

Southern CA & South Sierra Nevada Range

August 10th-14th, 2015

Background: Many of California's forests are overly dense with trees and experiencing four years of exceptional drought. As this drought has become increasingly severe and prolonged, tree mortality continues to increase in most areas, sometimes dramatically. This portion of the 2015 regular survey was conducted for normal data collection primarily within the National Forests of Southern CA. Forest Health Protection had conducted a special early season aerial survey covering much of this area in April 2015, but was more completely resurveyed during normal summer timeframe to maintain consistency year to year, to map deciduous trees which were dormant in April, to reassess the progression of overall tree mortality and to detect any foliar diseases or insect caused defoliation which would not be expressed earlier in the year. The special aerial survey conducted in April 2015 was a stand alone event and not cumulative with acres and tree mortality numbers presented here since a great deal of duplication invariably occurred. Drought conditions throughout most this surveyed area are currently categorized as extreme or exceptional. (Fig. 1)

Objective: Detect and map extent and severity of tree mortality and other damage including drought stress throughout southern CA, portions of the central coast and Transverse Ranges, the Tehachapi Mountain Range and the far Southern Sierra Nevada Range.

Surveyors: J. Moore, L. McAfee

Methodology: Surveyors mapped recently dead or currently injured/stressed trees using a digital aerial sketch-mapping system while flying in a light fixed-wing aircraft approximately 1,000 feet above ground level. Surveyors recorded the species of tree affected, estimated number of recently killed trees and/or any type of other damage (defoliation, dieback etc.) detected at each mapped location.

Details:

- Approximately 6 million acres were surveyed (Fig. 1); primarily on the Cleveland, Angeles and San Bernardino, as well as portions of the Los Padres, Sequoia and Inyo National Forests (Fig 3). Other areas of note include the Tehachapi Range, eastern portions of the Southern Coastal Ranges and several State Parks.
- Pine mortality in particular was widespread, but most intense from the Mt. Pinos area on the Los Padres NF through the Tehachapi Range and onto the Sierras (Fig. 2-9). Singleleaf pinyon and Jeffrey are the most common pine species in this area and accounted for most of mortality (Fig. 2, 4, 6, 9).
- Drought, bark beetles and other interacting stressors have also heavily impacted Coulter pine on the Los Padres NF and along the Southern Coastal Ranges (Fig. 5), gray pine located in lower elevations as well as lodgepole pine in higher areas on the Sequoia NF.
- Live oak mortality was also widespread especially in southern portions of the Tehachapi Range and on the Cleveland NF (Fig. 8, 10).
- Severe drought induced discoloration/defoliation and some suspected mortality was common in blue oak and other oak species throughout the foothills of the San Joaquin Valley and in the Tehachapi Range (Fig. 10).
- Considerable white fir mortality was observed in higher elevations, especially in the Sierras (Fig 7, 8).
- Substantial oak mortality attributed to Golden Spotted Oak Borer continues in and around portions of the Cleveland NF (Fig 11).

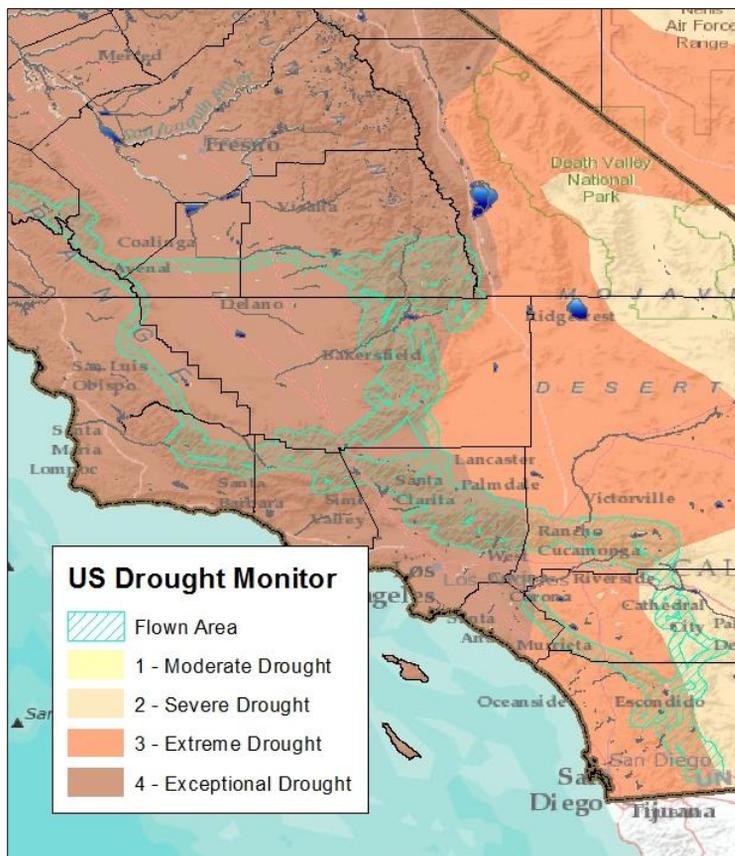


Figure 1. Flown area and drought conditions as of Aug 25th, 2015 based on USGS Drought Monitor.

Summary:
 Acres surveyed: 6.24 million
 Acres with mortality: 854,000
 Estimated number of dead trees: 11,750,000

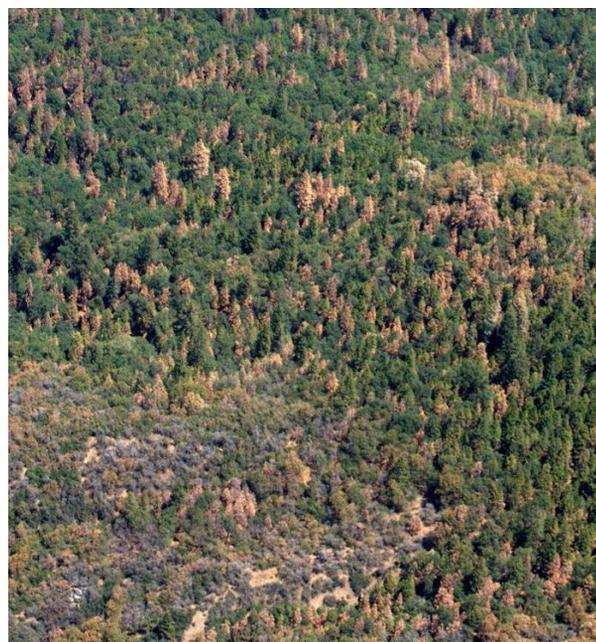


Figure 2. Widespread mixed conifer mortality east of Porterville on the Sequoia NF.

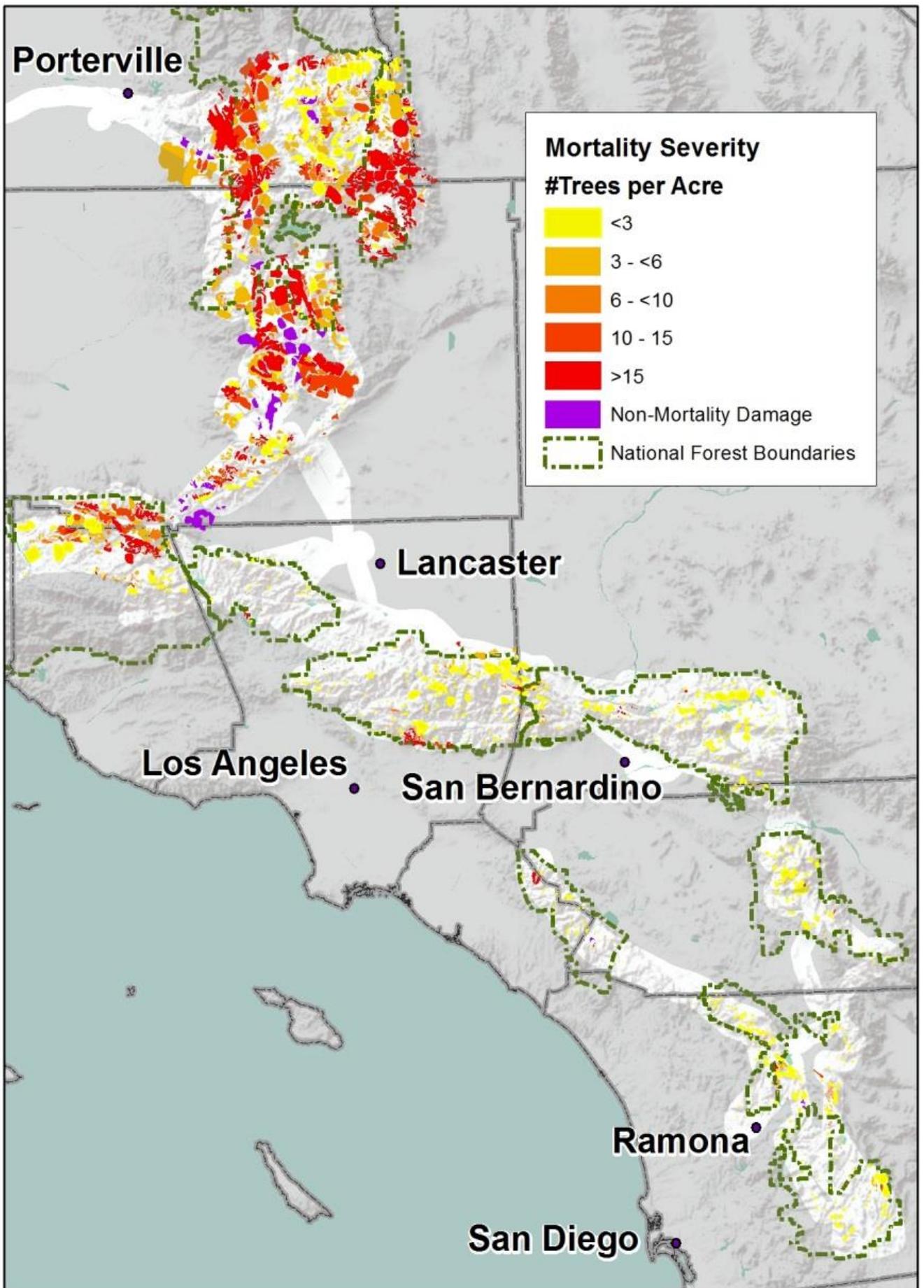


Figure 3. Map of area surveyed depicting tree mortality and other damage.



Figure 4. Widespread mortality of singleleaf pinyon pine was common such as this area within the Scodie Mountains at the southern tip of the Sequoia NF.



Figure 5. Dramatic levels of Coulter pine mortality were common among the isolated pockets found in many areas of the Southern Coast Ranges such as this one in the Gabilan Range south of Hollister near Mt. Harlan.



Figure 6. Ongoing severe mortality of Jeffrey pine on the Tehachapi Range near Twin Lakes.



Figure 7. Landscape mixed conifer mortality near Hatchet Peak on the Sequoia National Forest east of Porterville. Many tree species are collectively affected and this particular area including white fir, Jeffrey and sugar pine and incense-cedar. Notice that the giant sequoia trees in the upper left foreground appear healthy.



Figure 8. Ongoing severe landscape level mortality of ponderosa pine, white fir and interior live oak southeast of Porterville near Sugarloaf Peak on the Sequoia NF.



Figure 9. Widespread often intense singleleaf pinyon pine mortality south of Frazier Park on the Los Padres NF.



Figure 10. Discoloration/death of interior live oak, blue oak and other oak species in the Tehachapi Range.



Figure 11. Oaks killed by golden spotted oak borer GSOB in Northern San Diego County. Such mortality has been ongoing for several years with older dead trees recorded in previous years surveys now gray skeletons.