

Aerial Detection Survey, Pacific Southwest Region Southern Sierra Nevada Range of California, October 2022

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.

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Methodology: Recent tree mortality was mapped using Digital Mobile Sketch Mapping systems. Surveyors drew polygons or affixed points and annotated percent of forested area affected along with damage type, tree species, and causal agent. The five-class rating system is: Very Light (1-3%), Light (4 -10%), Moderate (11-30%), Severe (31-50%), and Very Severe (>50%). Alternatively, small groups of trees were recorded as point data and have no acreage assigned until later processing. Southern Sierra Nevada 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.

Survey Highlights: This report presents preliminary findings in and around the 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 2020 and 2021 were not flown and are removed from the survey coverage area, particularly on the Eldorado and Stanislaus NFs.

- White and California red fir mortality remained elevated as compared to last year. Mortality was detected across approximately 720,000 acres. Most of the mortality was rated as light to moderate intensity (78%). Mortality was widespread throughout the area particularly east of Fresno and at higher elevations where true firs are the dominant forest type.
- Jeffrey and ponderosa pine mortality was detected across ~47,000 acres. Over 70% of this area is categorized as light or moderate intensity. Mortality was especially concentrated in and around the town of Mammoth Lakes on the Inyo NF.
- Five-needle pine mortality (including limber, western white, sugar, and whitebark pine) was observed collectively across approximately 21,000 acres, with more than 60% categorized as either moderate or severe intensity. Mortality occurred throughout the host ranges, and whitebark pine mortality was particularly severe. Note that sugar pine mortality was collected as point data only and therefore does not contribute to the acreage count in this interim report.
- Lodgepole pine mortality was detected across ~3,700 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 south and west of Monache Mountain on the Sequoia NF. Defoliation caused by lodgepole needleminer was very severe and widespread last year, but in 2022 only one 381-acre polygon of severe defoliation was detected west of Mono lake. This is due to needleminer's two year lifecycle where alternate-numbered years are less damaging.
- Pinyon pine mortality was recorded across approximately 24,000 acres. Mostly at moderate intensity, and most active southeast of Bishop in the White Mountains, Inyo NF.
- Other conifer mortality included incense cedar, knobcone and gray pine, Douglas-fir and one giant sequoia, observed collectively across ~2,800 acres. These were often collected as point data, which is not included in acreage totals in this interim report.
- Varying degrees of oak damage was observed across ~3,400 acres. This is likely a considerable underestimate since oak injury caused by drought is difficult to capture via aerial survey. Additionally, drought-induced discoloration was commonly severe and widespread across the survey area, but not well captured by the survey as it was ubiquitous.

Preliminary Summary (numbers may change)

Area surveyed: 11 million acres
Acres with mortality: 821,940 acres

Host	Acres with Mortality
California red and white fir	720,000
Jeffrey and ponderosa pine	47,000
five-needle pines	21,000
lodgepole pine	3,700
pinyon pine	24,000
other conifer	2,600
oaks	3,400
incense-cedar	240
Total	821,940

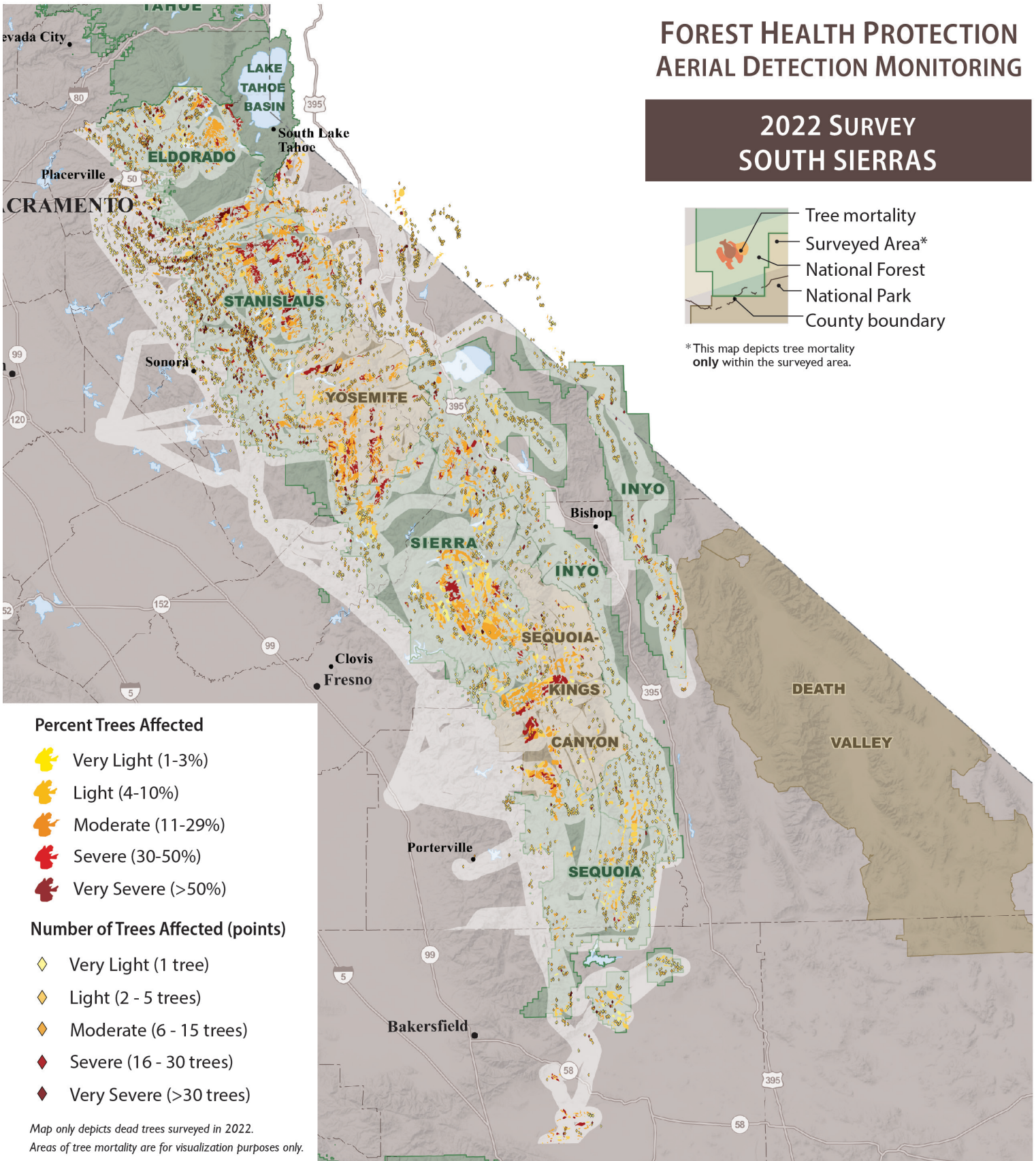


Ongoing and increasingly severe fir mortality near Mt. Silliman, Tulare County.



FOREST HEALTH PROTECTION AERIAL DETECTION MONITORING

2022 SURVEY SOUTH SIERRAS



- 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 2022.
Areas of tree mortality are for visualization purposes only.

