Aerial Detection Survey, Pacific Southwest Region
Southern Sierra Nevada Range of California, August 2021

Preliminary Summary
(numbers may change)
Area surveyed: 9.8 million acres
Acres with mortality: 480,000 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

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 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). Typically the Eldorado NF is also included in this report but most of this area will not be surveyed in 2021 due to the Caldor fire.

- White and California red fir mortality remained elevated and was detected across approximately 385,000 acres. Most of the mortality was rated as having a light or moderate intensity. Mortality was common throughout the area and generally occurred in higher intensities at high to very high elevations.
- Jeffrey and ponderosa pine mortality was detected across 45,000 acres with over 80% of this area categorized as light or very light intensity. More concentrated mortality was observed in and around Mammoth on the Inyo NF.
- Five-needle pine mortality (including limber, sugar, foxtail, Western white, and whitebark pine) was observed collectively across 31,000 acres with more than 40% categorized as either moderate or severe intensity. Mortality occurred throughout the area, 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 11,000 acres with over 60% of this area categorized as either light or very light intensity and the rest at moderate intensity. The mortality was primarily across high elevations throughout the area but was particularly active south and west of Monache Mountain on the Sequoia NF. Additionally, defoliation caused by lodgepole needleminer was often severe and widespread and was again concentrated primarily in the high eastern areas of Yosemite NP and southern Stanislaus NF.
- Pinyon pine mortality was recorded across 7,600 acres, often at moderate intensity, and was most active southeast of Bishop in the White Mountains, Inyo NF. Additionally, pine needle scale defoliation was evident across 1,800 acres and was particularly active southwest of Red Mountain, also in the White Mountains.
- Other conifer mortality included knobcone and gray pine and was observed collectively across 350 acres but were often collected as point data, which is not included in acreage totals in this interim report.
- Light oak mortality was observed and recorded. Discoloration, however, was often severe but not captured by the survey since it was ubiquitous across the survey area.

Host	Acres with Mortality
California red and white fir	385,000
Jeffrey and ponderosa pine	45,000
five-needle pines	31,000
lodgepole pine	11,000
pinyon pine	7,600
gray or California foothill pine	300
knobcone pine	50
Oaks	40
unknown hardwood	10
Total	480,000

Ongoing severe whitebark pine mortality Near Glass Creek Meadow, Mono county.

Please direct questions pertaining to this report to Jeffrey Moore
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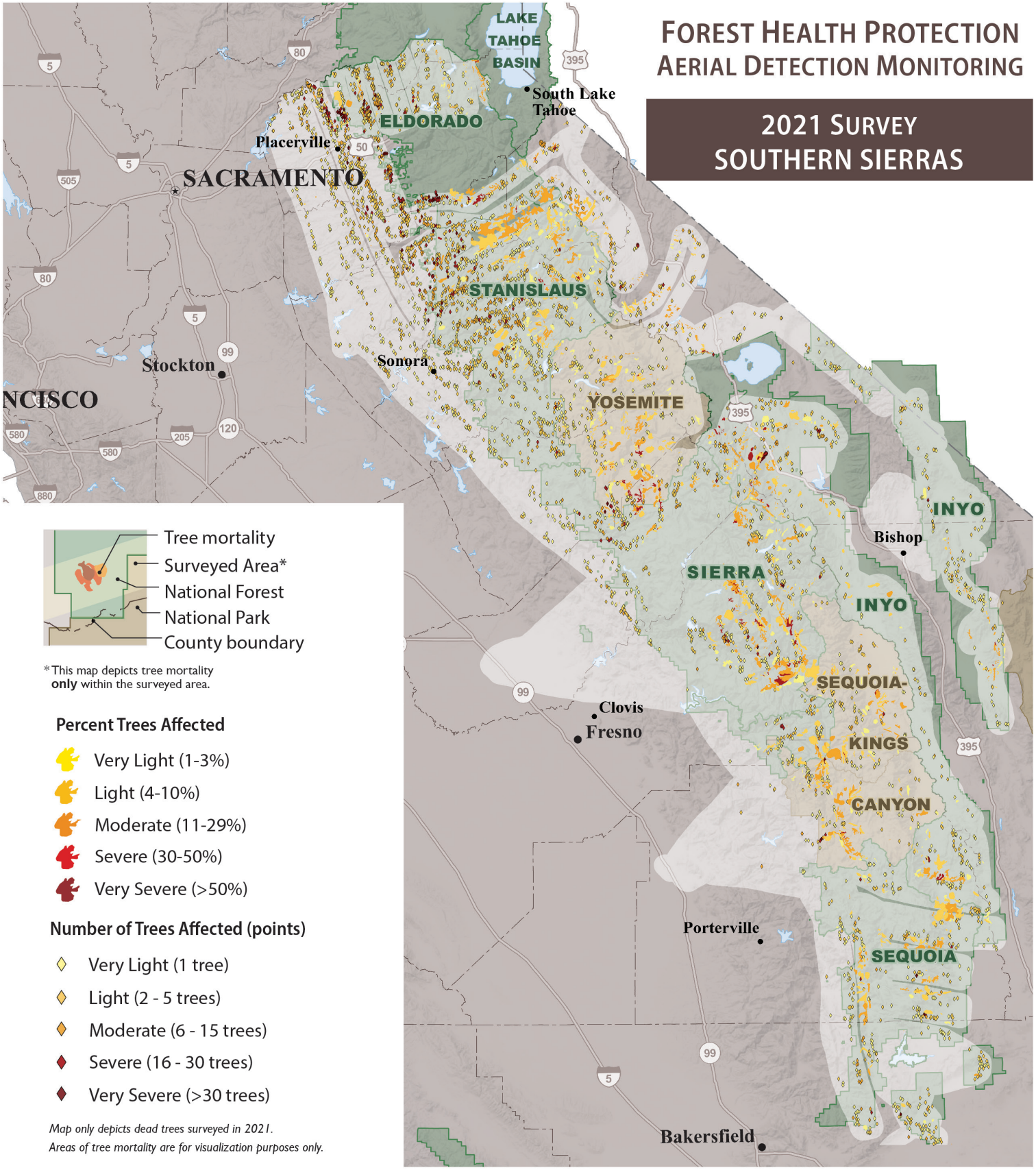
UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST HEALTH PROTECTION
AERIAL DETECTION MONITORING

2021 SURVEY
SOUTHERN 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 2021.
Areas of tree mortality are for visualization purposes only.