

Sudden Oak Death Special Survey

Background: Sudden oak death (SOD) was first detected in California in 1995. This disease, caused by *Phytophthora ramorum*, has since killed millions of oaks and spread to 14 counties in California. Annual aerial detection surveys for SOD have been conducted in California since 2001. San Luis Obispo County on California's central coast has remained uninfested despite having suitable habitat for SOD in close proximity to known infestations.

Objective: Detect and map areas with oak and tanoak mortality in San Luis Obispo and southern Monterey County. Mapped areas will be ground checked by Cal Poly and Cal Fire personnel for verification of the disease. Assessment of overall tree mortality in the area was a secondary objective.

Surveyors: Z. Heath, K. Corella, S. Bisbing, J. Moore

Date: May 20th, 2014

Methodology: Recently dead tanoak and coast live oak were mapped visually by surveyors using digital aerial sketch-mapping systems flying in a light fixed-wing aircraft approximately 1,500 feet above ground level. Photos of mapped trees were taken as well to aid in finding the trees. Cal Poly and CalFire personnel will follow up the survey with ground visits to areas with oak mortality to test for the presence of *P. ramorum*.

Details:

- About 460,000 acres were surveyed in San Luis Obispo County. Additionally, parts of Monterey, San Benito, Fresno and Merced Counties were surveyed during the survey and en route. Large areas with tree mortality were seen throughout forested areas of the survey area. Figure 1. The majority of the damage was likely related to the ongoing drought; California's central coast is currently experiencing even more severe drought conditions than the rest of the State. Figure 2.
- Extensive coast live oak mortality was observed in the vicinity of Paso Robles in San Luis Obispo County, about 10 to 20 miles away from the coast. This mortality is likely due to the drought, not from sudden oak death. Figure 3.
- Relatively less oak mortality was seen closer to the coast. About 30 discrete areas, consisting of individual or small clumps of dead oak trees, were identified in San Luis Obispo County within 10 miles from the ocean. These locations will be the priority for ground checks.
- Live oak and tanoak mortality was also observed in the Salmon Creek drainage in southern Monterey County, slightly more than a mile from the San Luis Obispo County line. Figure 4. Based on the proximity of known areas with SOD, this may be due to *P. ramorum* rather than drought. Large areas of intense tanoak mortality was observed on the Monterey Coast north of Salmon Creek, where SOD is known to exist.
- One of the three native stands of Monterey pine in California was also included in the survey. Intensive mortality was seen throughout this stand, Figure 5. Substantial mortality in Coulter, gray pine, and landscape pines was also observed throughout the survey area, much more than was recorded in previous years. Figure 6.
- Small areas Santa Lucia fir mortality were observed as well, similar in extent to previous years.
- Many eucalyptus plantations near the coast also were also dead or completely defoliated. Figure 7.

Figure 1. Flown area and mapped tree mortality

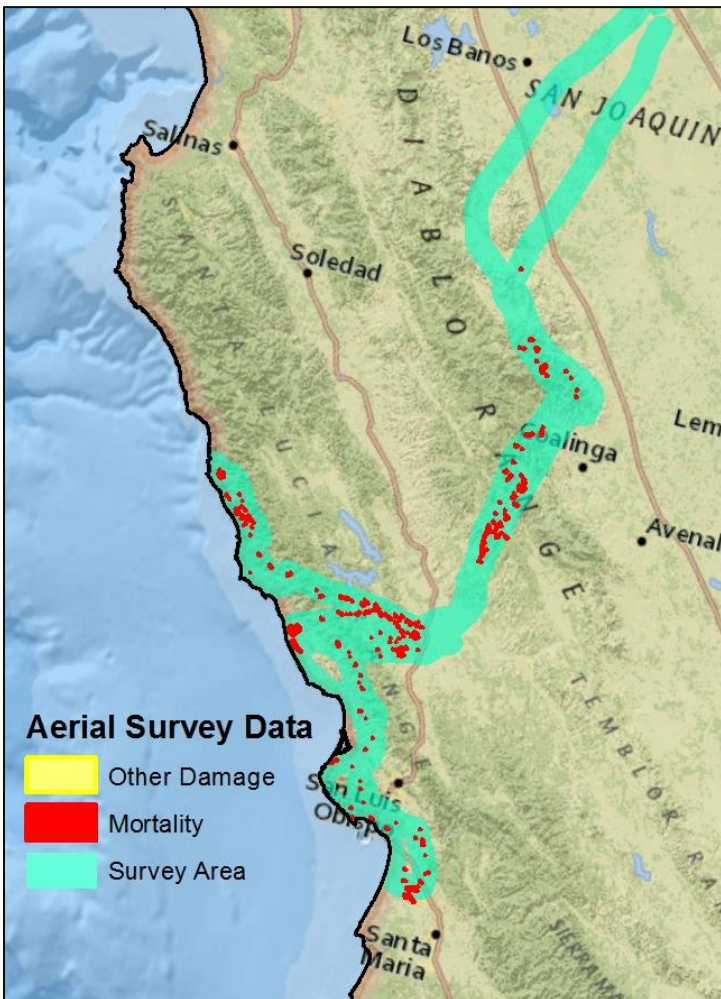
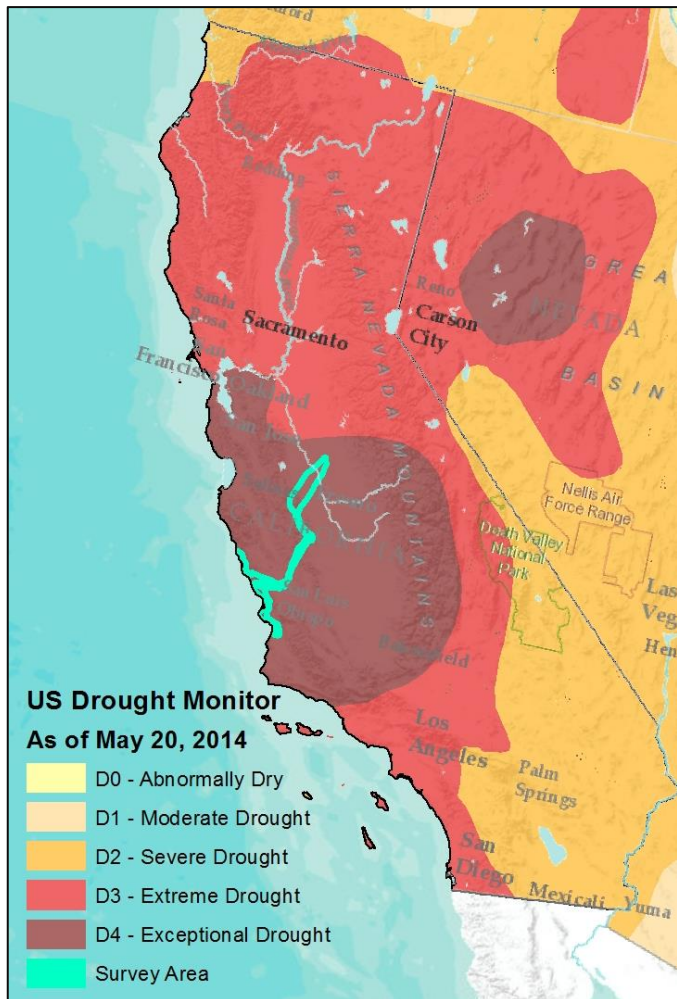


Figure 2. Current Drought Conditions in California



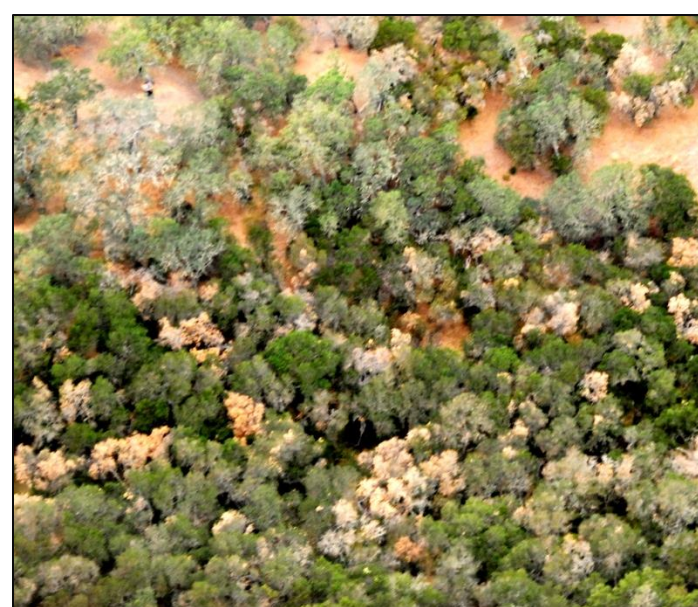


Figure 3. Coast live oak mortality in San Luis Obispo County, likely from drought.



Figure 4. Tanoak mortality in Salmon Creek in Monterey County, likely from sudden oak death.



Figure 5. Mortality in a native Monterey pine stand in Cambria, San Luis Obispo County.



Figure 6. Pine mortality in a residential area near Pismo Beach, San Luis Obispo County.

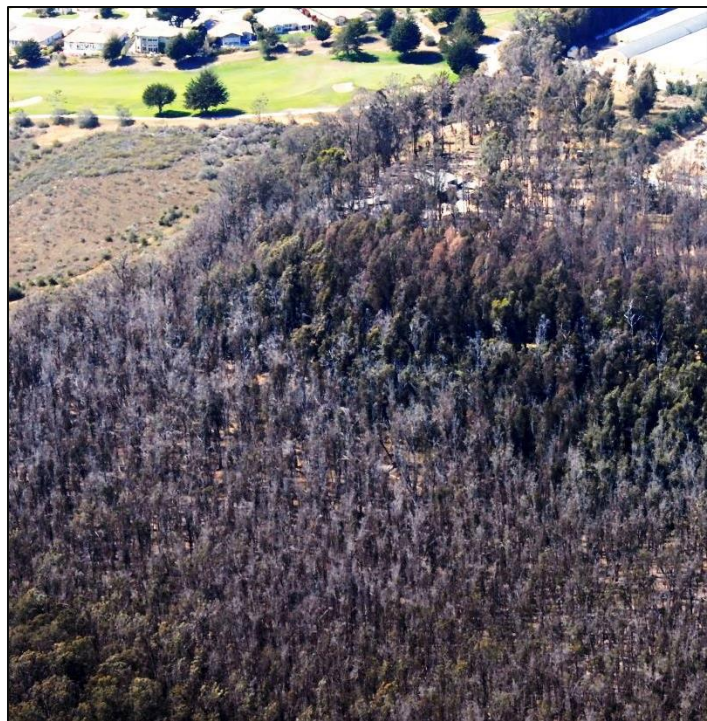


Figure 7. Damage to Eucalyptus south of Pismo Beach, San Luis Obispo County.

Direct questions pertaining to this report to Zachary Heath (email: zheath@fs.fed.us phone: 530-759-1751). Report Date June 23, 2014.

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Sudden Oak Death Survey

Background: Sudden oak death (SOD) was first detected in California in 1995. This disease, caused by *Phytophthora ramorum*, has since killed millions of oaks and spread to 14 counties in California. Annual aerial detection surveys for SOD have been conducted in California since 2001. Del Norte County on California's northern coast has remained uninfested despite having suitable habitat for SOD in close proximity to known infestations.

Objective: Detect and map areas with oak and tanoak mortality in Del Norte County. Attempts will be made to ground check areas with tanoak mortality for verification of the disease. Assessment of overall tree mortality in the area was a secondary objective.

Surveyors: Z. Heath, R. Noyes

Date: June 17th, 2014

Methodology: Recently dead tanoak were mapped visually by surveyors using digital aerial sketch-mapping systems flying in a light fixed-wing aircraft approximately 1,500 feet above ground level. Photos of the mapped trees were taken as well to aid in finding the trees.

Details:

- About 400,000 acres were surveyed in Del Norte County, focusing on areas at high risk for spread of SOD. The Biscuit Fire area on the Oregon border, high elevation areas to the east, and coastal areas with no tanoak were not surveyed. Additionally, parts of Humboldt County was surveyed during the survey and en route. Figure 1.
- Only one area with possible tanoak mortality was observed in Del Norte County, about 3 miles north of the mouth of the Klamath River. Figure 2.
- The sudden oak death infestations at Redwood Creek and at the Mad River, both in Humboldt County, were covered during the survey. Recent tanoak mortality was observed at both locations. Figures 3 and 4.
- Bear damage to Douglas-fir was evident throughout the survey area, similar in severity and extent to previous years, as was Port-Orford-Cedar root disease and pine mortality on serpentine areas at Rattlesnake Mountain.

Figure 1. Flown area and mapped tanoak mortality

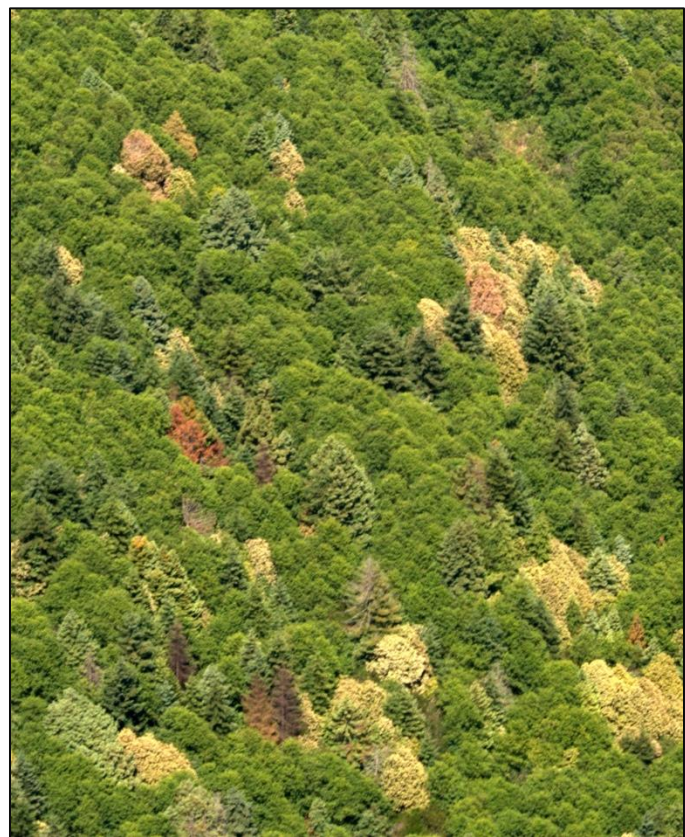


Figure 2. Possible tanoak mortality (tan colored trees) along with living tanoak (pale green) in Del Norte County. Bear damage to Douglas-fir is visible in the lower left quarter of the photo (orange trees).



Figure 3. Recent (tan trees at left) and older (gray trees on right) treatments for SOD at Redwood Creek.

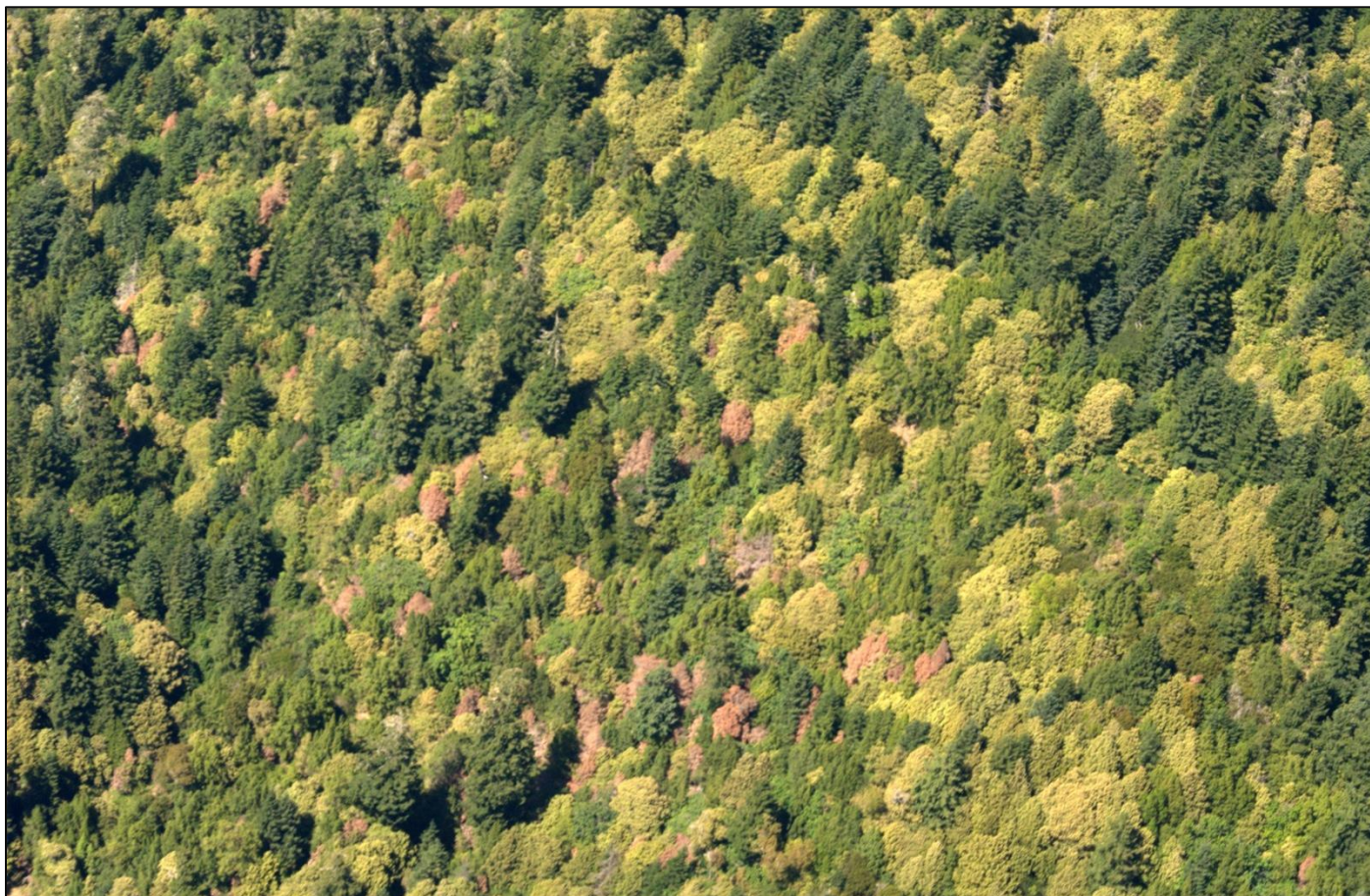


Figure 4. Tanoak mortality from sudden oak death near the Mad River.

Direct questions pertaining to this report to Zachary Heath (email: zheath@fs.fed.us phone: 530-759- 1751). Report Date June 18, 2014.