

California Forest Health Highlights 2025



A publication of the
California Forest Pest Council

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Cover photo:

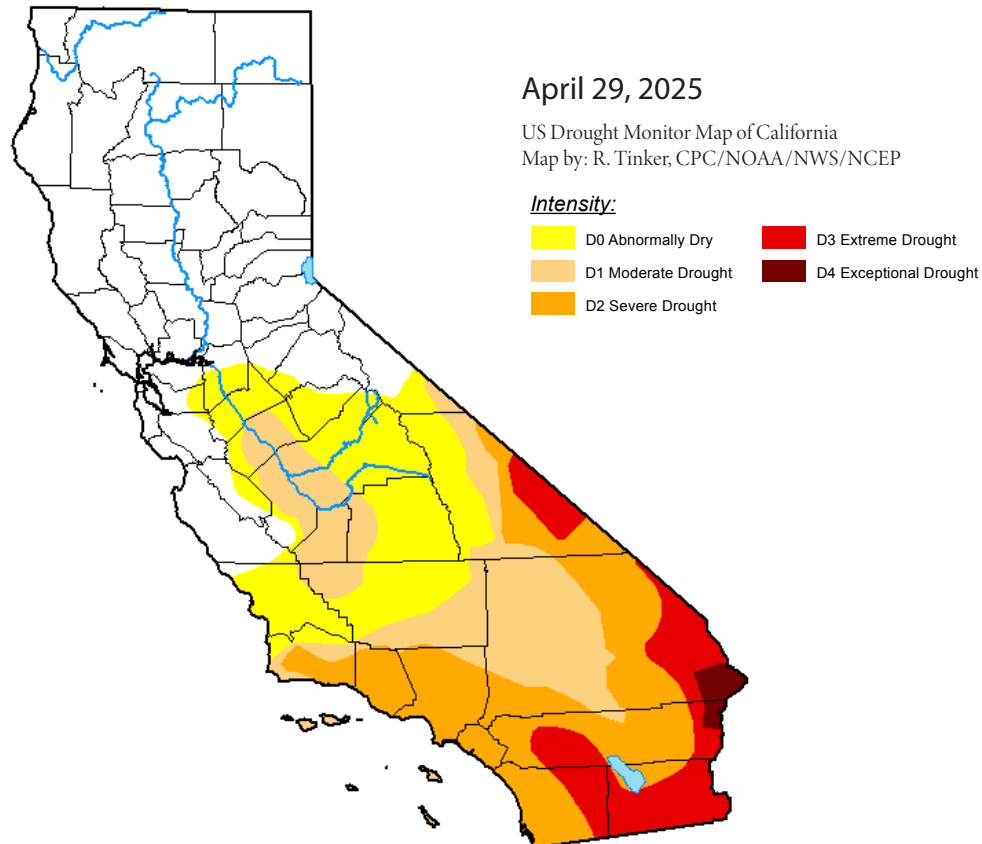
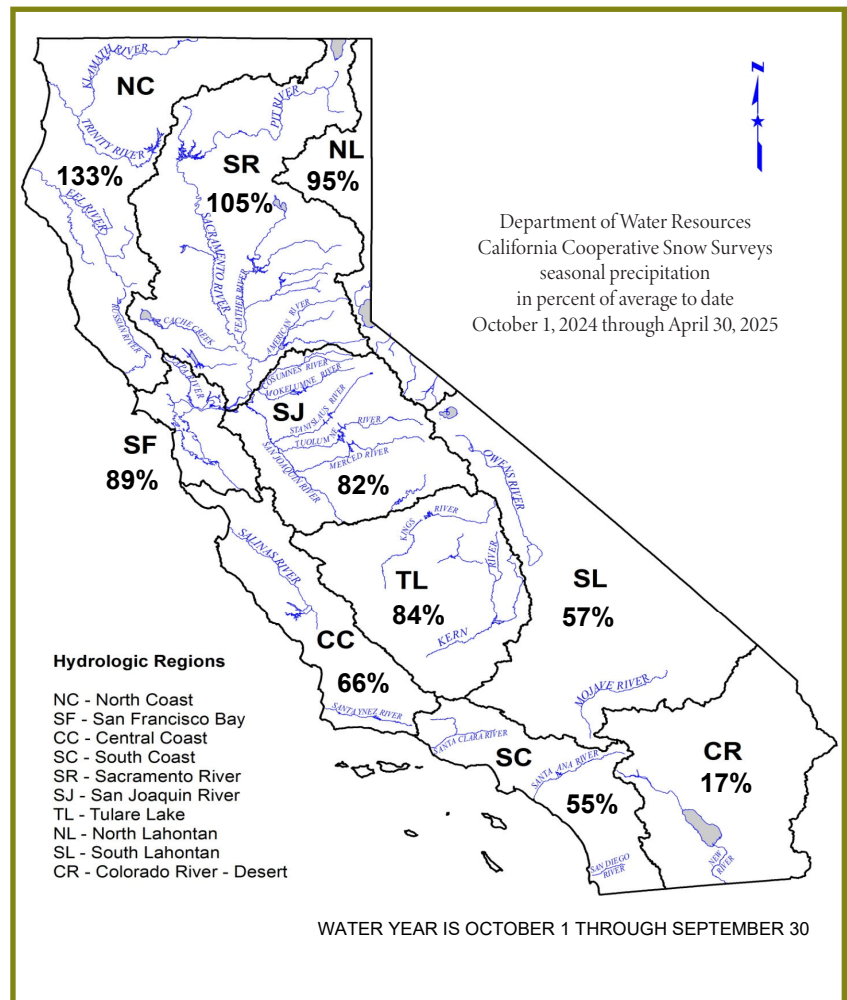
Lodgepole pine defoliation caused by lodgepole needleminer, Yosemite NP (Mono County).

Photo Credit: B. Bulaon, CAL FIRE

Statewide precipitation was 105% of average from October 2024 - April 2025, compared to 93% of average for the same time period in 2023 - 2024. In Northern California, forested area rainfall totals were 95 - 133% of average, Southern California areas were 17 - 57% of average, and the central areas of the state ranged from 66 - 89% (see map at right). The 2024 - 2025 water year (water year is from October 1 - September 30) aligned with historical averages (1901 - 2000) as the 71st wettest and 60th driest (since 1895). Precipitation was below average in October, April, and May (bottom 1/3 of years on record) and above average in November, February, March, August, and September (top 1/3 of years on record). Precipitation was normal for December, and July. While most of the year's precipitation was unexceptional, January was the 9th driest and June was the 7th driest on record.

Statewide temperatures deviated significantly from historical averages (1895 - 2022) with the 2024 - 2025 water year being the 8th warmest on record. While November, March, and July temperatures were in the normal range, temperatures in every other month were above normal. October and December were the 2nd warmest ever recorded, and August was the 6th warmest (6°F, 5.3°F, and 3.5°F above average, respectively).*

*NOAA National Centers for Environmental information, Climate at a Glance: Statewide Rankings, published November 2025, retrieved on December 3, 2025 from <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/rankings>.

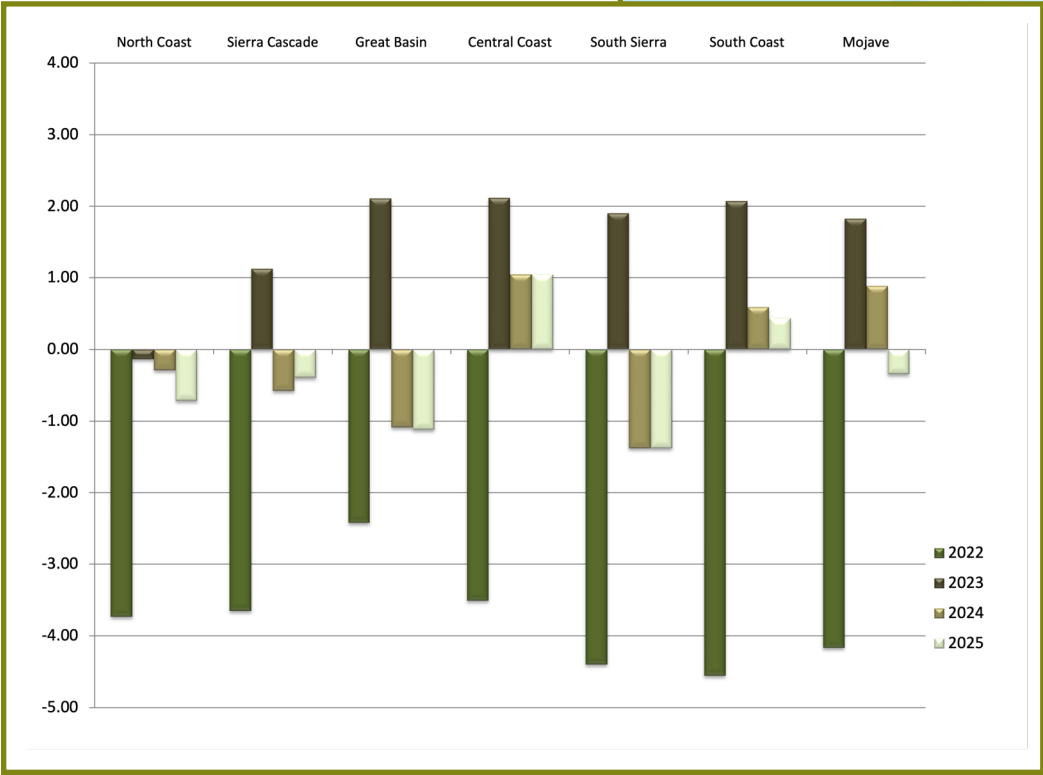


Palmer Drought Index

The Palmer Drought Severity Index (PDSI) is an indicator of drought and moisture excess, with negative values denoting degree of drought. For the 2024 – 2025 water year, the yearly average PDSI values ranged from -1.36 in the South Sierras (driest zone) to 1.07 in the Central Coast (wettest zone) (see map). As of September 30, 2025, the northern half of the state, the Southern Sierras, and the Mojave had a precipitation deficit, while the South and Central Coasts had a moisture surplus.



Palmer Drought Severity Index (PDSI) for California, 2022 - 2025



Palmer Classifications

Value	Description
4.0 or more	Extremely wet
3.0 to 3.99	Very wet
2.0 to 2.99	Moderately wet
1.0 to 1.99	Slightly wet
0.5 to 0.99	Incipient wet spell
0.49 to -0.49	Near normal
-0.5 to -0.99	Incipient dry spell
-1.0 to -1.99	Mild drought
-2.0 to -2.99	Moderate drought
-3.0 to -3.99	Severe drought
-4.0 or less	Extreme drought

Source: National Climatic Data Center, U.S. Department of Commerce, <https://www.ncei.noaa.gov/pub/data/cirs/climdiv>

Survey Summary

Acres surveyed 2025: 9.8 million acres

Acres surveyed 2024: 40.1 million acres

The USDA Forest Service, Pacific Southwest Region, State and Private Forestry staff conducts annual aerial surveys throughout forested areas of California to detect recent tree mortality, defoliation, and other damage. Aerial Detection Surveys (ADS) are systematically flown in small, fixed-wing aircraft on a 4–5 mile grid pattern with two observers recording from opposite sides of the plane. Most forested areas are typically surveyed including National Forests (NF), National Parks (NP), and other federal, state, tribal, and private industrial and non-industrial lands.

Most of the Region was not surveyed in 2025, however approximately 9.8 million acres were surveyed (June – July). Areas surveyed include the Southern Bay Area, Central Coast, and Southern California along with much of the Southern Sierra Nevada Range where the concurrent drought conditions were most severe. Report trends and comparisons to previous years' data will mostly be limited to this extent. Additionally, some areas of California were flown by other regions such as portions of the Humboldt-Toiyabe NF south of Lake Tahoe and areas near the Oregon border that include portions of the Rogue River NF that extend into California. These areas will also be referred to in this report.

The following information was collected for each area with tree mortality or damage:

- damage type (mortality, top kill, defoliation, branch flagging, dieback, or discoloration)
- percent of area affected (see below for severity scale)
- affected tree species or genus
- probable damage agent (root disease, bark beetles, etc.).

Not all trees in reported acres are dead or damaged. Tree mortality and damage were recorded on a severity scale based on the percentage of trees affected within a given area. Severity of mortality and damage was rated as follows: very light (1-3% of mapped area affected), light (4-10%), moderate (11-29%), severe (30-50%), and very severe (>50%). Below we report the estimated number of acres affected and/or severity of mortality or damage within those areas.

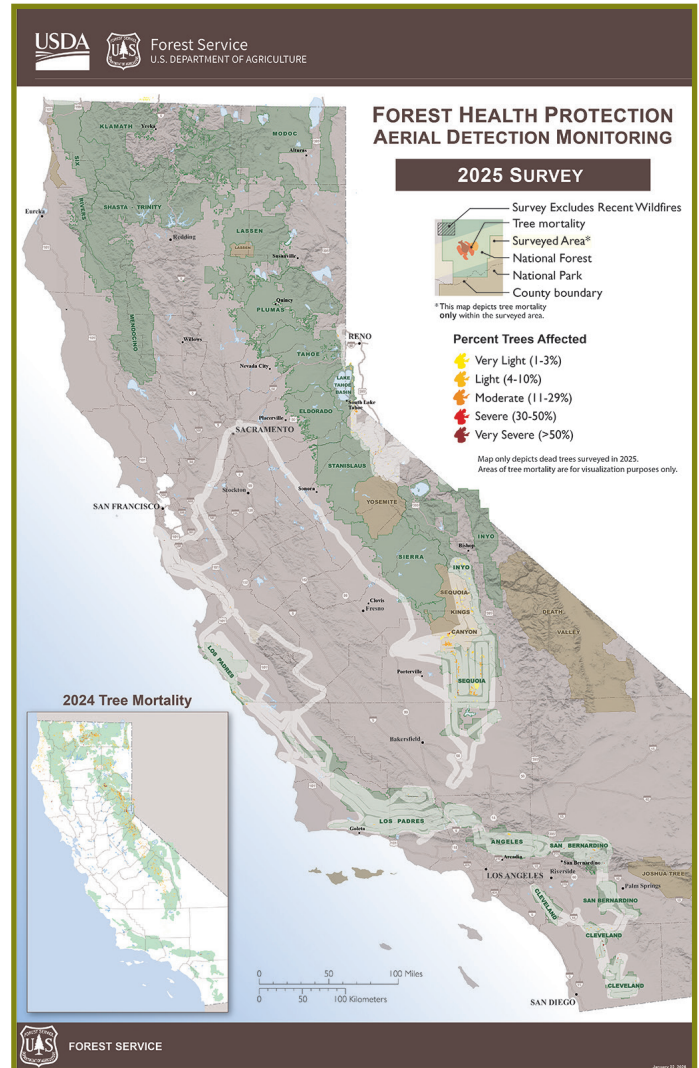
**Note: acres of mortality or damage may be noted in more than one bullet below as multiple damage agents can occur in the same location.*

Findings

Elevated levels of tree mortality (i.e. more than 1% of forested area affected) caused primarily by insects or diseases were recorded on approximately 44,000 acres. Most of the dead trees were recorded as fir (*Abies* spp.), followed by whitebark pine (*Pinus albicaulis*), yellow pine (*P. ponderosa*, *P. jeffreyi*, *P. coulteri*), redwood (*Sequoia sempervirens*), and tanoak (*Notholithocarpus densiflorus*).

Bark Beetles and Wood Borers

- California/Shasta red fir (*A. magnifica*, *A. magnifica* var. *shastensis*) and white fir (*A. concolor*) comprised more than 71% of the tree mortality recorded in 2025. Within areas surveyed both years, mortality increased from 24,000 acres with mortality detected in 2024, to ~33,000 acres recorded in 2025.
 - White fir mortality has been widespread throughout much of its range for many years but more recently the intensity has generally been light to moderate and associated with heavily stocked mixed conifer stands. In 2025, mortality was much less widespread in the areas surveyed.
 - Red fir mortality has generally occurred throughout much of its range in mature, pure, high-elevation stands at light to severe intensities. Mortality has been most intense and widespread in the Central Sierra Nevada Range where the most recent drought was most exceptional and these areas were not surveyed in 2025. In areas surveyed, activity was



USDA Forest Service Aerial Detection Survey Results, California, 2025.
Map by: M. Woods, Forest Service

reduced from approximately 21,000 acres in 2024 to ~700 acres with mortality in 2025 occurring in higher elevations of the southern Sierra Nevada Range.

- In the surveyed areas, pine mortality attributed to western pine beetle (*Dendroctonus brevicomis*) decreased slightly with ~1,100 acres with mortality in 2025 compared to ~1,300 acres with mortality in 2024. Mortality occurred in the southern Sierra Nevada Range on the Sequoia NF.
- Douglas-fir (*Pseudotsuga menziesii*) mortality caused by flatheaded fir borer (*Phaenops drummondi*) was not recorded in 2025 since it is not known to occur in the areas surveyed. An estimated 55,000 dead trees across 16,000 acres were recorded in 2024, mostly in the greater Redding area (Shasta County) and to a lesser extent along the northern Coast Range, both of which exhibited severe mortality in 2022 and closely correlated where recent drought conditions were also exceptional.
- In the surveyed areas, pine mortality attributed to mountain pine beetle (*Dendroctonus ponderosae*) remained elevated with an estimated 5,800 acres with mortality compared to ~5,500 acres in 2024. Mortality was primarily in lodgepole pine (*P. contorta*) and primarily located west of Kennedy Meadows within the Sequoia NF. Single tree and small group mortality of whitebark pine was commonly detected in eastern high elevation areas of Sequoia-Kings Canyon NP and northern Inyo NF. Most of the ranges for both species were not surveyed in 2025.
- Mortality of high-elevation five-needle pine (i.e. whitebark, limber (*P. flexilis*), western white (*P. monticola*), and foxtail (*P. balfouriana*)) in the surveyed areas increased from an estimated 780 acres with mortality in 2024 to ~5,400 acres with mortality in 2025. Whitebark pine was the most heavily impacted of the species though single trees and small groups of western white pine mortality were not uncommon. The elevated levels of high-elevation pine mortality in recent years is concerning since these trees are very long lived, difficult to replace, and provide critical food and shelter for many alpine species.
- Jeffrey pine mortality attributed to Jeffrey pine beetle (*D. jeffreyi*) or *Ips* spp. remained unchanged across the surveyed areas with ~2,000 acres with mortality in both 2024 and 2025. Mortality was common throughout its range in 2024 but was greatly reduced in Southern California in 2025.
- Goldspotted oak borer (*Agrilus auroguttatus*)-caused oak (*Quercus* spp.) mortality increased to an estimated 4,500 dead trees across 710 acres in 2025 compared to ~1,700 dead trees across 660 acres in 2024. Most mortality detected via aerial survey again occurred in and near the Palomar Ranger District on the Cleveland NF (San Diego County). Additionally, oak mortality within the northern Trabuco Ranger District continues to increase.
- Pinyon pine (*P. monophylla*) mortality attributed to *Ips* spp. decreased from ~160 acres with mortality in 2024 to a few single trees and small groups of mortality in 2025. Pinyon mortality was recorded in far eastern areas of the Sequoia, far southern Inyo NF as well as far northeastern San Bernadino NF. Single tree and small group mortality was also common on the Humboldt-Toiyabe NF.

Defoliation

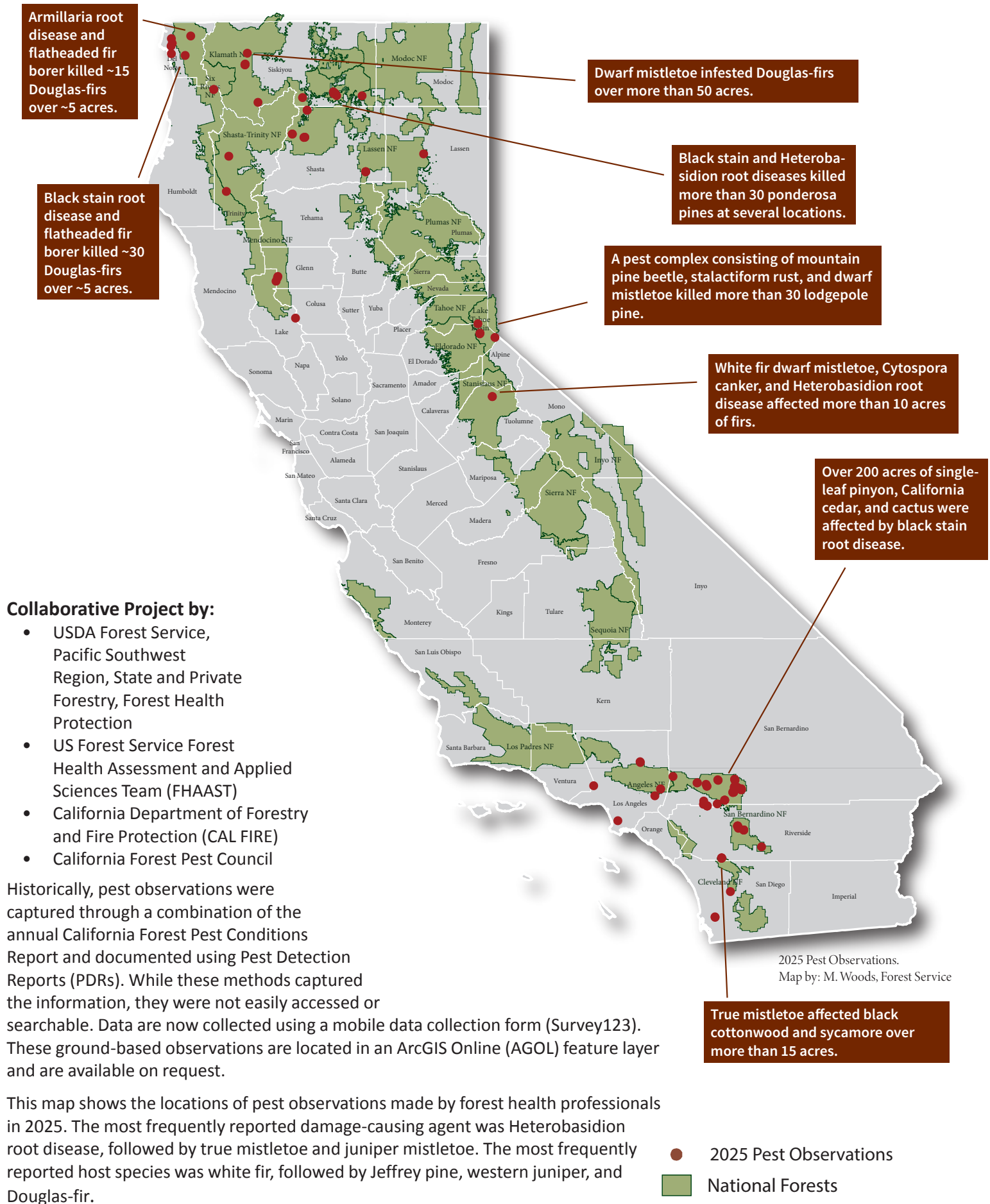
- Fir defoliation caused by Douglas-fir tussock moth (*Orgyia pseudotsugata*) or western/Modoc budworm (*Choristoneura* spp.) and lodgepole pine defoliation caused by lodgepole needleminer were not recorded in 2025. Areas where previous years' defoliation outbreaks occurred were not surveyed. Further information can be obtained in previous years' [Aerial Survey Reports](#).

Diseases

- Tanoak mortality attributed to sudden oak death (*Phytophthora ramorum*) has been historically low in recent years as generally dry spring weather has inhibited the spread of this invasive disease. The wet spring of 2022 and ensuing field reports in 2023 indicated significant new infections but detection of whole tree mortality was not elevated in 2024 and most of this habitat type was not surveyed in 2025. However, all areas of the south bay and central coast were surveyed and indicate continued low incidences of mortality in those areas. An estimated 4,900 dead trees across 550 acres were detected in 2025 compared to ~12,000 dead trees across 870 acres in 2024.

Drought

- Though still rare, an unusually high incidence of scattered single tree redwood mortality was recorded in several coastal areas of the southern Bay Area. Causal agents are unknown, but drought may be a factor.
- Three years of exceptional drought conditions (2020-2022) caused large scale mixed conifer (white fir, Douglas-fir, ponderosa pine, knobcone pine (*P. attenuata*), and incense-cedar (*Calocedrus decurrens*) mortality in the north interior of California in 2023 which lingered into 2024. It is unknown how this situation progressed since none of these areas were surveyed in 2025.



Native Insects

Bark and Woodboring Beetles

Mountain Pine Beetle (*Dendroctonus ponderosae*)

Sierra Nevada

Mountain pine beetle activity decreased in the Sierra Nevada due to preceding years of normal precipitation. While mountain pine beetle-caused tree mortality diminished to background levels in most areas, mountain pine beetle-attacked trees were found where populations had been persistently high in previous years, and beetles continued to find susceptible hosts.

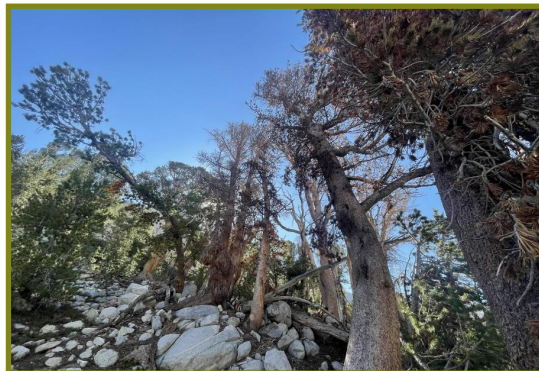
At submontane elevations, mountain pine beetle continues to kill mature trees in lodgepole (*Pinus contorta*) and whitebark pine (*P. albicaulis*) dominated forests. High levels of newly attacked trees were found in popular campgrounds in the Medicine Lake Recreation Area, Modoc National Forest (NF) (Siskiyou County). Approximately 50% of lodgepole pine trees throughout the administrative area surrounding the lake were affected (cumulative mortality equaling 20-50 trees killed per acre). Trees greater than 8-inches diameter at breast height (DBH) were most often killed, regardless of prior damage, crown condition, or stand density. In fall 2024, USDA Forest Service, Forest Health Protection (FHP) and Modoc NF staff applied preventative insecticide to 215 high-value lodgepole pines located in three campgrounds. All trees were successfully protected from mountain pine beetle attack.

The Sierra Nevada Network, a National Park Service (NPS) inventory and monitoring group, surveyed areas of the southern Sierra Nevada for causes of mortality in whitebark and foxtail pine (*P. balfouriana*). Four foxtail pines were attacked and killed by mountain pine beetle in the surveyed areas in 2025. Whitebark pine stands in several areas were beginning to experience moderate levels of mountain pine beetle infestation (11-30% of trees in the surveyed areas) along trails near Bench Lake heading east towards Taboose Pass in Kings Canyon National Park (NP) (Inyo County). Mountain pine beetle continues to infest trees with white pine blister rust (*Cronartium ribicola*) girdled tree trunks. Low levels of mountain pine beetle-caused mortality occurred (one tree per acre) in the Tioga and Mono-Parker Passes in Yosemite NP (Mono County). Unidentified twig beetles (*Pityophthorus* sp.) were also observed causing needle and branch dieback of whitebark pines at many locations; some were even found infesting tree trunks alongside mountain pine beetle.

Mountain pine beetle-caused tree mortality continues in the White Mountains of eastern California (Mono County). Windshield-ground surveys conducted by FHP staff detected tree mortality along the Ancient Bristlecone Scenic Byway. Species of dead trees were not confirmed due to the distance from the road but were most likely limber pines (*P. flexilis*) based on form. Fresh mountain pine beetle attacks were observed on one living large (>20-inch DBH) Great Basin bristlecone pine (*P. longaeva*) near the parking lot of the Ancient Bristlecone Pine



Whitebark pine mortality near Mono Pass, Yosemite NP (Mono County).
Photo by: Z. Klein, American Forests



Mountain pine beetle-caused mortality of whitebark pine, Upper Palisade Lake (Fresno County). Photos by: Z. Klein, American Forests



Above, mountain pine beetle-caused mortality of whitebark pine, and below, mountain pine beetle-killed trees in mortality plot, Bench Lake (Inyo County). Photos by: Z. Klein, American Forests

Forest Visitor Center. Two dead Great Basin bristlecone pines with older mountain beetle attacks were adjacent, but no other infestations were found in the area nearby. While this level of mortality would be considered very low for either limber or Great Basin bristlecone pine (one tree per 100 acres), bark beetle activity is very rare in this ecosystem. Mountain pine beetle activity in other locations with similar ecosystems in the eastern Sierra Nevada have been severe enough to warrant continued surveys in this area to monitor progression.

In the North Grove of Calaveras Big Trees State Park, four >30-inch DBH sugar pines (*P. lambertiana*) were mass attacked and killed by mountain pine beetles in an area treated with prescribed fire in spring 2024 (Calaveras County). Despite minimal trunk scorch and no crown scorch, trees were still attacked by bark beetles. Thick duff layers around the tree base likely allowed fire to linger on underground roots, girdling the cambium. In spring 2025, needles of two additional mature sugar pines in the fire footprint began turning red, signaling decline but not complete mortality.

Northwestern California

Approximately 10 acres of sugar pine mortality was detected on a private property along the Philo-Greenwood Road in coastal Mendocino County during a survey in summer 2024. This location appears to be a sugar pine plantation (all trees roughly 10-15-inch DBH) with several trees having recently died and some showing evidence of bark beetle attack. The recent increased mortality in sugar pine trees could be due to a progressive increase in bark beetle populations.

Western Pine Beetle (*Dendroctonus brevicomis*)

Sierra Nevada

Western pine beetle activity in the central and southern Sierra Nevada has remained at endemic levels (<1 tree per acre) for the past two years. Scattered occurrences have been observed in recently burned areas (wildfires or prescribed burns) where high severity burn temperatures significantly injured trees, inciting bark beetle attack and colonization.

Jeffrey Pine Beetle (*Dendroctonus jeffreyi*)

Southern Sierra Nevada

Jeffrey pine beetles continue to impact Jeffrey pine (*P. jeffreyi*) dominated forests in Inyo Craters, Inyo NF and surrounding areas (Mono County). Newly attacked trees were observed directly adjacent to previously reported areas, with approximately 3-5 new trees exhibiting signs of attack on the edges of infested tree clusters. New groups of mortality (5-20 Jeffrey pine trees) were developing in nearby green stands. Cumulative mortality in these areas was very severe, impacting >50% of trees infested or killed by Jeffrey pine beetle. Stands with past Jeffrey pine mortality (>5 years old) were treated to reduce fuel loads and hazard trees. No Jeffrey pine beetle activity was detected in recently prescribed burn areas in Inyo Craters or in pine forests east of Highway 395 in Mammoth Lakes.



Newly killed Jeffrey pines adjacent to stand with older jeffrey pine beetle-caused mortality, Inyo Craters (Inyo County). Photo by: B. Bulaon, CAL FIRE

Red Turpentine Beetle (*Dendroctonus valens*)

Southern Sierra Nevada

Red turpentine beetle activity was confined to pine trees that were severely affected by wildfires. An unknown wildfire ignition near Crestview Rest Area (Mono County) burned mostly at low intensity over 20 acres but did have some hotter spots (~2 acres total) that consumed about 20 Jeffrey pine trees of various sizes. These trees were attacked, but not killed, by red turpentine beetles. Beetles were found only on severely charred trees and did not move to adjacent lesser affected pines.

The August 2024 Crozier Fire (1,938 acres in El Dorado County) burned at moderate to severe intensity in the general forest area north of Swansboro Airport and Mosquito Road, Eldorado NF (El Dorado County). The following spring, red turpentine beetle pitch tubes amassed only on large-diameter severely burned ponderosa



Centers of Jeffrey pine mortality expanding into larger mortality pockets, Inyo Craters (Inyo County). Photo by: B. Bulaon, CAL FIRE

(*P. ponderosa*) and sugar pines. Red turpentine beetle activity was restricted to fully scorched, dead pines. Red turpentine beetle attacks were not found on trees in lower intensity burned areas (with lesser crown scorch).

Douglas-fir Beetle (*Dendroctonus pseudotsugae*)

Northwestern California

Though flatheaded fir borer (*Phaenops drummondi*) continues to be the main causal agent of Douglas-fir (*Pseudotsuga menziesii*) decline in Northern California, small clusters of Douglas-fir tree mortality caused by Douglas-fir beetle were detected in Jackson Demonstration State Forest (Mendocino County), Las Posadas Demonstration State Forest (Yolo County), and surrounding areas.

The Forest Service, CAL FIRE, and the Canadian Forest Service conducted a large trapping effort to assess the genetic variability of Douglas-fir beetle in the range of Douglas-fir trees in California. Douglas-fir beetles were caught in baited funnel traps at three locations in the far northwestern part of the state where Douglas-fir is most prevalent: Humboldt Redwoods State Park (Humboldt County), Jackson Demonstration State Forest, and Jedediah Smith State Park (Del Norte County). At each location, three traps were placed more than 100 meters apart near sites where beetles had been observed in either windthrown Douglas-fir stems (Del Norte and Humboldt Counties) or actively attacking live trees (Mendocino County). Low to moderate numbers of beetles were recovered in northern traps, but high numbers were recovered at the Mendocino location, reflecting beetle populations high enough to produce the attacks observed in neighboring trees. This population increase began approximately two years previously in trunks that had been cut but not removed from the forest floor. Beetle populations were sustained in stressed trees impacted by a prescribed burn in winter 2024-2025 following a timber harvest. Additionally, many of the large Douglas-fir trees in this location have long-term infections by velvet-top fungus (*Phaeolus schweinitzii*) that render trees highly susceptible to beetle attack.

Southern Sierra Nevada

While it was expected that the combination of prolonged drought and scorching from the 2024 Crozier Fire would have led to an increase in Douglas-fir beetle populations, no Douglas-fir beetles were found attacking Douglas-fir trees scorched during the fire.

Douglas-fir beetles were found infesting live, green, Douglas-fir trees with prior *Phellinus pini* infection along Cottonwood Road, Stanislaus NF (Tuolumne County). Two mature (>20-inch DBH) Douglas-fir trees on Forest Service Road 1N04 had conks and fresh boring dust. No recent disturbance or previous damage was noted on affected Douglas-fir trees. Douglas-fir beetles are not as widespread and destructive in California as they are in the Pacific Northwest or in the interior forests of the Rocky Mountains. In California, this beetle is often found infesting fallen green trees or trees with pathogen infections.

Fir Engraver (*Scolytus ventralis*)

Northern Interior and Sierra Nevada

Fir engraver beetles continue to cause extensive top-kill, branch damage, and whole tree mortality of true firs (*Abies* spp.) in the Sierra Nevada and northern California. While this beetle can kill true firs on its own, it is often part of a pest complex where several biotic agents including root disease, dwarf mistletoes, and other insects contribute to tree decline. Coupled with severe drought conditions three years ago, host trees of all size classes have been damaged or killed due to fir engraver and associated agents.

Fir engraver, along with the complex of other damage agents, continued to cause scattered mortality in forests where presence of true fir is high. Recent ground surveys in variable stand densities and elevations throughout the Sierra Nevada confirmed that fir engraver and its associates caused fir mortality throughout the surveyed area. For example, galleries of fir engravers were found mid-bole in 1-2 large dead red firs (*A. magnifica*) per acre across 300 acres on Earthquake Dome, Inyo NF (7,500 feet elevation, Mono County). Woodborers were also found at the bases of the dead trees.

Fir engraver caused mortality and -damage of mature red fir with severe dwarf mistletoe (*Arceuthobium abietinum*) infection has been ongoing for several years in Hammil Canyon, Stanislaus NF (Tuolumne County). Approximately 10-15 mature red fir trees per acre have died over the past decade in this canyon.



Douglas-fir with highly reduced crown and pitch streamers indicative of Douglas-fir beetle attack, Jackson Demonstration State Forest (Mendocino County).

Photo by: C. Lee CAL FIRE



Flatheaded fir borer-caused mortality of Douglas-fir, Shasta-Trinity NF (Shasta County). Photo by: A. Hawkins, Forest Service

The combination of fir engraver and severe dwarf mistletoe infection caused mass red fir decline around Bear Mountain Ski Area and Lake Alpine (Calaveras County). Top-dieback or whole tree mortality (1-2 trees per acre) is clearly visible from Highway 4 North. Fir engraver, woodborers, and Armillaria root disease killed approximately 10 white firs (*A. concolor*) (>30-inch DBH) in North Grove Campground, particularly along meadow edges (Calaveras Big Trees State Park).

Flatheaded Fir Borer (*Phaenops drummondi*)

Northwestern California

Flatheaded fir borer continues to be the primary causal agent of Douglas-fir decline and die-off throughout the northern half of the state. While there were fewer bark beetle-infested stands detected in northern coastal counties, flatheaded fir borer continued to be the leading cause of scattered mortality (<1 tree per acre).

Flatheaded fir borer continued to kill Douglas-fir trees in Shasta-Trinity NF, especially in Trinity and Shasta Counties. Tree mortality was widespread, with the highest mortality occurring in the low elevation forests in eastern Klamath NF where Douglas-fir co-occurs with ponderosa pine and black oak (*Quercus kelloggii*). The full extent and severity of mortality is not currently well characterized.

Drought stress likely contributed to Douglas-fir mortality. Internal tree injuries caused by drought stress (ie. sapwood damage) have persisted despite the recent wet seasons and appear to have increased the susceptibility of Douglas-fir to insects and diseases. Ongoing mortality along with fresh woodpecker activity in mature Douglas-firs indicate the presence of flatheaded fir borer at the edges of large mortality centers that have formed since the 2011-2017 drought six miles inland along Annapolis Road (Sonoma County). A landowner-conducted analysis of aerial imagery over the past decade indicated that 120 acres of mortality occurred every two years across the large property since that major drought event. However, it is possible that mortality in hardwoods could be attributed to the sudden oak death pathogen and other pests.

Pine Engravers (*Ips* spp.)

Southern Sierra Nevada

Ips woodi, an uncommon bark beetle known to attack limber pines, has been collected from multiple fallen Great Basin bristlecones in Schulman Grove, Ancient Bristlecone Forest, Inyo NF since 2023 (Inyo County). This year, *Ips woodi* specimens were collected from a fallen and completely infested 25-inch DBH Great Basin bristlecone pine located in a mixed species stand along White Mountain Road. The stand included limber pines affected by mountain pine beetle but only *Ips woodi* infested the entire



Douglas-firs with old, new, and impending mortality caused by flatheaded fir borer, Annapolis (Sonoma County). Photo by: C. Lee, CAL FIRE



Signs of woodpecker activity in flatheaded fir borer-attacked Douglas-fir, Annapolis (Sonoma County). Photo by: C. Lee, CAL FIRE

length of the bole of the Great Basin bristlecone pine. A second, live, Great Basin bristlecone pine, next to the fallen, infested bristlecone, had no insect or pathogens in Fall 2025.

Sequoia Bark Beetles (*Phloeosinus* spp.)

Central and Southern Sierra Nevada

Ancient Forest Society, in cooperation with Sequoia-Kings Canyon NP and Calaveras Big Trees State Park, conducted a range-wide giant sequoia bark beetle survey in 2025. The survey assessed over 6,600 acres across 14 groves to document signs and symptoms of beetles in the crowns of 14 legacy giant sequoia trees and the surrounding understory. The survey found that all 14 trees had some level of sequoia bark beetle damage.

There is no effective lure for sequoia bark beetles, so CAL FIRE Forest Entomology and Pathology Program (FEP) conducted a series of small studies at Calaveras Big Trees State Park to investigate potential lures for monitoring traps. In 2024, a small number of baited traps were deployed with small sequoia twigs attached, and twigs were refreshed every week during possible flight period – six specimens total were collected. In 2025, traps were deployed with one bag of sapwood shavings, mixed chips, and a bag of needles and shredded bark, or one bag of sapwood shavings and mixed chips along with a bag of scorched needles and bark. The former caught 23 specimens while the latter only caught four. Additional trials of varying lure combinations will be conducted at multiple sites in 2026.

Western Oak Bark Beetles

(Pseudopityophthorus pubipennis)

Northwestern California

In the Central Valley and Coast Range of California, western oak bark beetles were found in combination with foamy bark canker (*Geosmithia* species #41) on coast live (*Q. agrifolia*) and California black oaks in areas that were recently pruned as part of fuel reduction treatments in late summer 2025. In Nevada County, one cut stem from a two-stemmed coast live oak resulted in three neighboring trees later exhibiting symptoms of foamy bark canker and signs of western oak bark beetle infestation. In Placer County, both agents were noted on up to 20 neighboring coast live oaks after heavier pruning. This treatment also included on-site chipping and scattering of cut material. Oak trees ranging from 6-14 inches DBH were observed in late September with foamy bark cankers developing on the trunk and beetles visible in the foam. A few trees with no pruning or lighter pruning were also found with attacks and cankers. These sites will be revisited next year to assess tree recovery.



Exit holes on giant sequoia, Sequoia-Kings Canyon NP.
Photo by: Ancient Forest Society



Heavily pruned live oak infested with western oak bark beetles and foamy bark canker (Placer County). Photo by: A. Erny, Mason, Bruce & Girard, Inc.



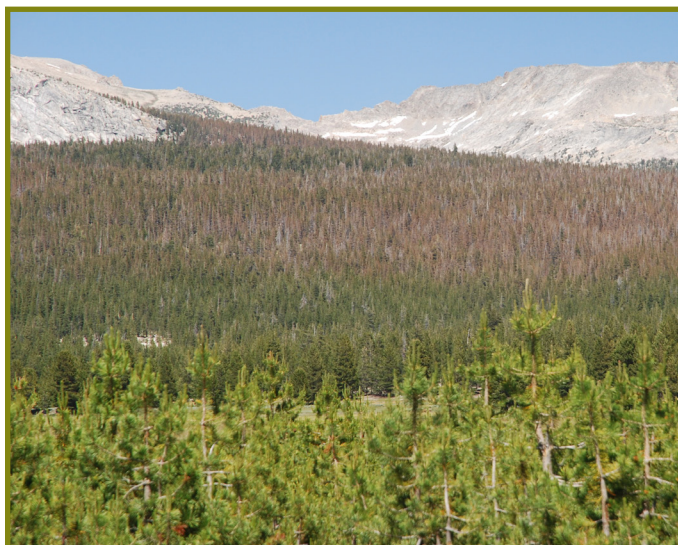
Recently cut oak stem alongside stem with foamy bark canker and western oak bark beetles, Grass Valley (Nevada County). Photo by: A. Erny, Mason, Bruce & Girard, Inc



Heavily pruned live oak with foamy bark canker and western oak bark beetles, (Placer County).
Photo by: A. Erny, Mason, Bruce & Girard, Inc



Lightly pruned live oak with foamy bark canker and western oak bark beetles (Placer County). Photo by: A. Erny, Mason, Bruce & Girard, Inc



Lodgepole needleminer caused mortality of lodgepole pine, Tuolumne Meadows, Yosemite NP (Mono County). Photo by: B. Bulaon, CAL FIRE



Left: Lodgepole pine severely defoliated by lodgepole needleminer, and Right: Close up of damage caused by lodgepole needleminer, Delaney Creek, Yosemite NP (Mono County). Photos by: B. Bulaon, CAL FIRE



Other Bark Beetles

Northwestern California

Monterey pine engraver (*Pseudips mexicanus*) and twig beetles were found in small diameter trunks of shore pine (*P. contorta*) located near the north shore of Lake Earl at Tolowa Dunes State Park (Del Norte County). Twig beetles were also found in the roots of those dead and dying shore pines. Both beetle species were found in a group of approximately 10 small shore pine trees and were associated with *Leptographium* sp. and *Diplodia scrobiculata* pathogen infections. *Ilyonectria* sp. has previously been found in declining shore pines at the same site, where shore pines have been gradually dying off for several years.

Foliar Insects

Lodgepole Needleminer (*Coleotechnites milleri*)

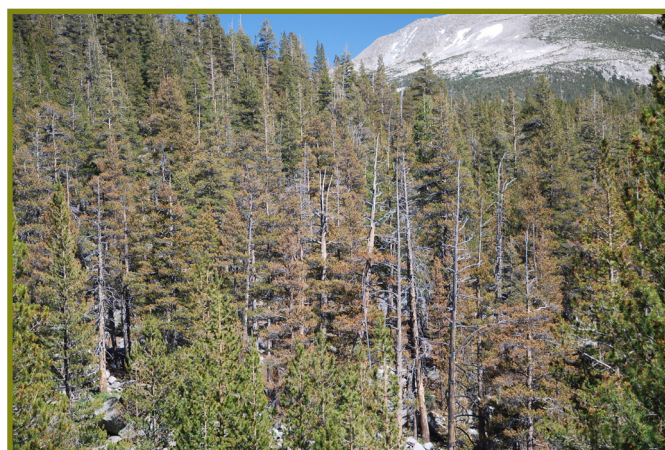
Central Sierra Nevada

Every other year, defoliation caused by lodgepole needleminer has been highly visible in recurring areas along Highway 120 in Yosemite NP (Mono County). Approximately 500 acres of lodgepole pines on the north side of Tuolumne Meadows towards Dog Lake and along Delaney Creek were moderately to severely defoliated (50 to >75% of the tree). Larger, overstory, lodgepole pine trees were affected more than understory trees. Defoliation up to 90% was observed along rocky and south-facing slopes. Lodgepole needleminer activity in these areas and other locations in Yosemite NP has been on-going for more than 25 years with minimal tree mortality. Affected lodgepole pines often recover in even-numbered years as the insect begins its two-year development cycle again.

Douglas-fir Tussock Moth (*Orgyia pseudotsugata*)

Northwestern California

Douglas-fir tussock moth was found in July 2025 at Cattle Camp Campground on the Shasta-Trinity NF near McCloud (Siskiyou County). A few egg masses and two caterpillars were observed along with slight defoliation on three Douglas-fir trees at one campsite, but no further tree defoliation or damage was noted later in the season.



Severe lodgepole pine defoliation caused by lodgepole needleminer along Dog Lake Trail, Yosemite NP (Mono County). Photo by: B. Bulaon, CAL FIRE



Slight defoliation of Douglas-fir caused by Douglas-fir tussock moth, Shasta-Trinity NF (Siskiyou County). Photo by: A. Hawkins, Forest Service

California Oak Moth (*Phryganidia californica*)

Southern California

The California oak moth is one of many species of caterpillars that feed on oaks, but one of the most important oak-leaf feeding moth species where it occurs. Populations are unpredictable each year and can vary from very high to low infestation levels. Healthy oaks generally tolerate extensive defoliation without serious harm.

California oak moths caused significant defoliation (>80% of needles) to more than 90% of coast live oaks across 250 acres in the city of Cambria (San Luis Obispo County) and 15 acres in Aromas (Monterey and San Luis Obispo Counties). Scattered oak trees were also defoliated in Arroyo Grande and Santa Maria (San Luis Obispo County). This defoliation was noted in August, but damage was occurring before then. California oak moth defoliation was also observed on coast live oaks on public and private land in Aptos in October (Santa Cruz County).



California oak moth on coast live oaks, Aromas (Monterey and San Luis Obispo Counties). Photo by: K. Corella, CAL FIRE

Alder Leaf or Flea Beetle (*Agelastica alni* or *Macrolaticia ambiens*)

Southern California

Around 50 young white alders (*Alnus rhombifolia*) were severely defoliated (>90% of leaves) by either alder leaf or flea beetle in Ojai at Wheeler Gorge Campground, Los Padres NF (Santa Barbara County). The two beetles are difficult to distinguish in rapid assessments and the feeding pattern of leaf skeletonization is very similar. Outbreaks of either of these beetles occur and vary from year to year, usually in the late spring/summer. In outbreak years they can cause substantial defoliation but rarely enough to affect the long-term health of the trees.



White alders being affected by alder leaf or flea beetle, Los Padres NF (Santa Barbara County). Photo by: B. Vizzachero, Forest Service

Two-horned oak gall wasp (*Dryocosmus dubiosus*)

Southern Sierra Nevada

A citizen in Tuolumne County noticed that their interior live oak (*Q. wislizeni*) leaves and crowns were turning brown prematurely. Examinations of leaf samples found remnants of multiple small galls along the mid-veins on the undersides of leaves with discoloration at the leaf edges, characteristic of two-horned oak gall wasp. Several other trees in the neighborhood also exhibited symptoms of wasp infestation. Damage from this wasp causes leaf margins to discolor but does not kill whole leaves, nor cause serious long-term damage. Populations of this wasp vary year to year, with two generations annually.

Northwestern California

A small outbreak of two-horned oak gall wasp on coast live oak was noted along Highway 101 between Cloverdale and Hopland in northern Sonoma County. Additional surveying of coast live oak between these towns will be conducted in 2026 to assess severity of wasp infestation.



Leaf spotting and discoloration caused by two-horned oak gall wasp on coast live oak (Sonoma County). Photo by: C. Lee, CAL FIRE

Non-Native and Invasive Insects

Non-Native Insects

Spruce Aphid (*Elatobium abietinum*)

Northwestern California

Spruce aphid damage to Sitka spruce (*Picea sitchensis*) stands along Highway 101 between Fortuna and Big Lagoon subsided during the first part of 2025 (Humboldt County). Many severely damaged spruce crowns showed recovery and higher levels of green foliage, especially in the northern distribution of Sitka spruce. However, trees between Fortuna and Eureka showed heavy defoliation, ranging from 10-90% in all affected trees, by December. Some trees in the northern area around Trinidad and Redwood NP did have some twig and first-year needle dieback caused by other, unknown organisms. Searches for aphids at one site in southern Eureka recovered minimal numbers of the insects, confirming what is known about their life cycle: aphids typically emerge sometime in late winter and begin feeding on older needle cohorts of Sitka spruce.

Invasive Insects

Goldspotted Oak Borer (GSOB) (*Agrilus auroguttatus*)

www.gsob.org

Goldspotted oak borer can attack and contribute to mortality of California black oak, coast live oak, and canyon live oak (*Q. chrysolepis*). GSOB continues to spread in southern California through localized beetle flight and movement of GSOB-infested firewood. GSOB-infested trees are found extensively in Los Angeles, Riverside, San Bernardino, and San Diego Counties. In 2025, new GSOB infested coast live oak trees were identified in Los Angeles County and southeast Ventura County. See www.gsob.org for more information and report suspected GSOB-infested trees [here](#).

Los Angeles County

Stakeholders throughout Los Angeles County continue to collaborate on GSOB monitoring and management. Multiple agencies are working with the community of Green Valley to continue individual tree inspections and corresponding management. Los Angeles County Fire Department collaborated with stakeholders to identify GSOB-infested oak trees in strategic areas of the county. GSOB-infested oak trees were detected in East Marshall Canyon (Verne), Placerita Canyon (Newhall), Santa Clarita Woodlands Park (Santa Clarita), and Michael D Antonivic Regional Park (City of Los Angeles). Individual tree inspections were negative for GSOB in the following locations: Santa Susana Pass State Historic Park, Stoney Point Park, Bell Canyon Open Space, Eaton Canyon Park, and El Escorpion Park (City of Los Angeles), Chatsworth Park South, Chatsworth Park North, Chatsworth Natural Preserve, and Devils' Canyon Creek (Chatsworth), Chumash Park (Agoura Hills), Zev Yaroslavsky Las Virgenes Highlands Park (Calabasas), Whitney Canyon Park (Santa Clarita), Echo Mountain Lowe Fire Rd (Altadena), Monrovia Canyon Park (Monrovia), Glendora Wilderness Park (Glendora), Arcadia Regional Park (Arcadia), San Dimas Canyon Park and Nature Center (San Dimas), Golden Hills Wilderness Park (La Verne), Claremont Hills Wilderness Park (Claremont), Sycamore Canyon Park (Diamond Bar), Powder Canyon Open Space (La Habra), and Topanga State Park (Topanga).

The Los Angeles County Agricultural Commissioner/Weights and Measures collaborated with CAL FIRE FEP staff to inspect oak trees on multiple private properties located throughout Los Angeles County (Brentwood, Chatsworth, Claremont, La Verne, Los Angeles, and San Dimas), detecting GSOB-infested oak trees on private property in La Verne only. In 2026, stakeholders will continue collaborating to conduct ground surveys and monitor susceptible oak trees in urban forest and wildland forests throughout Los Angeles County.

Orange County

GSOB-infested host trees continue to be identified, monitored, and managed throughout Orange County. This includes GSOB-infested oak trees located on all land ownerships (private, municipal, state, Tribal, and federal lands) and across diverse forest types/locations (wildland urban interface, urban forest, and wildland forest stands). In February 2025, eight GSOB-infested coast live oak trees were identified in Coal Canyon and Telegraph Canyon Trail of Chino Hills State Park. This prompted a survey of 201 acres as well as enhanced monitoring of 495 tagged coast live oak trees. Orange County Parks surveyed more than 9,770 coast live oak trees in developed parks and green spaces. These surveys identified 473 GSOB-infested coast live oak trees, informed management of 1,276 trees, and resulted in the removal of 55 GSOB-infested coast live oak trees. In 2025, The Irvine Ranch Conservancy (IRC) entered its 11th year of collaboration with local agencies and volunteers to continue surveying, monitoring, and managing for GSOB. A total of 432 coast live oak trees were surveyed across three locations (Gypsum Canyon, Upper Fremont Canyon, and Weir Canyon) and only at Upper Fremont Canyon were two heavily infested (>30 exit holes) oak trees identified. IRC also conducted the first survey in Limestone Canyon where a total of 135 oak trees were surveyed, but no GSOB-infested oak trees

were identified. At Weir Canyon, IRC treated 243 oak trees with basal spray applications of bifenthrin in April and July of 2025. Another 53 oak trees in Fremont Canyon (IRC Property) were treated with carbaryl.

Riverside County

GSOB-infested trees are found throughout Riverside County and affect all land ownerships. At Mount San Jacinto State Park, GSOB-infested oak trees were confirmed in approximately 528 acres of recreational areas and in the surrounding Idyllwild and Pine Cove communities. These recreational areas include four campgrounds (Fern Basin, Fuller Mill, Humber Park, and Lake Fulmor), Camp Emerson Boy Scout Camp, Idyllwild Arts, and Riverside County Park. GSOB emergence holes were observed on 860 California black oak trees at those sites, 41 of which showed signs of heavy infestation (>50 exit holes per tree). San Bernardino NF staff collaborated with Mountain Community Fire Safe Council (MCFSC) to inspect 230 oak trees, of which 59 trees had GSOB exit holes. California State Parks continues annual re-survey (April & October) of 1,065 tagged oak trees across state parks land in the Inland Empire District. This re-survey identified 174 GSOB-infested oak trees, informed the annual application of insecticide in May 2025 at Stone Creek and Idyllwild Campgrounds, and required removal of one heavily infested oak tree from state parks land. GSOB-infested coast live oak trees were identified on Santa Margarita Ecological Reserve property in 2025; oak trees on the property are now being monitored. Ground surveys by local and state agencies identified multiple GSOB-infested oak trees on private property along Poppet Flats Road (south of Hwy 234) and in forests north of Lake Skinner Recreation Area.

Santa Barbara County

In 2025, no GSOB-infested trees were identified in Santa Barbara County. In August 2025, CAL FIRE FEP and Forest Service FHP collaborated to conduct three GSOB training courses to inform local stakeholders of GSOB biology and management and to train participants to identify and report GSOB-infested oak trees.

San Bernardino County

GSOB-infested host trees continue to be identified and monitored in parts of San Bernardino County. This includes GSOB-infested oak trees located on all land ownerships (private, municipal, state, Tribal, and federal lands) and across diverse forest types/locations (wildland urban interface, urban forests, wildland forest stands). GSOB management activities and reporting varies across land ownership and collaborators. The Inland Empire Resource Conservation District (IERCD) conducted GSOB surveys in Angelus Oaks, Banning, Cedarripes Park, Crestline, Forest Falls, Oak Glen, Skyforest, Sugarloaf, Twin Peaks, and Wrightwood. IERCD surveyed a total of 3,151 trees from November 1, 2024 to November 30, 2025, identifying GSOB infestation on 443 California black oak trees. GSOB-infested trees continue to be identified on private property in Crestline, Forest Falls, Oak Glen, Silverwood, Sugarloaf, and Wrightwood. California State Parks continued GSOB management at Silverwood Lake State Recreation Area where 1,053 oak trees were resurveyed (April & October 2025). Several trees were identified for preventive pesticide application in May 2025 and one heavily infested oak tree (>30 exit holes) was identified for removal. Staff re-surveyed (April & October 2025) 477 tagged trees at Wildwood Canyon State Park, identified 43 GSOB-infested coast live oak trees, and applied preventive pesticide to select trees in May 2025. Multi-agency collaboration continues for GSOB management (survey, monitoring, inventory, education/outreach, removal of oak trees heavily infested by GSOB) across all land ownerships throughout the county.

San Diego County

GSOB is considered widespread on all land ownerships of San Diego County. This includes private, municipal, state, Tribal, and federal. GSOB-infested trees continue to be identified throughout the county. Joint management efforts continue to expand between agencies, Tribes, and cooperators.

Ventura County

In spring 2025, ground surveys in east Ventura County detected new GSOB-infested coast live oak trees on private property in the community of Santa Susana and multiple GSOB-infested trees located on multiple landownerships along Las Lallas Canyon Road (Santa Susana Mountains). Staff with Ventura County Agriculture/Weights and Measures maintained 37 funnel traps to detect GSOB in strategic areas of Ventura County. Multi-agency (federal, state and local government agencies, University of California (UC), and non-profit groups) collaboration will continue to expand GSOB surveys and stakeholder awareness, while providing GSOB management (survey, monitoring, treatments) across the county.

Invasive Shot Hole Borer (ISHB) (*Euwallacea fornicatus* and *E. kuroshio*)

The term “Invasive Shothole Borer” (ISHB) is an education/outreach term used to encompass two closely related ambrosia beetles, the polyphagous shothole borer (*Euwallacea fornicatus*) and Kuroshio shothole borer (*E. kuroshio*). These two beetles and their respective fungal symbionts often overlap in their range and require DNA analysis to distinguish between species. Identification of species is not frequently performed and does not impact management or monitoring practices. Because of this,

“ISHB” is used interchangeably for both species for monitoring and reporting purposes. For more information, please visit <http://www.iscc.ca.gov/ishb.html> and <http://www.ishb.org>.

Los Angeles County

In 2025, multiple agencies collaborated to continue extensive monitoring and management of ISHB across urban parks, natural areas, and private properties across Los Angeles County. Approximately 576 parks were visited to assess trees for presence of ISHB and other tree pests. Sixteen surveyed parks were found to have ISHB infested trees: Calabasas Bark Park and Cold Creek Preserve (Calabasas), Cesar Chavez Park, DeForest Park, El Dorado East Regional Park, Hudson Park, and Los Altos Park (Long Beach), Crescenta Valley Community Regional Park/Dog Park and Verdugo Park (Glendale), Dapplegray Park (Rowland Heights), Ken Malloy Harbor Regional Park (Harbor City), Loma Alta Park (Altadena), Rosecrans Park (Gardena), Hermon Park and Vista Hermosa Natural Park (Los Angeles), and Walnut Creek Nature Center (Baldwin Park). Most ISHB-infested trees were sycamores (*Platanus* sp.). Another 558 city parks were inspected for presence of ISHB within the following cities: Boyle Heights, Calabasas, Carson, Chatsworth, Encino, Hawthorne, Hermosa Beach, Inglewood, Koreatown, La Cañada, Long Beach, Los Angeles, Pacoima, Palmdale, Palos Verdes, Paramount, Pico Rivera, Redondo Beach, Rolling Hills, San Fernando, San Marino, San Pedro, Santa Clarita, Sierra Madre, Signal Hills, South El Monte, Torrance, West Hills, West Hollywood, Whittier, and Wilmington. No ISHB were detected in these parks. Stakeholders throughout the county will continue to collaborate on monitoring and management for ISHB.

Orange County

In 2025, extensive monitoring and management continued across all land ownerships throughout Orange County. This included multiple entities conducting and collaborating on ISHB management activities. Reports from multiple stakeholders indicate many locations with no ISHB-infested trees, low-level of ISHB trees, and persistent ISHB infestations at previously reported locations. A total of 21 sites were surveyed, including Aliso and Wood Canyons Wilderness Park (Aliso Viejo), Arden Modjeska House, Modjeska Nature Preserve, and Silverado Elementary School (Silverado), Bent Tree Park (North Tustin), Carbon Canyon Regional Park (Brea), Clark Regional Park (Buena Park), Craig Regional Park (Fullerton), George Key Ranch Historic Park (Placentia), Harriet Wieder Regional Park (Huntington Beach), Haster Basin Park (Garden Grove), Irvine Ranch Historic Park (Irvine), Irvine Regional Park and Peter’s Canyon Regional Park (Orange), Laguna Coast Wilderness Park (Laguna Beach), Laguna Niguel Regional Park (Laguna Niguel), Mile Square Regional Park (Fountain Valley), O’Neill Regional Park and Whiting Ranch Wilderness Park (Trabuco Canyon), Talbert Regional Park (Costa Mesa), Tri-City Regional Park (Placentia), Yorba Regional Park (Anaheim), and trees along Santa Ana River Trail (multiple cities). Cities also reported trees exhibiting symptoms and signs of ISHB infestation. The City of Paramount identified one coast live oak with small holes and cankers likely caused by ISHB attack. At Bonita Park, City of La Habra staff observed multiple sycamores and coast live oaks with symptoms (ex: canopy thinning/dieback) and signs of ISHB trunk entry/exit holes. Fullerton Union High School District reported exit holes and cankers on two coast live oaks located on UHSD property. City of Mission Viejo reported 100 trees (sycamore, *Parkinsonia* sp., *Cercidium* sp.) with canopy thinning/dieback and trunk entry/exit holes, of which the four most heavily ISHB-infested trees (>150 ISHB exit holes) were removed. Newport Beach reported 65 ISHB infested trees (palo verde (*P. florida*), willow (*Salix* spp.), sycamore, alder, box elder maple (*Acer negundo*), buckeye (*Aesculus californica*), and poplar (*Populus* spp.)) at Arroyo Park exhibiting canopy thinning, crown dieback, and exit holes. At Santiago Oaks Regional Park, a total of 23,908 trees were surveyed; of which 462 trees were infested by ISHB and only 29 trees were heavily infested. Reporting entities believe ISHB infestation levels vary by park, but there is a general decline in the number of ISHB infested trees throughout the county. The number of ISHB-infested trees has increased compared to previous years at only a few parks. All parks mentioned are being actively managed, with heavily ISHB-infested trees being removed and high-value moderately ISHB-infested trees being treated accordingly. From May to August 2025, IRC and volunteers conducted surveys in mitigation areas in Trabuco Creek (O’Neill Regional Park in Trabuco Canyon) where a total of 101 trees were assessed, 15 of which were infested with ISHB. Audubon Starr Ranch staff and volunteers surveyed extensive areas of Trabuco Canyon (Silverado) but did not observe any infested trees, although adjacent properties have reported ISHB infestation in the recent past. Annual inspection of individual trees for signs of ISHB continued in Irvine beginning in early September at Bommer Canyon and Quail Hill. Of the 142 trees surveyed, seven trees had low ISHB infestation (<50 ISHB exit holes). Surveys conducted at Silverado Elementary School (Silverado) and Irvine Ranch Historic Park (Irvine) did not identify any infested trees. Stakeholders also reported continued mechanical treatment of heavily ISHB-infested trees (>150 exit holes) and treatment of select high-value trees. Stakeholders throughout the county will continue to collaborate on monitoring and management for ISHB.

Riverside County

ISHB populations continue to infest host trees throughout Riverside County. Over 150 trees (sycamores, coast live oaks, and magnolias (*Magnolia grandiflora*)) with signs of ISHB infestation (canopy thinning/dieback, trunk entry/exit hole, and discoloration) were documented in multiple locations throughout the city of Riverside. Multiple agencies are collaborating on ISHB management (surveys, tree inspections, monitoring panels/traps, and management) with varying levels of reporting.

San Bernardino County

Multiple stakeholders throughout the county conducted individual tree inspections and identified ISHB-infested trees, but management activities and reporting vary across landownership and collaborators. ISHB-infested trees have been observed on private property in East Highland Ranch, Loma Linda, Redlands, and San Bernardino. In August 2025 at Ted and Lila Dawson Park (Loma Linda), seven box elder trees with moderate ISHB infestation (50-150 exit holes) were successfully treated (felled, chipped on site, and stumps ground) to reduce ISHB populations. From February to October 2025, California State Parks Inland Empire District collaborated with IERCD to maintain ISHB monitoring traps at strategic sites in Chino Hills State Park. In riparian areas along Carbon Canyon Road, California State Parks identified ISHB in an infested box elder tree, prompting plans to survey strategic areas for ISHB infestation.

San Diego County

Identification of ISHB-infested host trees and collection on ISHB monitoring panels continue in west San Diego County. There is ongoing monitoring of 301 coast live oak trees at Daley Ranch (Escondido). Multiple ISHB-infested sycamores trees with canopy thinning/dieback and trunk entry/exit holes were observed throughout the county and four heavily infested ISHB trees were removed from several sites. Multiple oak trees attacked by ISHB and displaying decline symptoms (dieback, discolored foliage, and crown thinning) were reported at four locations in La Mesa; infested trees were promptly removed. Stakeholders throughout the county continue to collaborate on monitoring and management for ISHB.

San Luis Obispo County

CAL FIRE Forestry Division continued to conduct ground surveys and maintain ISHB monitoring traps at three locations in San Luis Obispo County, but no ISHB-infested trees were detected and no ISHB specimens were collected from traps in 2025.

San Mateo County

Since 2024, local agencies and stakeholders have collaborated on ISHB monitoring. San Mateo County Agricultural Commissioner/Weights and Measures did not detect ISHB in any of the traps they maintained. San Mateo County Parks continued ground surveys and trap maintenance in strategic areas of their park system but ISHB was not identified on host trees or in traps in 2025. Stakeholders continue to collaborate at the county and regional level (Bay Area) to monitor and manage for ISHB.

Santa Clara County

In November 2023, ISHB infested London plane trees (*Platanus × acerifolia*) were discovered within the City of San Jose. This infestation is approximately 213 miles directly north from the previously known locations in Santa Barbara County. To keep the public informed, San Jose has created an online public viewer with maps displaying up-to-date information on tree locations, species surveyed, levels of ISHB infestation, and management status. Since fall of 2025, San Jose city staff and cooperators have identified 1,760 trees with low levels of ISHB infestation (<50 exit holes), 89 trees with moderate levels of ISHB infestation (50-150 exit holes), and six trees with heavy levels of ISHB infestation (>150 exit holes). San Jose has treated 20 trees that were moderately infested by ISHB and plan to continue managing for ISHB-infested trees in early spring 2026. Midpeninsula Regional Open Space District maintained 150 ISHB traps but no ISHB specimens were collected. Stakeholders continue to collaborate at the county and regional level (Bay Area) to monitor and manage for ISHB.

Ventura County

Multiple stakeholders continue ISHB management activities (tree inspections, surveys, monitoring, treatments) but management activities and reporting vary across land ownership and collaborators. City of Moorpark reported a total of 31 trees (sycamores and coast live oaks) with low levels of ISHB infestation across five parks (Arroyo Vista, Glenwood, Mountain Meadow, Tierra Rejada, Miller).

Mediterranean Oak Borer (*Xyleborus monographus*)

Northern California

Mediterranean oak borer populations have been detected injuring and killing trees in ten California counties. The potential for further introductions into California remains a concern. Mediterranean oak borer and its associated fungi continue to kill valley and blue oaks (*Q. lobata*, *Q. douglassi*) throughout Lake, Napa, Sacramento, and Sonoma Counties as well as at satellite infestations in Amador, El Dorado, Marin, Mendocino, Sutter, and Yolo Counties. While Mediterranean oak borer has been confirmed to be present in these counties, the extent of infestation and impact on trees is not currently known.

In 2020 and 2021, long-term monitoring plots were established in Napa and Sonoma Counties to track Mediterranean oak borer infestation in valley, blue, and Oregon oak (*Q. garryana*) across different site conditions. This includes monitoring plots in urban and natural settings and burned and unburned plots post wildfire. In 2025, oak stands affected by wildfire appeared to be no more susceptible to Mediterranean oak borer attack than unburned oak stands, with many minor infestations detected in the first two years no longer active. After five years of data collection in the urban and natural plots, slightly more oak tree recovery

was detected than decline. Three years of normal rainfall (2023-2025) likely aided in the recovery. New Mediterranean oak borer-infested trees were detected in Amador, Marin, Mendocino, and Sutter Counties in 2025, but extent and impact of infestation is not currently known. Temperature experiments in Napa and Sonoma Counties indicate that the major spring dispersal events are triggered when the sapwood reaches daytime highs of 63-65° F, correlated with ambient daytime highs of 65° F sustained over at least 2-3 days, or single daytime highs of around 80° F.

Emerging Pest Highlights

The following exotic invasive pests are not currently causing widespread damage to trees in California but have been caught in monitoring traps or intercepted at airports and agricultural checkpoints and therefore pose a potential risk.

Greater Shothole Borer-Fusarium Dieback Complex (GSHB) (*Euwallacea interjectus*)

Central California

Greater shothole borer complex, originally from Southeast Asia, is established in the southeastern United States and has been introduced to Hawai'i, Louisiana, and Texas on three separate occasions. In October 2024, *Euwallacea interjectus* and fungal associate *Fusarium floridanum* was identified from a sample collected from an infested box elder maple tree located near the community of Felton (Santa Cruz County). The full host range is not yet known, but the complex attacked box elder, California sycamore (*P. racemosa*), arroyo willow (*S. lasiolepis*), red willow (*S. laevigata*), coast live oak, and black cottonwood (*Populus trichocarpa*). This is the first infestation in the western United States.

Since then, California State Parks, University of California Cooperative Extension (UCCE), UC Davis, CAL FIRE and others have collaborated to conduct ground surveys to identify GSHB-infested trees in surrounding areas and to delimit the infestation in Santa Cruz County. Multiple greater shothole borer-infested box elder trees were identified across riparian forests in Henry Cowell State Park as well as riparian forests along San Lorenzo River (community of Paradise Park), and urban forests in Santa Cruz (Santa Cruz County). In May 2025, the NorCal ISHB Science and Strategy Convening was held at Felton Community Center. This meeting included presentations on science and management of invasive shothole borers, focused workgroup discussions, and a field tour. Multi-agency collaboration will continue to raise stakeholder awareness and expand GSHB monitoring and management efforts.

Other Highlights

Trapping, Survey, and Monitoring of Invasive Species

The California Department of Food and Agriculture's (CDFA) Pest Detection and Emergency Projects Branch conducts statewide early detection surveys targeting high-risk invasive species that pose significant threats to California's forest resources. The goal of these risk-based surveys is to detect invasive forest pests early to support informed decision-making and evaluate potential response options related to the establishment and further natural and artificial spread of high-risk invasive species.

Exotic Woodborer Survey (various species)

The 'Exotic Woodborer Survey' targets high-risk invasive woodboring beetle species that pose serious threats to California's forests, tree crops, riparian areas, and urban trees. Surveys were conducted July 2025 through October 2025 for the following beetles: emerald ash borer (*Agrilus planipennis*), Asian longhorned beetle (*Anoplophora glabripennis*), citrus longhorned beetle (*Anoplophora chinensis*), redbay ambrosia beetle (*Xyleborus glabratus*), black spruce beetle (*Tetropium castaneum*), and brown spruce longhorned beetle (*Tetropium fuscum*). CDFA conducted surveys in 12 counties using multi-funnel and cross vane panel traps as well as visual surveys for *A. glabripennis* and *A. chinensis*. Surveys were conducted at high-risk locations associated with tree and wood movement and storage. A total of 22 detection traps were placed at high-risk sites including wood processing facilities, green waste operations, arboretums and wood staging areas. This survey plays a critical role in protecting California forests and agriculture from invasive woodborers capable of causing extensive tree mortality and long-term ecological and economic harm. No exotic woodborer pests of regulatory concern were detected through the 2025 survey.

Asian Defoliating Moth Survey (various species)

The 'Asian Defoliating Moth Survey' targets several high-risk moth species known to cause severe and widespread defoliation in forest ecosystems, both natural and managed. Target pests include flighted spongy moth (*Lymantria dispar asiatica*), spongy moth (*Lymantria dispar dispar*), rosy moth (*Lymantria mathura*), nun moth (*Lymantria monacha*), and Siberian silk moth (*Dendrolimus superans sibiricus*). Early detection and prevention are achieved through three complementary approaches in collaboration with the County Agricultural Commissioners. First, CDFA deploys detection traps at high-risk ports of entry to intercept moths which may be introduced through maritime pathways associated with international cargo movement. Second, CDFA conducts a large-scale statewide spongy moth detection survey. Third, vehicles and containers traveling from spongy moth infested states are inspected at California Border Protection Stations.

In 2025, 2,794 detection traps were placed in proximity to California's ten deep-water ports. A total of 21,178 spongy moth detection traps were deployed statewide from June through August across urban and suburban landscapes. Traps were regularly monitored throughout the survey period. A spongy moth eradication project is currently ongoing in the Calabasas area of Los Angeles County following detections of spongy moth starting in 2023. In 2025, a total of 28 spongy moths were detected. Eradication efforts include high-density trapping and an egg mass survey. These coordinated efforts are critical for preventing the establishment of these devastating defoliating moths, which if established, could severely impact forest health, watershed function, agricultural commodities, and urban forests.

Emerald Ash Borer (EAB) (*Agrilus planipennis*)

The emerald ash borer (EAB) is an invasive wood-boring insect pest of ash, *Fraxinus* spp., native to China and other areas of East Asia. EAB is distributed across 37 U.S. states and 6 Canadian provinces and poses an imminent threat to California's extensive urban and natural forest ecosystems with ash presence. Some external tree signs of potential EAB infestation include canopy die-back, epicormic shoots, woodpecker damage, vertical bark-splitting, and D-shaped exit holes. During 2024 and 2025, green Lindgren funnel and purple prism traps, both types baited with the EAB lure, were deployed by the CDFA and cooperators at more than 100 sites across a 15-county survey area extending from San Diego County to Siskiyou County. Those counties included Del Norte, Humboldt, Kern, Lassen, Los Angeles, Modoc, Nevada, Orange, Riverside, Sacramento, San Diego, Santa Barbara, Shasta, Siskiyou, and Tehama. Monthly EAB trap service continued through September 2024 and 2025 with consideration given to climatic variability and peak EAB adult emergence windows determined from degree-day development models. No EAB specimens were detected from these traps in California. Interestingly, the successful recovery of other resident buprestid species indicates that these traps possess cost-effective potential for broader buprestid beetle biodiversity monitoring and pest surveillance programs. Plans are underway to resume EAB monitoring and continue educational pest prevention outreach across California during the 2026 field season with support from various stakeholders and agency partners. Please send EAB monitoring questions to EABTrapping@cdfa.ca.gov.

Spotted Lanternfly Survey (*Lycorma delicatula*)

The spotted lanternfly is an invasive planthopper with a broad host range that includes agricultural commodities as well as forest and urban tree species such as maples, oaks, walnuts (*Juglans* spp.), willows, and tree-of-heaven (*Ailanthus altissima*). Spotted lanternfly is established in at least 18 states and poses a high risk of introduction into California through the movement of vehicles, cargo, railcars, and outdoor materials. CDFA conducts an annual high-risk spotted lanternfly detection program which has included visual surveys at high-risk sites statewide. In 2025, 543 sites were surveyed for spotted lanternfly in 13 counties, adding to the more than 2,000 sites surveyed across California since the program's development in 2020. In addition to the survey, CDFA also prevents the introduction of spotted lanternfly into California by inspecting vehicles coming from states infested with spotted lanternfly at the CDFA's Border Protection Stations and inspection of cargo planes at major airports originating from high-risk states. Although occasional spotted lanternfly life stages have been intercepted at the border protection stations and airports, no infestations have been detected in California. These findings underscore the importance of continued early detection efforts to protect forests, agricultural hosts, and urban tree resources in California.

Diseases

Root Diseases

Armillaria Root Rot (*Armillaria* spp.)

Northwestern California

Armillaria spp. were collected in northeastern Humboldt County at one of four study plots where conifers encroached on California black oaks (*Quercus kelloggii*) over the last hundred years. Woody baits were placed in the soil at the base of trees and at short distances from subject black oak trees, left for a year, retrieved from the soil, and examined for signs of *Armillaria* infection.

Armillaria sp. was detected in January on several small (5-10-inch DBH) Douglas-fir (*Pseudotsuga menziesii*) stems as part of an approximately 3-acre blowdown event on the Headwaters Forest Reserve near Fortuna (Humboldt County). Fruiting bodies of velvet-top fungus (*Phaeolus schweinitzii*) were found on blown-down stems, with one stem also having a fruiting body of *Heterobasidion occidentale*. *Armillaria* sp. was detected in association with scattered ponderosa pine (*Pinus ponderosa*) mortality across 40-60 acres near Edgewood (Siskiyou County). Some dead pines were lone individuals, but many were part of medium-scale (10-15 tree) mortality centers with trees in various stages of decline and mortality.

Central California

Armillaria sp. was found behind large bleeding cankers on two large (>35-inch DBH) coast live oak trees (*Q. agrifolia*) at a residence in San Mateo County. Approximately 20 coast live oaks in a 28-acre parcel dominated by coast live oaks were impacted by *Armillaria* sp. in the city of Salinas (Monterey County). There were distinct root disease centers in two locations with dead trees in the middle and dying and declining trees radiating out from the center of the infested area. *Armillaria* mushrooms were found on numerous declining trees and on stumps from removed trees. Tree symptoms included thinning canopy, twig and branch dieback, and pathogen signs included honey mushrooms and mycelial mats at the base of tree.



Armillaria on coast live oak (Monterey County). Photo by: K. Corella, CAL FIRE

Heterobasidion Root Disease

(*Heterobasidion occidentale* and *H. irregulare*)

Northwestern California

Heterobasidion occidentale was detected in a diseased coast redwood (*Sequoia sempervirens*) tree at a plantation in coastal Mendocino County, along with the additional decay pathogens *Coniophora puteana* and *Peniophora* sp. *H. occidentale* is known to reside endophytically in true fir species (*Abies* spp.), but the role of *Heterobasidion* spp. in coast redwoods is currently unknown. It appears widespread in redwoods and perhaps more damaging than generally recognized. No white rot (*H. occidentale* and *Peniophora* sp.) was observed in the damaged redwood stems that covered an approximately 5-acre area, while extensive brown rot (*Coniophora puteana*) was observed in most sampled stems.

Fruiting bodies of *H. occidentale* were also observed on numerous stumps and windthrown redwood stems in various locations in Del Norte and Humboldt Counties in 2025. Some of these stems and their root systems displayed the laminated white rot characteristics of this fungus.

H. occidentale produced fruiting bodies on a dead red alder (*Alnus rubra*) at See-tr'ee-ghin-dvm-dvn in Del Norte County. Fresh fruiting bodies samples were collected in March and positively identified through molecular analysis by the Garbelotto Lab at the University of California (UC) Berkeley. This is the first report of this fungus on red alder, although it is not surprising since *H. occidentale* is well-documented as a decayer.

A fruiting body of *H. occidentale* was detected in January on several small (5-10-inch DBH) downed Douglas-fir stems in an approximately 3-acre blowdown event on Headwaters Forest Reserve near Fortuna (Humboldt County).

Leptographium Root Diseases

(*Leptographium* spp.)

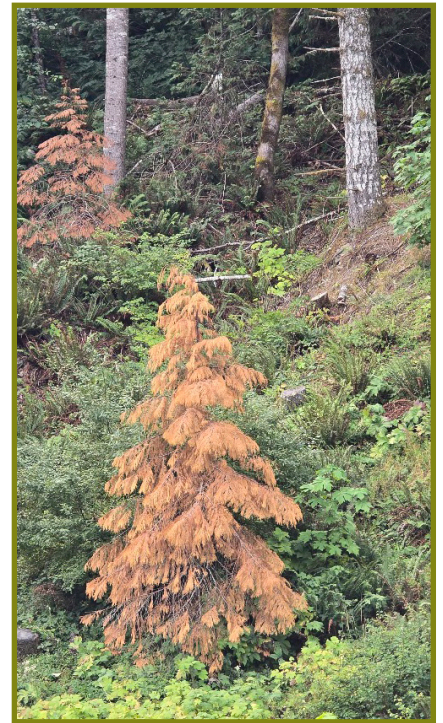
Central California

Leptographium neomexicanum was isolated from root tissue of a declining Monterey pine (*P. radiata*) at Point Lobos State Natural Reserve in Carmel (Monterey County). This reserve contains one of the few native Monterey pine stands in the state and has experienced heavy pine mortality in recent years. Other pathogens previously noted there include coastal dwarf mistletoe (*Arceuthobium littorum*), western gall rust (*Cronartium harknessii*), and velvet-top fungus.

Leptographium verrucosum was recovered from large declining valley oaks (*Q. lobata*) with bleeding cankers in a residential area near the base of Mount Diablo (Contra Costa County). The cankers were located on major roots, root crown area, and approximately 10-15 feet up the trunks. The native ambrosia beetle *Xyleborus xylographus* was also recovered in association with the cankers. *L. verrucosum* is currently taxonomically uncertain, since phylogenetic analysis has determined that it resides in its own monophyletic clade apart from other *Leptographium* species.



Ongoing Monterey pine decline and mortality, associated with an unknown species of *Leptographium* as well as *Diplodia scrobiculata*, near Fernbridge (Humboldt County).
Photo by: C. Lee, CAL FIRE



Small Port Orford-cedars killed by *Phytophthora lateralis* along Highway 299 between Blue Lake and Willow Creek (Humboldt County).
Photo by: C. Lee, CAL FIRE

Northwestern California

Unknown species of *Leptographium* were recovered from areas of Monterey pine decline in Humboldt County and shore pine (*P. contorta*) decline in Del Norte County. The Monterey pine decline, which covers at least a 20-acre area, is located along Highway 101 near Fernbridge. The shore pine decline is located just north of Lake Earl in a section of Tolowa Dunes State Park. In both locations, the *Leptographium* species are near but not identical to both *L. wingfieldii* and *L. terebrantis*.

Port-Orford-Cedar Root Disease (*Phytophthora lateralis*)

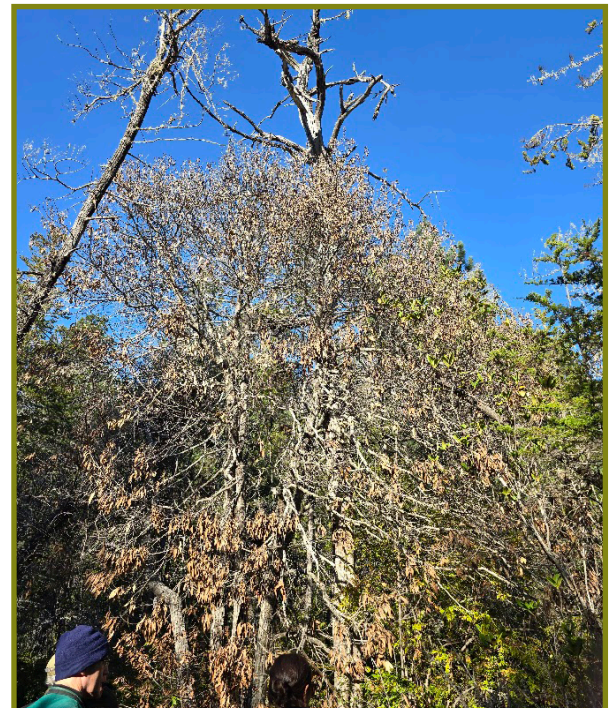
Northwestern California

Scattered individual dead or dying Port-Orford-cedars (*Chamaecyparis lawsoniana*) were noted in several locations in Humboldt and Del Norte Counties in 2025, including along South Fork Road in Del Norte County, at Gasquet near the confluence of the North Fork and Middle Fork Smith River, along Highway 96 between Weitchpec and Orleans in Humboldt County, and along Highway 299 between Blue Lake and Willow Creek in Humboldt County.

Other Soilborne *Phytophthora* Species and Related Oomycete Pathogens

Northwestern California

Phytophthora cinnamomi was detected in association with declining bay laurel (*Umbellularia californica*) trees at See-tr'ee-ghin-dvm-dvn, along the main stem of the Smith River between Hiouchi and the community of Smith River (Del Norte County). This site contains numerous culturally significant Oregon white oak (*Q. garryana*) trees and while it is currently unknown whether *P. cinnamomi* directly impacts Oregon white oak, approximately 5-10 trees were observed to be gradually declining or turning brown all at once in autumn 2025. In early December, vegetation was noticeably declining at several north coast sites in the pygmy forest along Road 500 in Jackson Demonstration State Forest (Mendocino County).



Chinquapin mortality, likely caused by *Phytophthora cinnamomi*, in the pygmy forest at Jackson Demonstration State Forest (Mendocino County).
Photo by: C. Lee, CAL FIRE

Chinquapin (*Chrysolepis sempervirens*), rhododendron (*Rhododendron macrophyllum*), shore pine, and pygmy cypress (*Hesperocyparis pygmaea*) were most affected by dieback and mortality, impacting 1-5 trees per acre. *P. cinnamomi* has been recovered in the past from pygmy forest soils nearby, particularly in association with chinquapin mortality. In the greater Fort Bragg area, *P. X cambivora*, *P. multivora*, and *Elongisporangium undulatum* were recovered from declining and dying shore pine, bishop (*P. muricata*), and pygmy cypress. Additionally, *P. X cambivora* was recovered from soil samples collected beneath a grove of severely declining Oregon white oaks on a private property near Annapolis in northwestern Sonoma County. Other dead and declining trees at this site include Douglas-fir, canyon live oak (*Q. chrysolepis*), and bay laurel.

E. undulatum was also recovered in association with a group of 5-10 declining shore pines at Su-meg State Park (Humboldt County) and in soil associated with a declining mature redwood (~40-inch DBH) in Arcata (Humboldt County), where *P. cinnamomi* had previously been recovered from the same tree. *E. undulatum* is consistently recovered in association with dieback of various hardwood and shrub species along the Mendocino and Sonoma County coastlines including wax myrtle (*Myrica californica*), evergreen huckleberry (*Vaccinium ovatum*), and tanoak (*Notholithocarpus densiflorus*).

An oomycete matching the genetic sequence designated in only one literature source as '*Globisporangium* sp. 3' was recovered at the Annapolis site in a very large (~10-acre) center of tanoak mortality and at Sea Ranch on the northern Sonoma County coast in association with ongoing Monterey cypress (*Hesperocyparis macrocarpa*) dieback and mortality. Dead and dying tanoaks, madrones (*Arbutus menziesii*), and bay laurels are also widespread between these two sites along Annapolis Road for 6-7 miles inland from the coast. The pathogenicity of *Globisporangium* sp. 3 is unknown and it is not conclusive whether the decline and mortality of these trees is due to this oomycete or other abiotic and biotic factors. The same *Globisporangium* species was identified from other soils sampled at the same time of year beneath dying mature redwoods at two sites in Santa Rosa. *Elongisporangium anandrum* and *Phytophthium vexans* were recovered from soils beneath declining redwoods and blueblossom ceanothus (*Ceanothus thyrsiflorus*) at Julia Pfeiffer Burns State Park (Monterey County), and *P. vexans* was recovered in association with declining mature redwoods at two sites in Santa Rosa (Sonoma County).



Generalized vegetation decline probably caused by a mix of pathogens just south of Gualala (Sonoma County). Pathogens detected here in the recent past include *Phytophthora cinnamomi*, *Elongisporangium undulatum*, *Diplodia scrobiculata*, *Cronartium harknessii* (cause of western gall rust), and *Fusarium circinatum* (cause of pitch canker).
Photo by: C. Lee, CAL FIRE

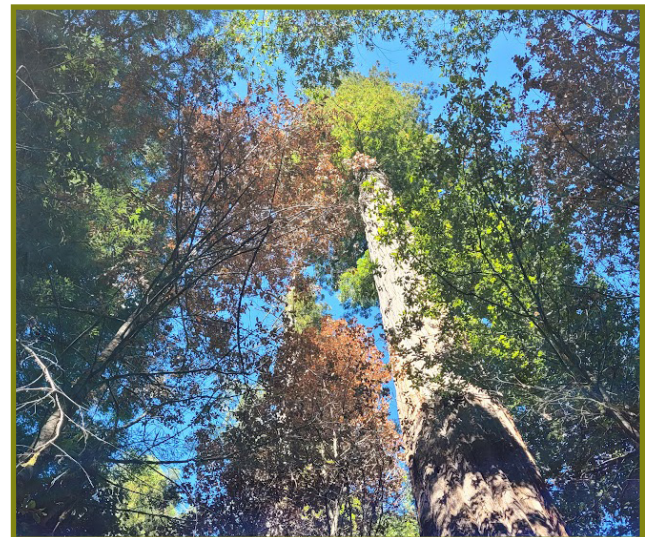
Non-Native Canker Diseases

Sudden Oak Death (SOD) (*Phytophthora ramorum*)

Northwestern California

In late 2021 and early 2022, CAL FIRE and UC Cooperative Extension (UCCE) Humboldt-Del Norte Counties detected a satellite *Phytophthora ramorum* EU1 (a European strain of the plant pathogen known to cause SOD) infestation near the original EU1 site found in Del Norte County. These detections were later confirmed by UC Berkeley during the 2022 SOD Blitz. Further surveys and plans for treating this infestation were underway in 2024, as was discussion of the optimal size and location for a requested SOD Zone of Infestation (ZOI) in Del Norte County. Wet winters and springs over the past two years have resulted in increased, widespread SOD activity in 2025. During wet periods there is typically a two-year delay from infection to increases in symptoms and mortality in oaks and tanoaks.

In 2024, the NA2 strain (formerly found primarily in nurseries and forests near Port Orford, Oregon) as well as the European strain (EU1) were found in the same watershed in Peacock Creek (Del Norte County). Since the NA1 strain was already established less than ten miles to the south,



Tanoak mortality in the understory of old-growth redwoods along Bull Creek in Humboldt Redwoods State Park (Humboldt County).
Photo by: C. Lee, CAL FIRE

this brings all three known strains of the disease together very near one another – a situation unique within *P. ramorum*'s introduced range. This offers the possibility of genetic recombination of the fungal pathogen with unknown impacts. In 2025, surveyors again found the pathogen spreading farther to the north in Rowdy Creek Watershed and east in Myrtle Creek watershed (Del Norte County).

The 2025 SOD Blitz citizen science effort led by the Garbelotto Lab at UC Berkeley found that *P. ramorum* is currently at epidemic phase in the coastal counties, perhaps because of abundant precipitation during recent winters or precipitation continuing later into the year than typical. In 2024, the NA2 strain of *P. ramorum* was found for the first time not only in Del Norte County, but also at five locations in the Bay Area. The 2025 SOD Blitz effort documented that these infestations are larger on average than most NA1 infestations. It has been documented that NA2 is favored over the other strains by warmer temperatures, which could have implications for pathogen spread in a warmer future climate as well as farther to the east in California. Further details of SOD survey results and infestation severity can be found on the 2025 SOD Blitz webpage: <https://sites.google.com/berkeley.edu/matteogarbelottolab/sod/sod-2025?authuser=0>.

Other than Del Norte County, specific north coast locations where increases in tanoak or coast live oak mortality due to *P. ramorum* were noted in 2025 include: mainstem Eel River in Humboldt County, coastal Mendocino and Sonoma Counties, Skyline area of San Mateo County, and parts of the Santa Lucia Mountains. In Humboldt County, known *P. ramorum* infestation was spreading along Bull Creek drainage within Humboldt Redwoods State Park, particularly in and around Big Trees Day Use Area and trail, and downstream along the mainstem Eel River, with dead trees noted at least as far north as the High Rock area. In coastal Mendocino County, tanoak mortality caused by the pathogen was noted near the ocean at a Jughandle State Natural Reserve parcel along Ocean Drive south of Fort Bragg. Multiple pathogen effects continued to generally degrade overstory vegetation at Salt Point State Park (Sonoma County). A landowner in northern Sonoma County conducted analysis of aerial imagery over the past decade and detected approximately 120 acres of mortality every two years. Some of the mortality may be hardwood mortality caused by the sudden oak death pathogen and other pests.

Pitch Canker Disease (*Fusarium circinatum*) **Northwestern California**

Continued individual-branch and whole-tree mortality caused by the non-native fungus *Fusarium circinatum* was noted in bishop pines in Salt Point State Park in north coastal Sonoma County. The northernmost observed infestation continued to be in the California Coastal National Monument just north of Point Arena in Mendocino County. Widespread symptoms were observed in 5-10% of bishop pines at the Pelican Bluffs parcel maintained by the Mendocino Land Trust.

In 2021, pitch canker was detected for the first time in Torrey Pines State Preserve which marked the furthest southern extent of the disease range (San Diego County). Although Torrey pine (*P. torreyana*) was known to be susceptible to the disease in laboratory tests, this was the first find in the natural ecosystem. The disease and associated *Ips* bark beetles



Tanoak mortality in the understory of Monterey, bishop, and shore pines at Jughandle State Natural Reserve (Mendocino County).

Photo by: C. Lee, CAL FIRE



General vegetation decline involving sudden oak death, pitch canker, *Phytophthora cinnamomi*, *Elongisporangium undulatum*, *Diplodia scrobiculata*, *Armillaria* sp., and other pathogens at Salt Point State Park (Sonoma County). Photo by: C. Lee, CAL FIRE



Branch flagging associated with the pitch canker pathogen (*Fusarium circinatum*) in bishop pine at Salt Point State Park in Sonoma County. Photo by: C. Lee, CAL FIRE

are causing extensive dieback and mortality in one of the rarest pine species in the world as there are only two native Torrey pine stands. Elsewhere along the coast, pitch canker is one pest among several (including other non-native pests) contributing to rapid mortality of virtually all coastal pine tree species. Decline in coastal pine tree species is being hastened by fluctuations in weather patterns, the removal of regular fire disturbance, and past land uses that altered soil characteristics.

In 2025, 35 Torrey pines in Orange County were reported to have oozing/streaming pitch from top to bottom of the main trunk, and reddish/brown needles.

Greater Shothole Borer-Fusarium Dieback Complex

(*Fusarium floridanum* and *Euwallacea interjectus*)

See entry for Greater Shothole Borer-Fusarium Dieback Complex under Emerging Pest Highlights for more information.

Native Canker Diseases

Canker Causing Fungi

Many fungi that cause cankers (dead areas of bark tissue, including cambium and phloem) are considered latent pathogens because they can reside in tree tissues for long periods of time without causing symptoms. They often respond to tree stress (e.g., drought/water stress, other pathogen infections, insect damage, or physical injury) by quickly expanding through tree tissues, killing the colonized tissue as they go. In some cases, they girdle entire stems, branches, or twigs causing tree mortality. They can also provide entry for decay fungi. Reproduction and initial spread of these fungi in the form of spores often require periods of relatively mild, wet weather.

Northwestern California

A wide variety of canker-causing pathogens caused symptoms in trees throughout northwestern coastal California (and other selected counties) in 2025. Some of these pathogens are typically more aggressive/harmful than others and few have common names. Tables 1-3 summarize these pathogens, their hosts, counties where they are present, and their damage potential in 2025. Photos below and on the next page illustrate symptoms associated with selected canker-causing pathogens in the north coast in 2025.

The *Seiridium* species found in Humboldt County on Monterey and Italian cypress (*Cupressus sempervirens*) appears to be a previously undescribed species. It is widespread in Trinidad, especially on Italian cypress. Symptoms appeared on branches of a large Italian cypress at Trinidad State Beach in February, with most of the tree being dead by June. Symptoms on Monterey cypress were confined to a small group of 10 trees at Little River State Beach, where the pathogen only caused limited branch tip dieback. Work is underway to demonstrate pathogenicity of this new species of *Seiridium* on cypress.



Cut Douglas-fir stump in Jackson Demonstration State Forest showing existing *Phaeolus schweinitzii* decay in sapwood.
Photo by: C. Lee, CAL FIRE



Dieback of naturalized Italian cypress near Trinidad (Humboldt County) caused by an undescribed species of *Seiridium*.
Photo by: C. Lee, CAL FIRE



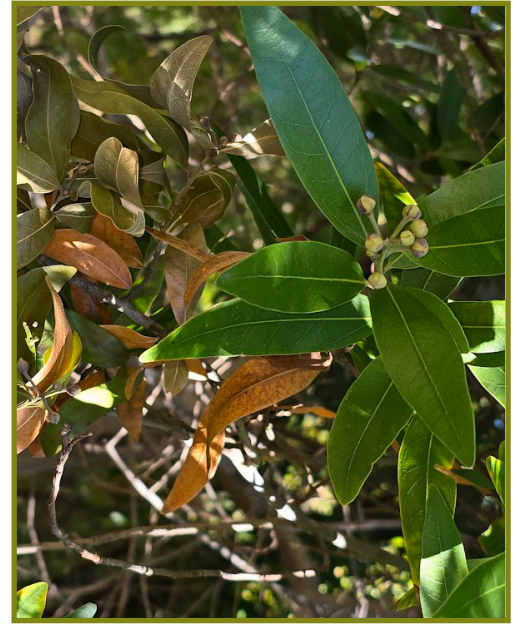
Decay pattern associated with invasion by one or more canker-causing fungi (and potentially also one or more decay fungi) in a small redwood stem near Navarro (Mendocino County). Note death of the original stem along with attempts by the root system to compartmentalize the original invasion and subsequent repeated fungal re-invasion. Photo by: C. Lee, CAL FIRE



Internal stem discoloration caused by *Diplodia scrobiculata* on a recently killed small stem of Monterey pine near Fernbridge (Humboldt County). Photo by: C. Lee, CAL FIRE



Bay laurel sprout mortality associated with the presence of *Dothiorella californica* near Mt. St. Helena in Sonoma County. Photo by: C. Lee, CAL FIRE



Bay laurel branch wilting and dieback associated caused by *Botryosphaeria dothidea* along the banks of Putah Creek near Lake Berryessa (Solano County). Photo by: C. Lee, CAL FIRE

Table 1. Canker-causing fungi detected on tree stems and large branches in northwestern California in 2025

Pathogen	2025 Host	2025 County	Damage potential
<i>Diplodia corticola</i>	tanoak	Humboldt, Mendocino	High
<i>Diplodia mutila</i>	chinquapin	Humboldt	Moderate
<i>Diplodia scrobiculata</i>	Monterey pine, shore pine	Del Norte, Mendocino	Moderate (tree), High (seedling/sapling)
<i>Dothiorella californica</i>	bay laurel	Sonoma	Low-Moderate
<i>Botryosphaeria dothidea</i>	bay laurel, tanoak	Solano, Humboldt	Moderate
<i>Dothiora maculans</i>	toyon	Humboldt	Unknown
<i>Dothiora viticola</i>	bigleaf maple	Sonoma	Unknown
<i>Neofusicoccum arbuti</i>	madrone	Humboldt	High
<i>Neofusicoccum parvum</i>	coast redwood	Sonoma	Low (mature trees), High (sprouts and off-site trees)
<i>Diaporthe rudis</i>	coffeeberry, shore pine	Humboldt, Mendocino	Moderate
<i>Diaporthe eres</i>	coast redwood	Mendocino	Unknown
<i>Diaporthe australafricana</i>	tanoak, white alder	Del Norte, Sonoma	Unknown
<i>Diaporthe cf. phaseolorum</i>	bay laurel	Sonoma	Unknown
<i>Diaporthe chamaeropsis</i>	bur oak (non-native)	Yolo	Unknown
<i>Allantophomopsiella pseudotsugae</i>	coast redwood	Mendocino	Unknown
<i>Diatrype whitmanensis</i>	bigleaf maple	Humboldt	Unknown
<i>Cadophora cf. dextrinospora</i>	coast redwood	Mendocino	Unknown
<i>Cytospora eucalypti</i>	madrone	Humboldt	Low-Moderate
<i>Plagiostoma barriae</i>	bigleaf maple	Humboldt, Sonoma	Unknown
<i>Seiridium sp. (previously undescribed)</i>	Monterey cypress, Italian cypress	Humboldt	High
<i>Biscogniauxia sp.</i>	coast redwood	Mendocino	Low-moderate

Pathogen	2025 Host	2025 County	Damage potential
<i>Allantophomopsis lycopodina</i>	coast redwood	Mendocino	Unknown
<i>Quambalaria cyaneescens</i>	Italian oak	Amador	Moderate-High

Table 2. Canker-causing fungi detected on twigs and leaves in northwestern California in 2025

Pathogen	2025 Host	2025 County	Damage potential
<i>Tubakia californica</i>	tanoak, canyon live oak	Del Norte, Humboldt, Mendocino, Sonoma	High
<i>Diplodia corticola</i>	chinquapin, cascara, tanoak	Del Norte, Humboldt, Mendocino	High
<i>Gnomoniopsis paracavulata</i>	Oregon white oak	Humboldt	Unknown
<i>Potebniamyces pyri</i>	Pacific yew	Humboldt	Unknown
<i>Sydowia polyspora</i>	tanoak, madrone, Oregon white oak	Humboldt, Sonoma	Low

Table 3. Canker-causing fungi detected on roots in northwestern California in 2025

Pathogen	2025 Host	2025 County	Damage potential
<i>Diplodia scrobiculata</i>	Monterey pine	Humboldt	Low-moderate
<i>Thelonectria</i> sp.	Monterey pine	Humboldt	Unknown
<i>Fusarium oxysporum</i>	Shore pine	Del Norte	Unknown
<i>Dothiora viticola</i>	Monterey pine	Mendocino	Unknown

Cytospora canker (*Cytospora chrysosperma*)
Southern Sierra Nevada
Cytospora canker of quaking aspen (*Populus tremuloides*) killed aspen along an unnamed tributary of Dog Creek on Bureau of Land Management (BLM) land in Bodie Hills (Mono County). Nearly all stems greater than 4-inches DBH were killed in an approximately 5-acre aspen grove. Other quaking aspen groves in the southeast Bodie Hills were observed with similar patterns of mortality.

Foamy Bark Canker (*Geosmithia* species #41)
Central California
Foamy bark canker was detected in association with western oak bark beetles infesting true oaks in the Central Valley (Nevada and Placer Counties). See entry for Western Oak Bark Beetle under Native Insects for more information.

Foliar Diseases
Maple Leaf Scorch (unknown sp.)
Northwestern California
Maple leaf scorch was observed on big leaf maple (*Acer macrophyllum*) along Highways 299, 96, and 3 in Humboldt, Shasta, Siskiyou, and Trinity Counties



Aspen mortality associated with Cytospora canker, Bodie Hills (Mono County).
Photo by: A. Hawkins, Forest Service



Maple leaf scorch on big leaf maple, Northwestern California. Photo by: A. Hawkins, Forest Service



Maple leaf scorch on big leaf maple, Northwestern California. Photo by: A. Hawkins, Forest Service



Sooty bark canker of incense cedar. Photo by: C. Barnes, Forest Service

as it has been in previous years. In 2025, symptoms appeared more severe in previously noted big leaf maples (>500 trees), especially along Highway 96 in Humboldt and Siskiyou Counties. One of the candidate causal agents, the bacterium *Xylella fastidiosa*, was not found in samples submitted to California Department of Food and Agriculture's (CDFA) Plant Pest Diagnostics Center over the last five years. However, it was found in multiple samples submitted to university labs between 2009 and 2016.

Sooty Bark Canker

(*Capnocybe spongiosa* (syn. *Arthrobotryum spongiosum*))

Southern California

Sooty bark canker was observed on incense cedar trees (*Calocedrus decurrens*) throughout multiple parks in Riverside and San Bernardino Counties. This included tightly packed young trees (in groups of 5-15 trees) as well as isolated larger incense cedars (1-2 trees per acre). Larger incense cedars had blackening branches and thinning canopies while small incense cedars had blackening stems, blackening lower branches, and discolored foliage as well as thinner crowns.

Rust Diseases

Western Gall Rust (*Cronartium harknessii*)

Northwestern California

New galls and branch dieback symptoms caused by this pathogen were widespread in bishop, shore, and Monterey pine populations across several north coast locations in 2025. New branch dieback was noted in a row of bishop pines along Highway 101 in Arcata near newly constructed dormitory buildings for Cal Poly Humboldt (Humboldt County). Symptoms in bishop pines along Highway 1 near Van Damme State Park in Mendocino County could be mistaken from a distance for branch tip dieback caused by pitch canker, which is not currently known to be distributed that far north in Mendocino County.

White Pine Blister Rust (*Cronartium ribicola*)

Southern Sierra Nevada

White pine blister rust requires *Ribes* species plants as alternate hosts for the lifecycle before the pathogen affects western white pine (*P. monticola*), sugar pine (*P. lambertiana*), whitebark pine (*P. albicaulis*), and limber pine (*P. flexilis*). Where white pine blister



Branch tip dieback caused by western gall rust on a bishop pine, Van Damme State Park (Mendocino County). Photo by: C. Lee, CAL FIRE



Cronartium harknessii (the western gall rust pathogen) sporulating on a bishop pine branch, Van Damme State Park. Photo by: C. Lee, CAL FIRE



Canker with oozing, chewing, and flagging caused by white pine blister rust, Bench Lake, Kings Canyon NP (Inyo County).
Photo by: Z. Klein, American Forests



Suspected white pine blister rust canker on whitebark pine, Woods Lake (Mono County).
Photo by: N. Bokino, American Forests



Canker on tree near Tioga Pass, Mt. Dana Trail, Yosemite NP (Tuolumne County). Photo by: Z. Klein, American Forests

rust has been established in forest stands, it continues to cause extensive damage and mortality to higher elevation five-needle pines on the eastside of the Sierra Nevada Range. Recent intensive surveys examined mortality causes and infection levels on whitebark and foxtail (*P. balfouriana*) pines in the southern Sierra Nevada where the highest populations of these species occur (Sequoia-Kings Canyon National Park (NP), Yosemite NP, Inyo National Forest (NF), Devils Postpile National Monument). Aecia were not always present, but symptomatic characteristics associated with white pine blister rust were noted, including large cankers (that girdle stems), branch flagging, and rodent chewing. Aecia spores were confirmed on three whitebark pines with girdled stems and active cankers located at Chain Lakes (Yosemite NP).

At Bench Lake area heading east towards Taboose Pass (Kings Canyon NP), mountain pine beetle activity continues at outbreak levels with white pine blister rust girdling the bole of some live trees (~3-6 trees). Newly detected infected western white pine and whitebark pine were observed in scattered locations around Mammoth Mountain Ski Area (Mono County), with minimal to no secondary hosts (necessary for the disease cycle) in the immediate vicinity. Older dead trees in areas like Woods Lake, Bench Lake, and Tioga Pass at Mt Dana trail had old branch flags, chewing, and oozing of pitch so white pine blister rust could not be confirmed.

Southern California

In 2025, field surveys conducted by a multi-agency collaboration found *Cronartium ribicola* and *Cronatrium occidentale* fruiting on several species of gooseberry (*Ribes* spp.) in botanical gardens, wildlands, and ornamental plantings in multiple locations across Los Angeles, Ventura, and San Bernardino Counties. Scale of infection varied at each location, ranging between 25-75% of gooseberry species affected per site. These detections are the first of white pine blister rust this far south in California and are evidence that the fungus is more widespread across different landscapes than previously known. To date, no primary hosts have been found infected in southern California.

Heart and Sap Rots

Brittle Cinder Fungus (*Kretzschmaria deusta*)

Northwestern California

In March 2025, this soft-rot fungus was observed at the base of a red alder at Sultan Creek, a tributary to the main stem Smith River, in Del Norte County. The fungus is commonly reported in Europe and well-known in the eastern United States. Hundreds of reports of *K. deusta* in California appear on



New and older fruiting bodies of *Kretzschmaria deusta* observed in March on red alder (Del Norte County).
Photo by: C. Lee, CAL FIRE

iNaturalist¹ since 2014, but it has received little extended discussion or study in the American West despite being recorded as a very effective decayer of the bases of living trees.

Velvet-top Fungus (*Phaeolus schweinitzii*)

Northwestern California

This fungus fruited abundantly in many locations across the north coast in association with infected trees in 2025. In Jackson Demonstration State Forest, infection of mature Douglas-fir is associated with attack by Douglas-fir beetle (*Dendroctonus pseudotsugae*) and ambrosia beetles. In early spring 2025, beetle-killed trees were harvested in preparation for a prescribed burn, leaving behind remnants with visual clues to the extent and location of fungal decay within the trees. While this fungus typically decays the heartwood area, it was widespread in the sapwood of many of these remnants, likely impinging on the functional sapwood and cambium of some trees.



Fruiting body of *Phaeolus schweinitzii* associated with a tree attacked by Douglas-fir beetle at Jackson Demonstration State Forest. Photo by: C. Lee, CAL FIRE

Inonotus (*Inonotus* sp.)

Southern California

In 2024, a dead California black oak was reported with an *Inonotus* fruiting body, a decomposing fungus, at Heaps Peak Arboretum, San Bernardino NF (San Bernardino County). Forest Service pathologists collected the fruiting body. In 2025, a new *Inonotus* fruiting body was observed on the same California black oak.



Cut Douglas-fir stump in Jackson Demonstration State Forest showing existing *Phaeolus schweinitzii* decay in sapwood. Photo by: C. Lee, CAL FIRE

Sulphur Shelf Fungus (*Laetiporus gilbertsonii*)

Northwestern California

In 2025, utility line contractors removed a large valley oak, ~48-inch DBH, along the Eastside Road between Healdsburg and Windsor that was noticeably declining for many years (Sonoma County). Subsequently, the sulfur shelf fungus fruited abundantly on the stump, revealing at least one decline factor.

Bacterial Diseases

Acute Oak Decline

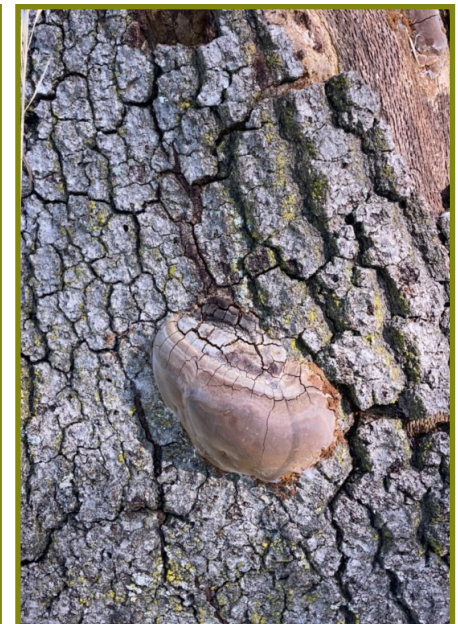
(various bacteria species)

Southern California

The positive identification of several bacteria (*Rahnella victoriana*, *Brenneria goodwinii*, *Gibbsiella quercinecans*, and *Erwinia* sp.) associated with acute oak decline of blue oaks (*Q. douglasii*) with basal trunk cankers in San Benito County in 2023 has prompted additional surveys and sampling in southern California. Samples collected through a multi-agency collaboration detected staining and positively identified bacteria in blue and coast live oaks located in Los Angeles (four



Fruiting bodies of *Laetiporus gilbertsonii* (sulfur shelf, chicken-of-the-woods) on a valley oak stump along Eastside Road, Healdsburg (Sonoma County). Photo by: C. Lee, CAL FIRE



Inonotus fomitiporia on black oak, Heaps Peak, San Bernardino NF (San Bernardino County). Photo by: C. Barnes, Forest Service

¹ iNaturalist is an American 501(c)(3) nonprofit social network of naturalists, citizen scientists, and biologists built on the concept of mapping and sharing observations of biodiversity across the globe. [iNaturalist.org](https://www.inaturalist.org) host a platform (webpage and application) that allows users to record and share observations.

trees), Monterey (one tree), and Ventura Counties (one tree). It is unknown if these samples contain new introductions of the disease, or if it has been present and undetected throughout California. Multiple agencies and local stakeholders are collaborating to continue surveying oak stands and analyzing wood samples of symptomatic host trees to identify presence/absence of these bacteria in native oak stands in counties of central and southern California. One dead coast live oak identified in the survey had symptoms (bleeding on bole, deterioration of inner and outer bark) and bacteria isolated from the tree's samples (*Erwinia billingiae*, *Gibbsiella quercinecans*, *Rahnella victoriana*) were all associated with acute oak decline.

Bacterial Wetwood (various bacteria species)

Southern California

At Dripping Springs Campground, Cleveland NF (Riverside County), bacterial wetwood was found on two Fremont cottonwood trees (*Populus fremontii*) and another 6-10 cottonwood had decline symptoms (leaf dieback, branch loss) with heavy mistletoe infestation.

Abiotic Disorder

Blue Oak Seasonal Leaf Drop

Northwestern California

Crown browning of scattered individual blue oaks was evident along Highway 44 between Shingletown and Redding (Shasta County) beginning in August. This is a well-documented adaptation of blue oaks to seasonal drought conditions.

Parasitic Plants

Western Dwarf Mistletoe (*Arceuthobium campylopodum*)

Southern California

Western dwarf mistletoe was detected on 12 Jeffrey pine (*P. jeffreyi*) trees during routine hazard tree inspections in Idyllwild Campground in Mount San Jacinto State Park (Riverside County). Level of infections ranged from localized witch's brooms and otherwise healthy crowns to trees with infection spanning entire crowns causing significant decline (e.g. branch dieback). Affected Jeffrey pines are in a high-value campground, have aesthetic value, and contribute to the recreational experience of the campground. California State Parks plans to perform selective pruning of significant witch's brooms on affected Jeffrey pine trees to suppress spread to other high-value trees, delay mortality of affected trees, and provide a safe environment.

Invasive Species Management in the Upper Santa Ana Watershed

In 2025, the Inland Empire Resource Conservation District (IERCD) Forestry Team surveyed seven locations for white pine blister rust (*Cronartium ribicola*) in the communities of Cherry Valley, Forest Falls, Lytle Creek, Redlands, Skyforest, and Yucaipa. The fungus reproduces, or “sporulates” on various host plants in the subcanopy, usually shrubs of the genus *Ribes*, including both native and invasive species. No new areas were identified to have white pine blister rust.

The Wildlands Conservancy staff completed surveys across five zones at their Oak Glen Preserve. Young *Ribes* sprouts were found in zones 1 and 2 and promptly removed due to the historic prevalence of white pine blister rust in those zones (see map at right). Zones 3 through 5 showed no presence of white pine blister rust on the three *Ribes* species present: *R.quercetorum*, *R.roezlii*, and *R.speciosum*. These species appear to continue exhibiting a resistance to white pine blister rust. In addition, the Forestry Team provided training to help staff identify white pine blister rust in *Ribes*.

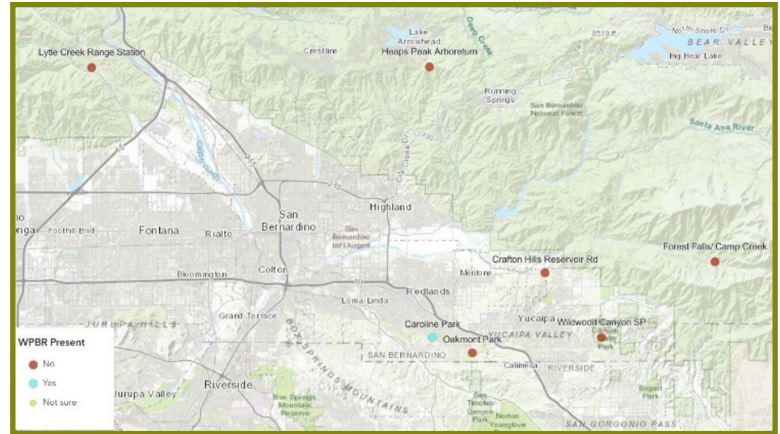
Prioritizing Landscape Actions to Control Emerging Priority Vegetation

California Invasive Plant Council (Cal-IPC), in collaboration with GreenInfo Network, built a new "timeline" function in CalWeedMapper that shows snapshots of weed distribution over time. Cal-IPC and GreenInfo Network updated the tool's user interface and learned more about the limitations of global datasets that have been incorporated into the tool. The tool can now be used at a statewide or regional level, summarizing data from CalWeedMapper to show change over time in the abundance of invasive plant species, as well as changes in the management of those species (see map below). Additionally, a team of new screeners were trained on the tool and will use it as part of completing Plant Risk Evaluations. Stakeholders from the federal, state, county, non-profit, academic, and private sectors convened to determine the ability of this new functionality to track progress over time on cross-boundary, cross-ownership, landscape-level management goals.

The tool is available at <https://weedmap.cal-ipc.org/weedmapper/timeline>.

Mitigating High Priority Invasive Plants on Federal Lands

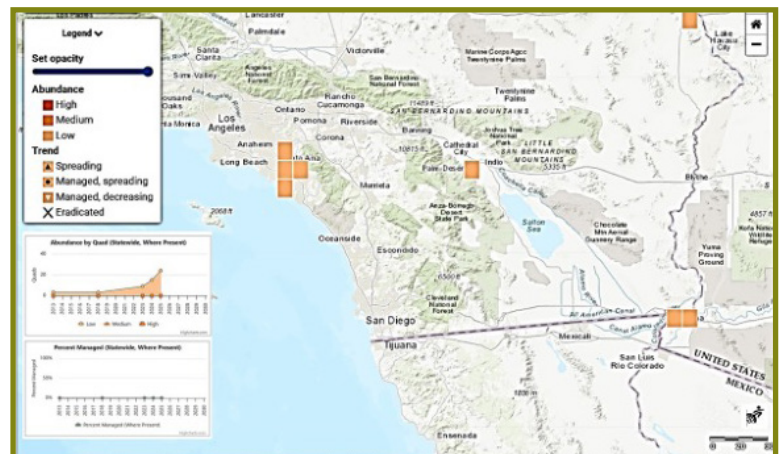
Cal-IPC worked with partners and Forest Service staff to establish contracts and implement weed management projects on the Los Padres, Klamath, San Bernardino, and Tahoe National Forests. This enabled the Klamath NF to control dyer's woad (*Isatis tinctoria*) in the rare Siskiyou mariposa lily habitat, the Tahoe NF to implement treatments for barb goatgrass (*Aegilops triuncialis*), yellow starthistle (*Centaurea solstitialis*), spotted knapweed (*Centaurea*



Locations surveyed by IERCD in 2025



IERCD staff inspecting a *Ribes* plant for white pine blister rust spores in Forest Falls.



Pennisetum ciliare map and trend for 2025

stoebe), rush skeletonweed (*Chondrilla juncea*), and medusahead (*Elymus caput-medusae*), and the Los Padres NF to implement treatments for control of dalmatian toadflax (*Linaria dalmatica*), French broom (*Genista monspessulana*), giant reed (*Arundo donax*), perennial pepperweed (*Lepidium latifolium*), rush skeletonweed, Spanish broom (*Spartium junceum*), and spotted knapweed in the fire scar areas left by the Zaca and Jesusita fires. The San Bernardino NF was also able to initiate surveys of high-priority areas for the presence of stinknet (*Oncosiphon pilulifer*) and rush skeletonweed.



Crewmembers on the RECON Project, traveling by mule through the San Bernardino NF.

In 2025, scientific publications concerning California forest pests and wildland conditions included:

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- Brasier, C.M.; Grünwald, N.J.; Bourret, T.B. et al. [110 coauthors]. 2025.** Preserving the biologically coherent generic concept of *Phytophthora*, "Plant Destroyer". *Phytopathology* 115: 573–586. <https://doi.org/10.1094/PHYTO-11-24-0372-LE>
- Bustamante, M.I.; Elfar, K.; Carachure, C.; Adaskaveg, A.; Kabashima, J.N.; Shogren, C.; Eskalen, A.; Lynch, S.C. 2025.** Etiology of pine ghost canker in Southern California urban forests. *Plant Disease* 109: 971–982. <https://doi.org/10.1094/PDIS-08-24-1718-SR>
- Chen, H.; Sloggy, M.R.; Flake, S.W.; Evans, S.; Maxwell, C.J. 2025.** Impacts of climate-driven insect population change on sawtimber provisioning, carbon sequestration, and water retention: A case study of bark beetle outbreaks in the USA. *Frontiers in Forests and Global Change* 7: 1513721. <https://doi.org/10.3389/ffgc.2024.1513721>
- Chen, J.T.C.; Nelson, L.; Rugman-Jones, P.F.; Tseng, S.P.; Sutherland, A.M.; Choe, D.H.; Haverty, M.I.; Lee, C.Y. 2025.** Description of a new species of subterranean termite in the genus *Reticulitermes* (Blattodea: Heterotermitidae) from southern California. *Annals of the Entomological Society of America* 118: 315–330. <https://doi.org/10.1093/aesa/saaf019>
- Cobb, R.C.; Schmidt, D.J.; Popenuck, T.; Scali, E.; Poloni, A.; Garbelotto, M. 2025.** *Phlebiopsis gigantea* biocontrol efficacy against *Heterobasidion irregulare* infection in California Jeffrey pine forests. *Forest Ecology and Management* 594: 122930. <https://doi.org/10.1016/j.foreco.2025.122930>
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- Fajardo, S.N.; Bourret, T.B.; Frankel, S.J.; Rizzo, D.M. 2025.** *Phytophthora* species and their associations with Chaparral and oak woodland vegetation in Southern California. *Journal of Fungi* 11: 33. <https://doi.org/10.3390/jof11010033>
- Francis, E.J.; Jung, C.G.; Hicke, J.A.; Hurteau, M.D. 2025.** Modeling the probability of bark beetle-caused tree mortality as a function of watershed-scale host species presence and basal area. *Forest Ecology and Management* 580: 122549. <https://doi.org/10.1016/j.foreco.2025.122549>
- Frankel, S.J.; Garbelotto, M.; Jones, C.; Grünwald, N.J.; Venette, R.C. 2025.** The perils of naïve use of open-source data: A comment on "Spatiotemporal distribution of sudden oak death in the US and Europe". *Agricultural and Forest Meteorology* 368: 110553. <https://doi.org/10.1016/j.agrformet.2025.110553>
- Garbelotto, M.; Scali, E.; Swain, S.; Macon, D.; Lacan, I.; Schmidt, D.; Popenuck, T.; Martino, I.; Guarnaccia, V. 2025.** In California's changing climate, latent pathogens drive novel woody plant diebacks on a large geographic scale. *Plant Pathology* 74: 2697–2714. <https://doi.org/10.1111/ppa.70041>
- Harkness, R.; Suslow, K.; Sharma, S.; Sakalidis, M.L.; Miles, T.; Schweigkofler, W. 2025.** Diversity and risk assessment of *Phytophthora* spp. found on plant roots in native plant nurseries and interstate shipping nurseries in California. *PhytoFrontiers* 5: 42–51. <https://doi.org/10.1094/PHYTOFR-06-24-0064-R>
- Haverty, M.I.; Nelson, L.J.; Baldwin, J.A. 2025.** Measurements of soldier head capsules of cuticular hydrocarbon phenotypes of *Reticulitermes* (Blattodea: Heterotermitidae) from Northern California identify morphologically cryptic and sibling species. *Journal of Economic Entomology* 118: 2500–2516. <https://doi.org/10.1093/je/toaf154>
- Looney, C. 2025.** Site-sensitive density management diagrams for even- and uneven-aged California mixed-conifer stands. PSW-RN-428. Vallejo, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 23 p. <https://doi.org/10.2737/psw-rn-428>
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Scali, E.; Johnson, M.; Emiliani, G.; Schmidt, D.; Popenuck, T.; Garbelotto, M. 2025. Not seeing the tree for the forest: Scattered trees can be unexpected hotspots of fungal diversity. *Biological Conservation* 303: 111020. <https://doi.org/10.1016/j.biocon.2025.111020>

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Tamm, J.E.; Dominguez, C.; Campos, R.; Heraty, J.; Hoddle, M.S. 2025. First occurrence of *Balcha indica* (Mani & Kaul, 1973) (Hymenoptera: Eupelmidae), parasitizing *Agrilus auroguttatus* Schaeffer, 1905 (Coleoptera: Buprestidae), in California. *The Pan-Pacific Entomologist* 101: 217–228. <https://doi.org/10.3956/2025-101.3.217>

The California Forest Pest Council (CFPC), a 501(c)(3) non-profit organization, was founded in 1951 as the California Forest Pest Control Action Council. Membership is open to public and private forest managers, foresters, silviculturists, entomologists, plant pathologists, biologists, and others interested in the protection of California's urban and wildland forests from injury caused by biotic and abiotic agents. The Council's objectives are to establish, maintain, and improve communication among individuals who are concerned with these issues. These objectives are accomplished by:

1. Coordinating the detection, reporting, and compilation of pest injury, primarily from forest insects, diseases, and animal damage.
2. Evaluating pest conditions, primarily those of forest insects, diseases, and animal damage.
3. Making recommendations on pest control to forest managers, protection agencies, and forest landowners.
4. Reviewing policy, legal, and research aspects of forest pest management and submitting recommendations to appropriate authorities.
5. Fostering educational work on forest pests and forest health.

The California Board of Forestry and Fire Protection recognizes the Council as an advisory body in forest health protection, maintenance, and enhancement issues. The Council is a participating member in the Western Forest Pest Committee of the Western Forestry and Conservation Association.

This report was prepared by Forest Health Protection, USDA Forest Service, Pacific Southwest Region and the California Department of Forestry and Fire Protection with other member organizations of the Council.

2025 Field Tours: Insect & Disease Tour, Calaveras Big Trees State Park, June 17

Weed Tour, Central Sierras, June 18-19

2025 Annual Meeting: November 18, UC Davis

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