USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Aerial Detection Survey, Pacific Southwest Region
Southern Sierra Nevada Range of California, July 2023

Preliminary Summary
(numbers may change)
Area surveyed: 10 million acres
Acres with mortality: 688,870 acres

Objective: The objective of this survey is to detect and record recently killed and damaged trees. Most of the recorded mortality and damage is caused by insects and diseases.

Surveyors: J. Moore, N. Stevens, G. Mayer

Methodology: Recent tree damage and mortality was recorded using Digital Mobile Sketch Mapping systems. When dead or damaged trees were observed surveyors drew a polygon around the trees on a map and recorded the percent of that area that was dead or damaged, the tree species, and the suspected causal agent. It is likely that other pathogens are contributing to damage and mortality, however, they are difficult to assess from the air; therefore, they are not recorded during the aerial survey but can be changed during post processing. Severity of mortality and damage within each polygon 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%). Small groups of trees were recorded as point data and not included in this report since they have no acreage assigned until later processing.

Survey Highlights: The Southern Sierra Nevada Range had a moderate incidence of point data that is not tabulated in this report but is depicted on the map at an exaggerated scale. For this area, point data was the primary way mortality was tracked in species such as giant sequoia, gray, sugar, pinyon and whitebark pine as well as oak. This report presents preliminary findings in and around the Eldorado, Inyo, Stanislaus, Sierra, and Sequoia National Forests (NFs) and Yosemite and Sequoia/Kings Canyon National Parks (NPs).

NOTE: Most areas within the extensive fire footprints from 2021 and 2022 were not surveyed and are removed from the survey coverage area, particularly on the Eldorado and Sequoias NFs. For 2023, the Southern Sierras has experienced approximately 690,000 acres with mortality, which is less than the five-year annual average of ~830,000 acres but still quite elevated. It should be noted that previous year's acreage estimates include converted point data, while the current year point data have yet to be converted and all data is still in draft form and subject to changes.

- White and California red fir mortality remained elevated. Mortality was detected across approximately 600,000 acres. Most of the mortality was rated as light to moderate intensity. Mortality was widespread throughout the Southern Sierra Nevada Range and particularly at higher elevations where true firs are the dominant forest type. White fir mortality was seen diffusely in mixed conifer stands, while red fir was observed in higher concentrations in monodominant stands.
- Jeffrey and ponderosa pine mortality was detected across 48,000 acres. Mostly at light to moderate intensities. Mortality was especially concentrated in and around the town of Mammoth Lakes on the Inyo NF and southeastern Sierra NF.
- Five-needle pine mortality (including limber, foxtail, western white, sugar, and whitebark pine) was observed collectively across approximately 14,000 acres mostly categorized as either moderate or severe intensity. However, whitebark pine mortality occurred at mostly light to moderate intensities. Note that sugar pine and most five needle pine mortality was collected mostly as point data and therefore does not contribute to the acreage count in this interim report.
- Lodgepole pine mortality was detected across ~21,000 acres and mostly categorized as either light or moderate intensity. The mortality was located primarily across high elevations throughout the area but was noticeably severe on the eastern side of the northern Sierra NF and Yosemite NP. Severe defoliation caused by lodgepole needleminer was also severe and widespread in far eastern Yosemite NP.
- Pinyon pine mortality was recorded across approximately 5,700 acres. Mostly at moderate intensity, and most active southeast of Bishop in the White Mountains, Inyo NF.
- Varying degrees of oak damage was observed across ~170 acres. However older drought injury was commonplace and was difficult to detect via previous aerial surveys.

Host	Acres with Mortality
California red and white fir	600,000
yellow pines (Jeffrey and ponderosa)	48,000
five-needle pines	14,000
lodgepole pine	21,000
pinyon pine	5,700
mixed oaks	170
Total	688,870

Ongoing severe limber pine mortality west of Mount Inyo, Inyo county.

Please direct questions pertaining to this report to Jeffrey Moore
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USDA

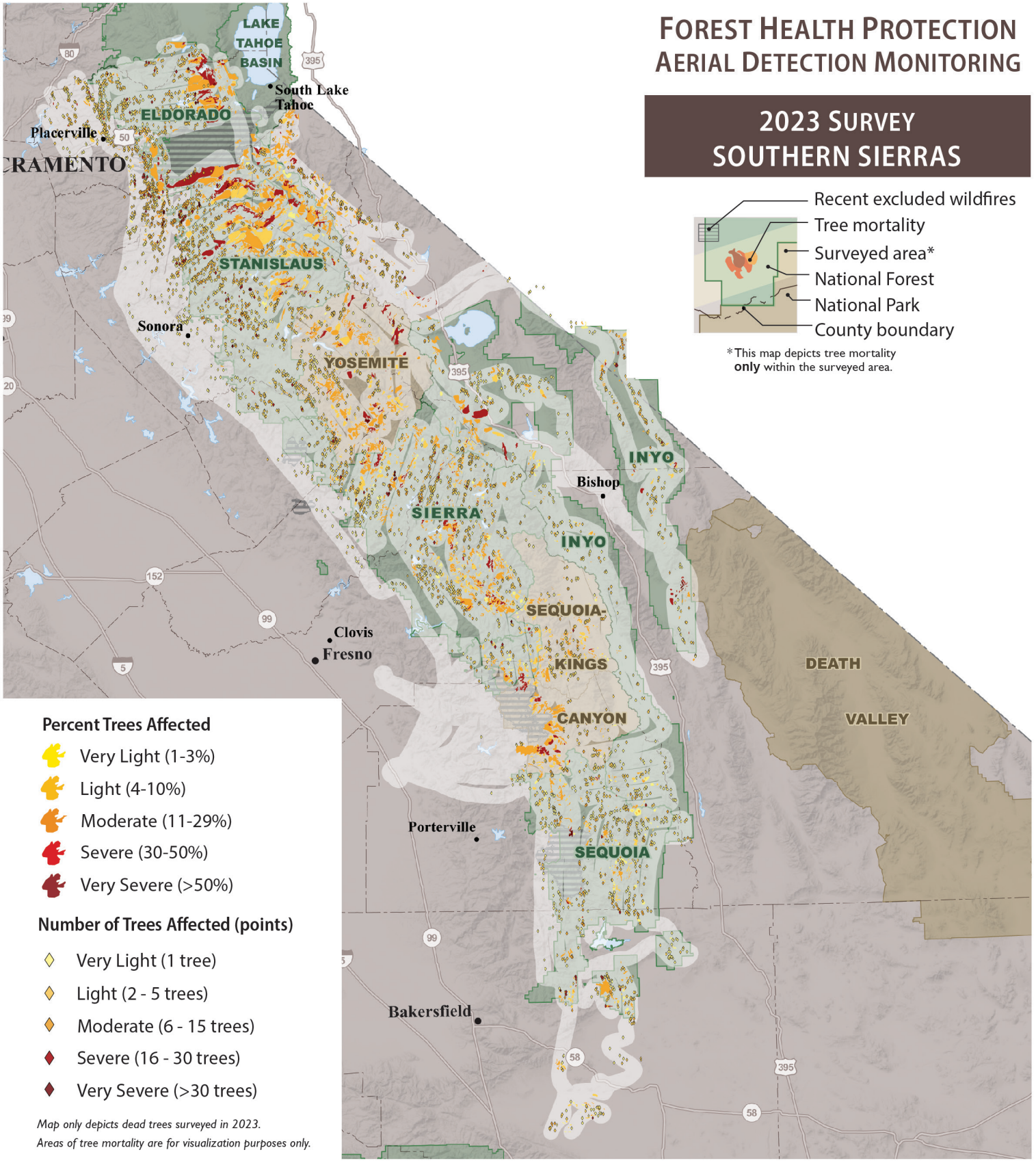
UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST HEALTH PROTECTION
AERIAL DETECTION MONITORING

2023 SURVEY
SOUTHERN SIERRAS

- Recent excluded wildfires
- Tree mortality
- Surveyed area*
- National Forest
- National Park
- County boundary

*This map depicts tree mortality **only** within the surveyed area.



Percent Trees Affected

- Very Light (1-3%)
- Light (4-10%)
- Moderate (11-29%)
- Severe (30-50%)
- Very Severe (>50%)

Number of Trees Affected (points)

- Very Light (1 tree)
- Light (2 - 5 trees)
- Moderate (6 - 15 trees)
- Severe (16 - 30 trees)
- Very Severe (>30 trees)

Map only depicts dead trees surveyed in 2023.
Areas of tree mortality are for visualization purposes only.