USDA United States Department of Agriculture

# 2019 HIGHLIGHTS OF TREE MORTALITY FROM INSECTS AND DISEASES AS SEEN BY AERIAL SURVEY

Approximately 41 million acres surveyed

## PACIFIC SOUTHWEST REGION

**15.1 MILLION DEAD TREES**

**2.2 MILLION ACRES WITH MORTALITY**

### PINE

#### WESTERN, MOUNTAIN, and JEFFREY PINE BEETLES

- Native insects which attack several pine species
- During the protracted drought of 2012-2016, these beetles **reached outbreak levels**, killing millions of trees in the Southern Sierra Nevada range; pine mortality has decreased but remains greatly elevated (~2x background levels)
- ★ Partnering with CALFIRE in state task forces to address forest health and resilience and to remove biomass from affected areas
- ★ R5 developing strategy for whitebark pine

### CALIFORNIA OAKS

#### GOLDSPOTTED OAK BORER

- Invasive insect which attacks several western oak species
- First identified in San Diego County in 2008; **now present in 4 additional counties**
- 2019 mortality from aerial survey fairly consistent over last 4 years
- ★ Monitoring and treating high value individual trees

### CALIFORNIA OAKS

#### SUDDEN OAK DEATH

- Tree disease which kills several oak species and tanoak
- **Significant effects** in coastal forests in California and Oregon
- SOD mortality in 2018 and 2019 have been 3-6x higher than between 2012-2017
- ★ Supporting partner efforts for survey and management

### ʻŌHIʻA

#### RAPID ʻŌHIʻA DEATH

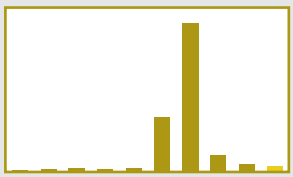
- A **devastating tree killer** caused by a vascular wilt fungus
- Spread throughout the Big Island of Hawaii and now found to a much lesser extent on Kauai, Oahu, and Maui
- ★ Utilizing a new survey technology to map the extent of rapid ʻōhiʻa death

### CALIFORNIA FIRS

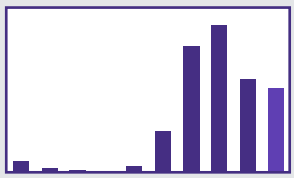
#### FIR ENGRAVER

- Significantly impacting California red fir and white fir
- Fir engraver-caused mortality **made up 82%** of detected mortality in California in 2019
- ★ Providing support for pest suppression, hazard tree removal, and surveying

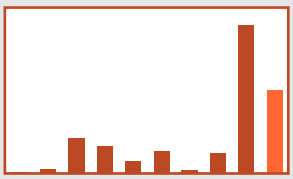
## TREE MORTALITY SURVEY TRENDS 2010-2019



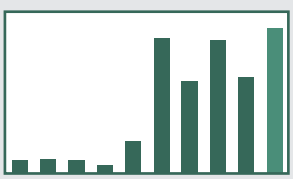
PINE BEETLES
**1.5 MILLION TREES**
IN 2019



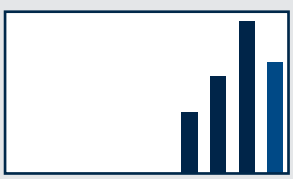
FIR ENGRAVER
**12.4 MILLION TREES**
IN 2019



SUDDEN OAK DEATH
**885 THOUSAND TREES**
IN 2019



GOLDSPOTTED OAK BORER
**17 THOUSAND TREES**
IN 2019



RAPID ʻŌHIʻA DEATH
**93 THOUSAND ACRES***
IN 2019

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Note: The units of measurement of mortality for above charts vary by pest.

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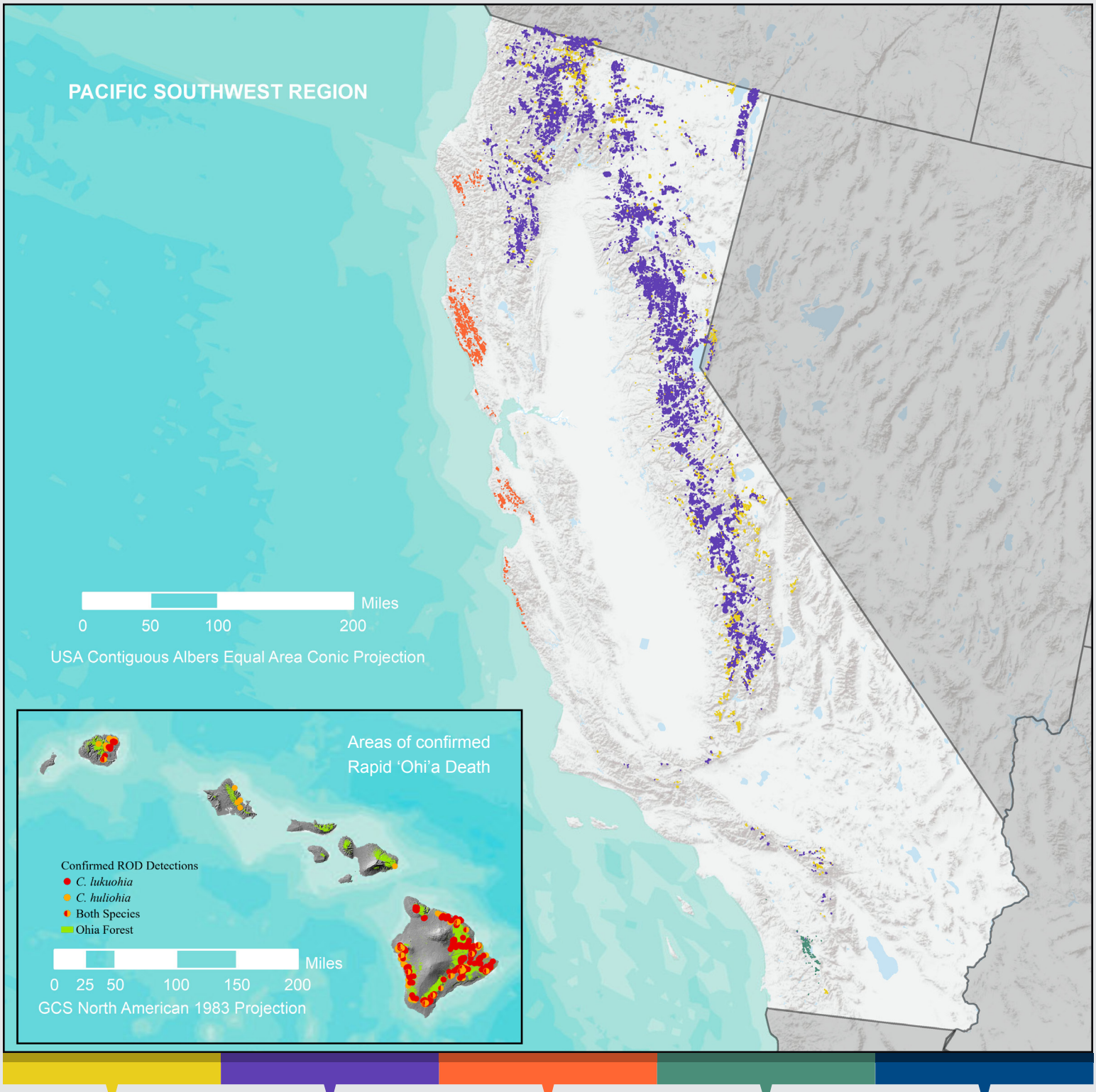
# 2019 INSECT AND DISEASE SURVEY

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