Central California Oak Mortality Aerial Survey - Spring 2010

Background: Sudden oak death (SOD) was first detected in California in 1995. This disease, caused by *Phytophthora ramorum*, has since killed hundreds of thousands of oaks and has spread to 14 counties in California. Forest Health Protection (FHP) has conducted special flights to detect SOD via aerial surveys since 2001. San Luis Obispo and San Benito Counties on California's central coast remain uninfested despite having suitable habitat for SOD and proximity to several counties known to have SOD. This survey was conducted in cooperation with California Polytechnic State University, San Luis Obispo.

Objective: Detect and map oak mortality in San Luis Obispo and San Benito Counties. Mapped mortality will be ground-checked for the presence of SOD.

Surveyors: Z. Heath and K. Camilli

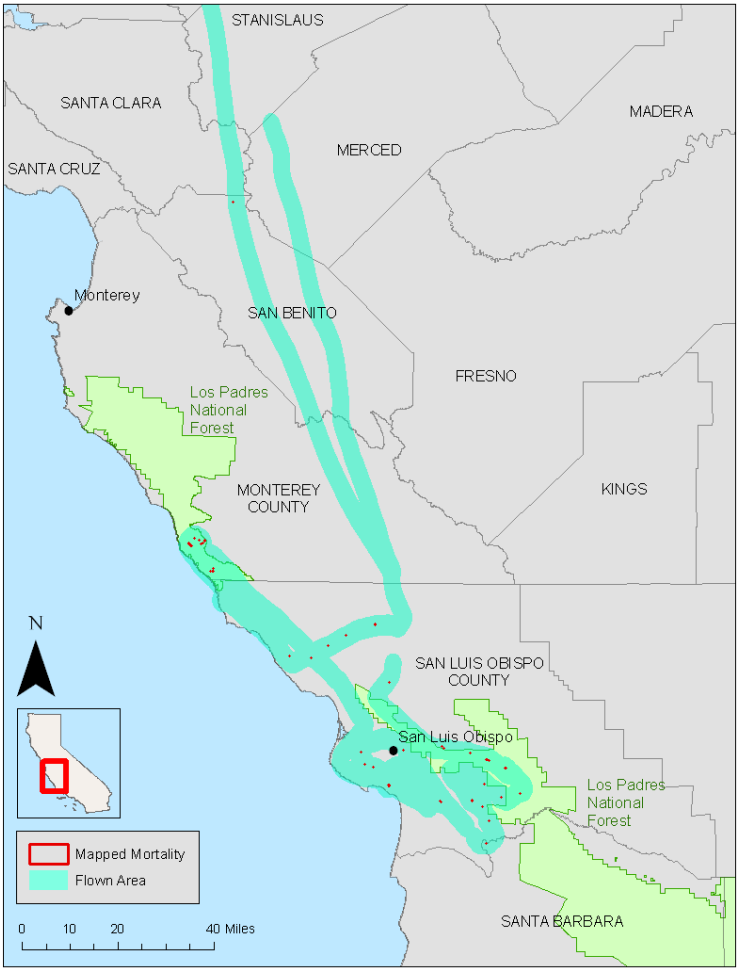
Date: June 2, 2010.

Methodology: Recently dead tanoak and live oak (still retaining dead foliage) were mapped visually by surveyors using digital aerial sketch-mapping systems flying in a light fixed-wing aircraft approximately 1,000 feet above ground level. Photographs were also taken of the mapped trees to aid in ground visits. Surveyors recorded number of dead trees at each mapped location. Mapped oak mortality will be ground checked by CalPoly staff to determine cause of death.

Details:

- Almost six hundred miles were flown, covering 647,000 acres of San Luis Obispo County, 200,000 acres in San Benito and Monterey Counties. Portions of neighboring counties were also flown. See figures 1 and 2.
- A total of 81 dead tanoak and live oak were mapped. One dead live oak was mapped in San Benito and Santa Barbara Counties. 22 live oak and tanoak were mapped in Monterey County (a county known to be infested). The rest of the dead trees were live oak mapped in San Luis Obispo County.
- Mapped mortality was sporadic throughout San Luis Obispo County and consisted mostly of individual trees, but several pockets of mortality with up to 10 trees each were mapped. Much of the mortality mapped in Monterey County was in areas known to have SOD. No recent mortality was mapped immediately to the south of these areas in San Luis Obispo County.
- Survey data, including locations of mortality, flight-lines, and photographs are available for viewing in Google Earth and Google Maps at: http://www.fs.fed.us/r5/spf/fhp/fhm/aerial/2010/kmz/index.shtml

Figure 1. Flown area and mapped oak mortality



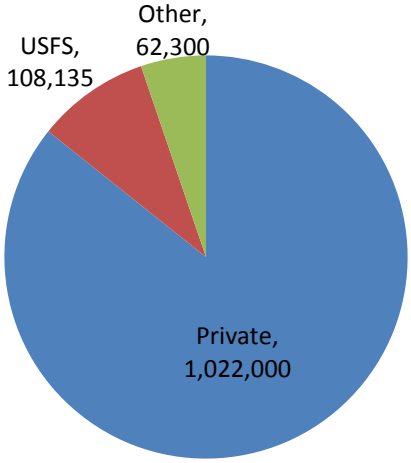


Figure 2. Surveyed Land Ownership (acres)

Summary:
Miles flown: 580
Acres surveyed: 1.2 million
Acres with mortality mapped: 25
Number of dead trees: 81

Direct questions pertaining to this report to Zachary Heath (email: zheath@fs.fed.us phone: 530-759-1751) or Kim Camilli (email: kim.camilli@fire.ca.gov Phone: 805-543-4244. Report Date July 21, 2010.

Northern California Oak Mortality Aerial Survey - Spring 2010

Background: Sudden oak death (SOD) was first detected in California in 1995. This disease, caused by *Phytophthora ramorum*, has since killed hundreds of thousands of oaks and has spread to 14 counties in California. Forest Health Protection (FHP) has conducted special flights to detect SOD via aerial surveys since 2001. Del Norte County in northern California remains uninfested despite having plenty of suitable habitat for SOD and proximity to two counties known to have SOD.

Objective: Detect and map oak mortality in Del Norte and northern Humboldt Counties. Mapped mortality will be ground-checked for the presence of SOD.

Surveyors: Z. Heath and J. Moore

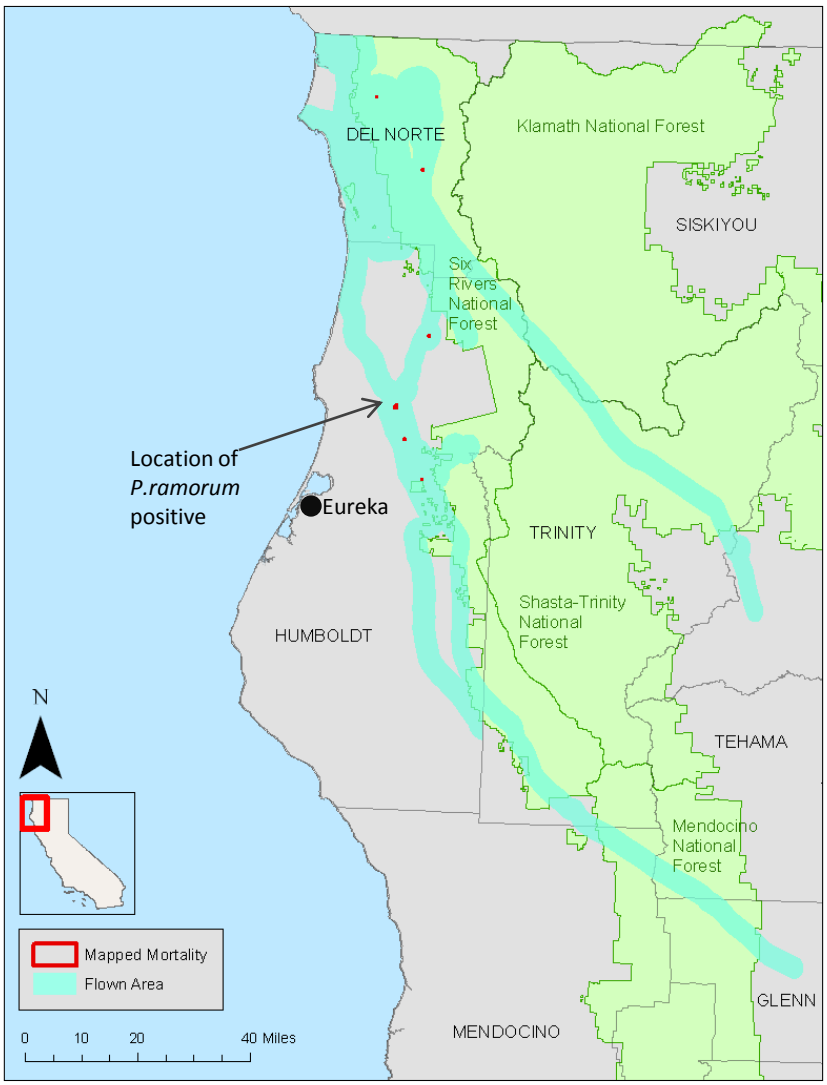
Date: June 8 and 16, 2010.

Methodology: Recently dead tanoak (still retaining dead foliage) were mapped visually by surveyors using digital aerial sketch-mapping systems flying in a light fixed-wing aircraft approximately 1,000 feet above ground level. Photographs were also taken of the mapped trees to aid in ground visits. Surveyors recorded number of dead tanoak at each mapped location. Mapped oak mortality will be ground checked to determine cause of death.

Details:

- Nine hundred miles were flown, covering 440,000 acres of Del Norte County and 500,000 acres in Humboldt County. Portions of neighboring counties were also flown. See figures 1 and 2.
- A total of 19 dead tanoak were mapped. Only two dead tanoak were mapped in Del Norte County.
- Tanoak mortality was rare throughout the surveyed area and typically consisted of areas with individual dead trees. Only one area mapped contained multiple dead trees. These trees were mapped in the Redwood Creek drainage in Humboldt County. Cooperators with the University of California Cooperative Extension visited the site within days after the flight and recovered *P.ramorum* from bay trees in the area.
- Survey data, including locations of mortality, flight-lines, and photographs are available for viewing in Google Earth and Google Maps at: http://www.fs.fed.us/r5/spf/fhp/fhm/aerial/2010/kmz/index.shtml

Figure 1. Flown area and mapped oak mortality



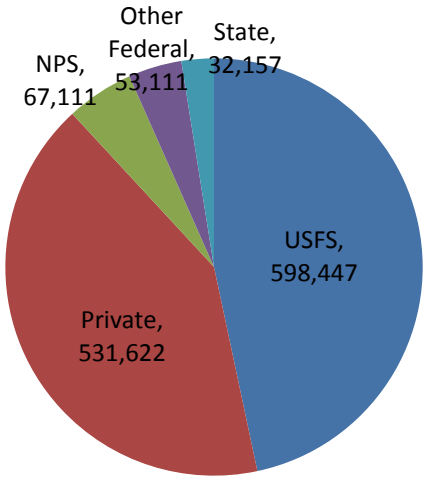


Figure 2. Surveyed Land Ownership

Summary:
Miles flown: 900
Acres surveyed: 1.3 million
Acres with mortality mapped: 29
Number of dead trees: 19

Direct questions pertaining to this report to Zachary Heath (email: zheath@fs.fed.us phone: 530-759-1751). Report Date July 21, 2010.

Northern California Oak Mortality Aerial Survey - Fall 2010

Background: Sudden oak death (SOD) was first detected in California in 1995. This disease, caused by *Phytophthora ramorum*, has since killed hundreds of thousands of oak and spread to 14 counties in California. Forest Health Protection (FHP) has conducted special flights to detect SOD via aerial surveys since 2001. In 2010, *P. ramorum* was discovered in Redwood Creek in northern Humboldt County, less than 25 miles from Del Norte County, currently an uninfested county. This flight was undertaken to track the spread of this infestation and other SOD infestations within Humboldt County.

Objective: Detect and map oak mortality at the periphery of known SOD infestations in Humboldt County.

Surveyors: Z. Heath, B. Oblinger, P. Angwin.

Date: Sept 23, 2010

Methodology: Recently dead trees were mapped visually by surveyors using digital aerial sketch-mapping systems flying in a light fixed-wing aircraft approximately 1,000 feet above ground level. Surveyors recorded number and species of dead trees and type of damage (mortality, defoliation, branch flagging and topkill) at each mapped location. Photographs were taken of each mapped area to aid in ground visits.

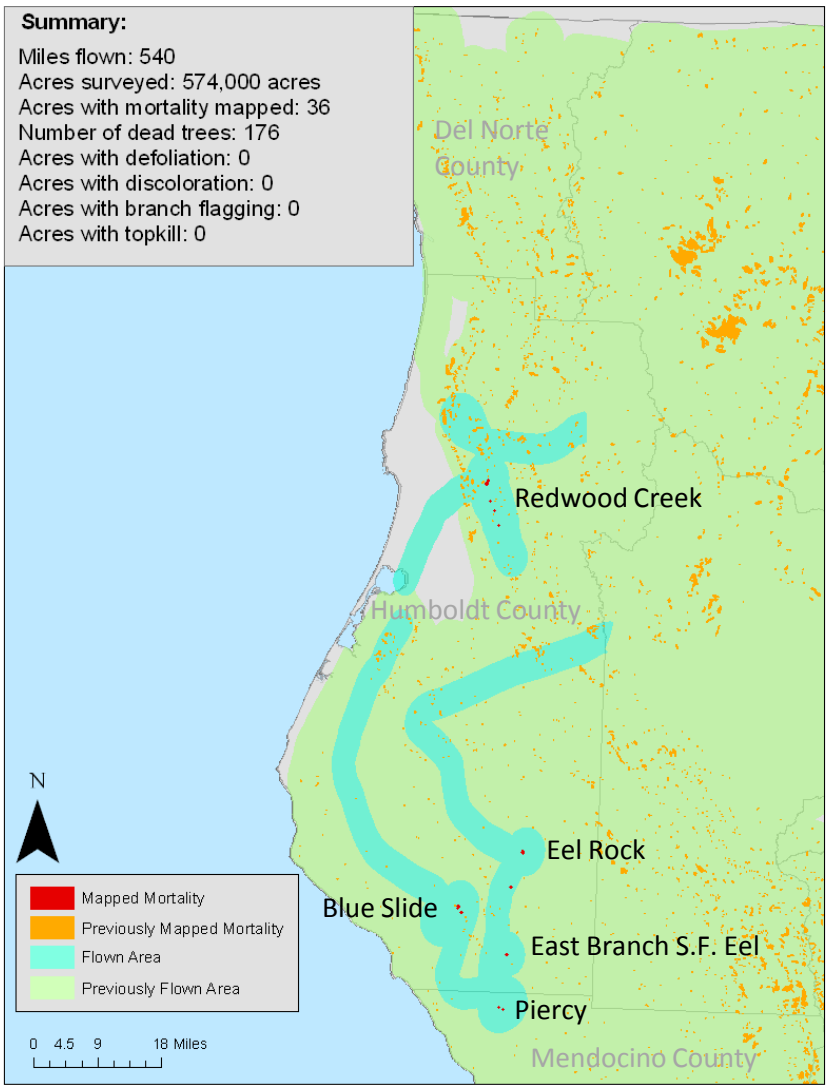
Details:

•Besides Redwood Creek, this flight covered parts of the East Branch of the South Fork Eel River, the South Fork Eel south of the Humboldt County line, and Blue Slide Creek (in the Mattole River watershed), watersheds which are positive for *P.ramorum* but have no confirmation of the pathogen from vegetation samples. An outlying infestation at Eel Rock (Main stem Eel River) was also surveyed. Most area surveyed was private land. See Figures 1 and 2.

•Tanoak mortality at Redwood Creek and Eel Rock does not appear to have spread much over the growing season. No tanoak mortality was observed within Blue Slide Creek. A few dead hardwoods were observed near Piercy, south of Humboldt County, however, pockets of tanoak mortality were mapped within the East Branch S.F. Eel River.

•Survey data, including locations of mortality, links to photos, and flight-lines are available for viewing in Google Earth and Google Maps at: http://www.fs.fed.us/r5/spf/fhp/fhm/aerial/2010/kmz/index.shtml

Figure 1. Flown area and mapped tree mortality



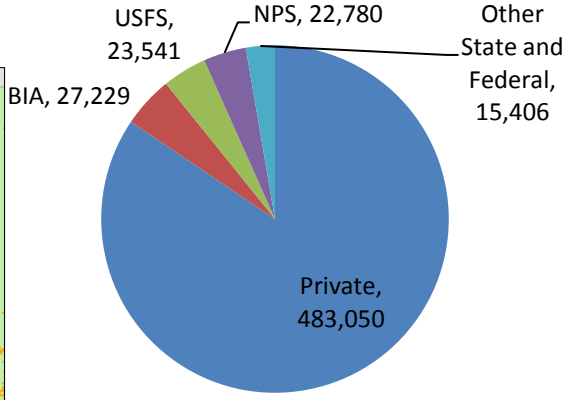
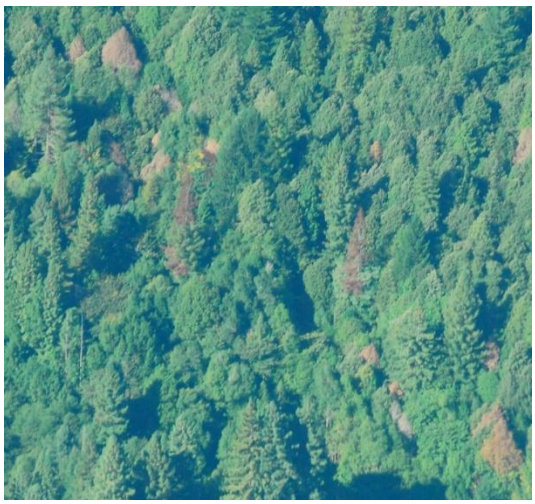


Figure 2. Surveyed land ownership



Tanoak and Douglas-fir mortality in Redwood Creek

Direct questions pertaining to this report to Zachary Heath (email: zheath@fs.fed.us phone: 530-759-1751). Report Date Sept 30, 2010.