Rural/natural landscapes

Sheri Smith
Regional Entomologist

Aerial Detection Survey

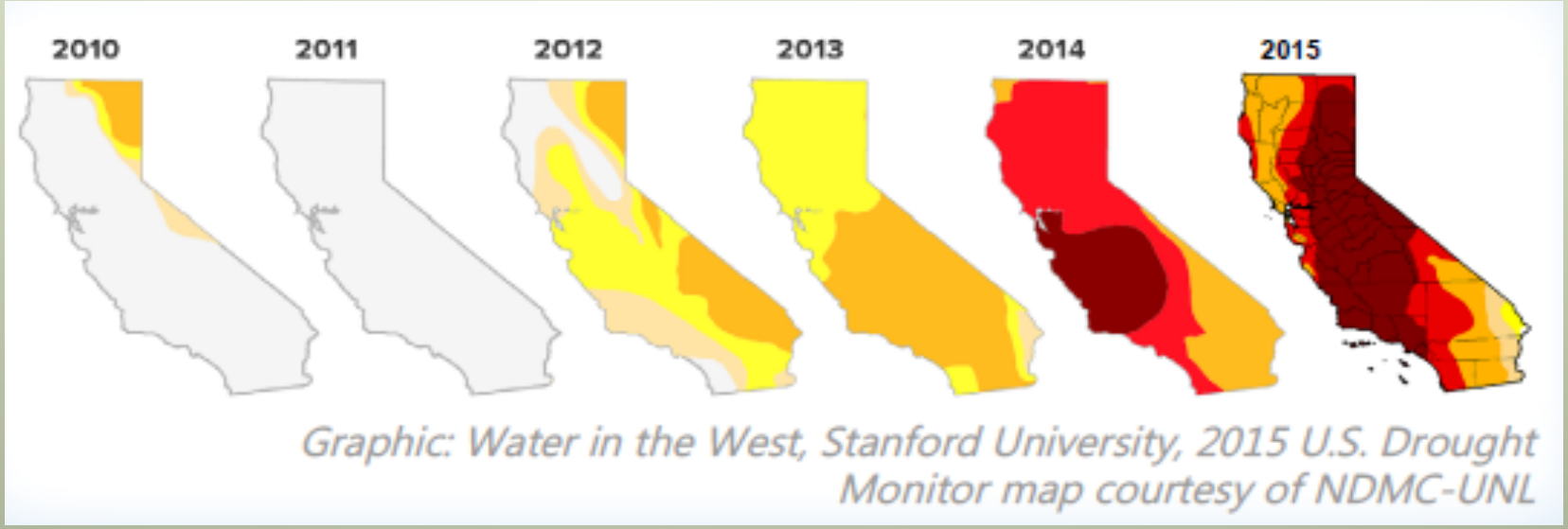
- visually mapped using a digital aerial sketch mapping system
- light fixed-wing aircraft
- ~ 1,000 ft. above terrain

http://www.fs.usda.gov/detail/r5/forest-grasslandhealth/?cid=fsbdev3_046696

Jeff Moore – ADS Program Manager

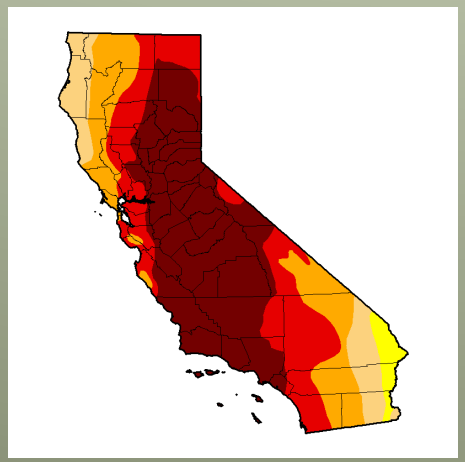
U.S. Drought Monitor

2010-current

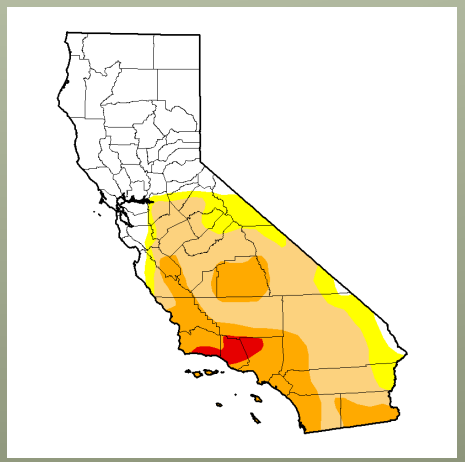


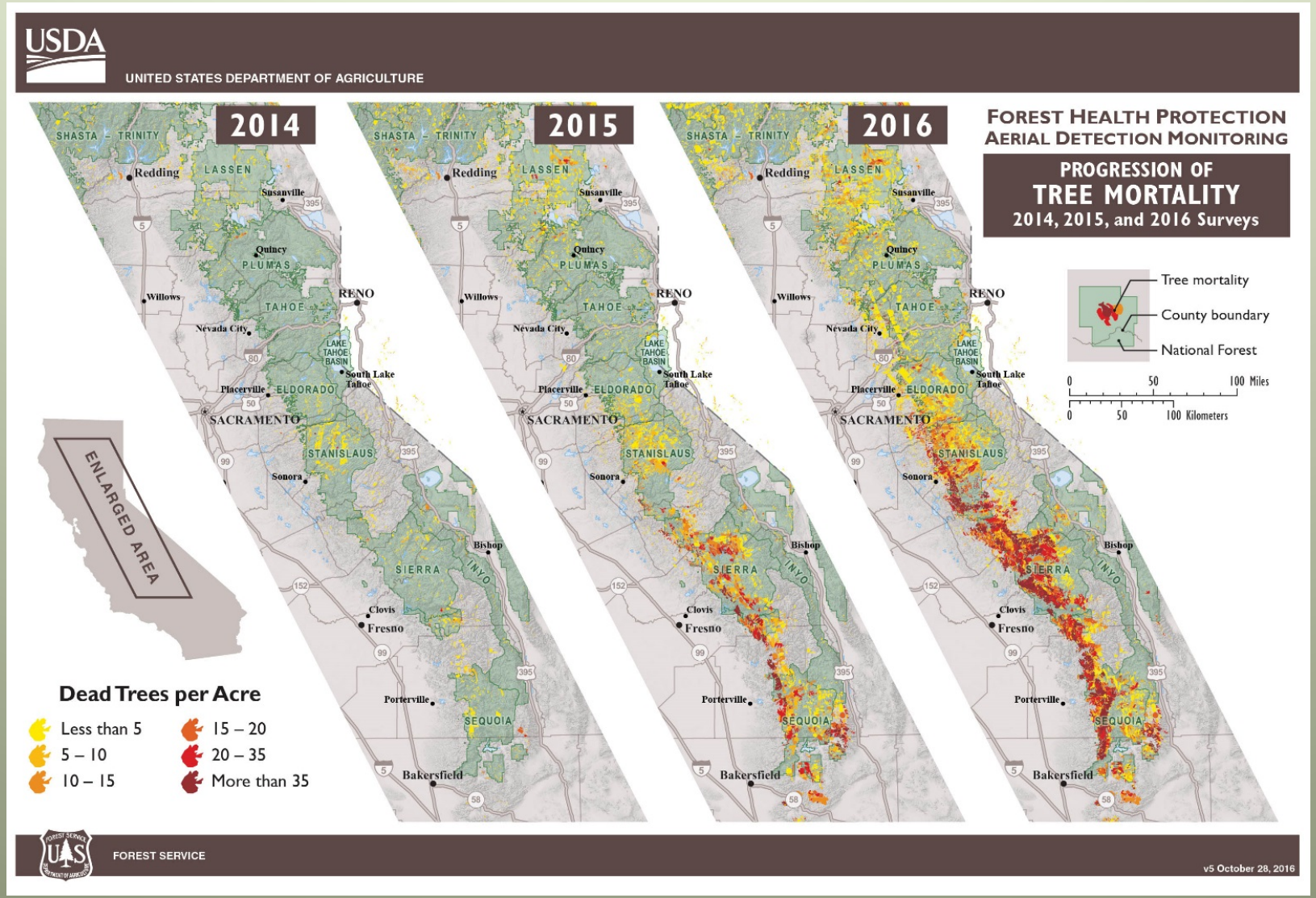
Graphic: Water in the West, Stanford University, 2015 U.S. Drought Monitor map courtesy of NDMC-UNL

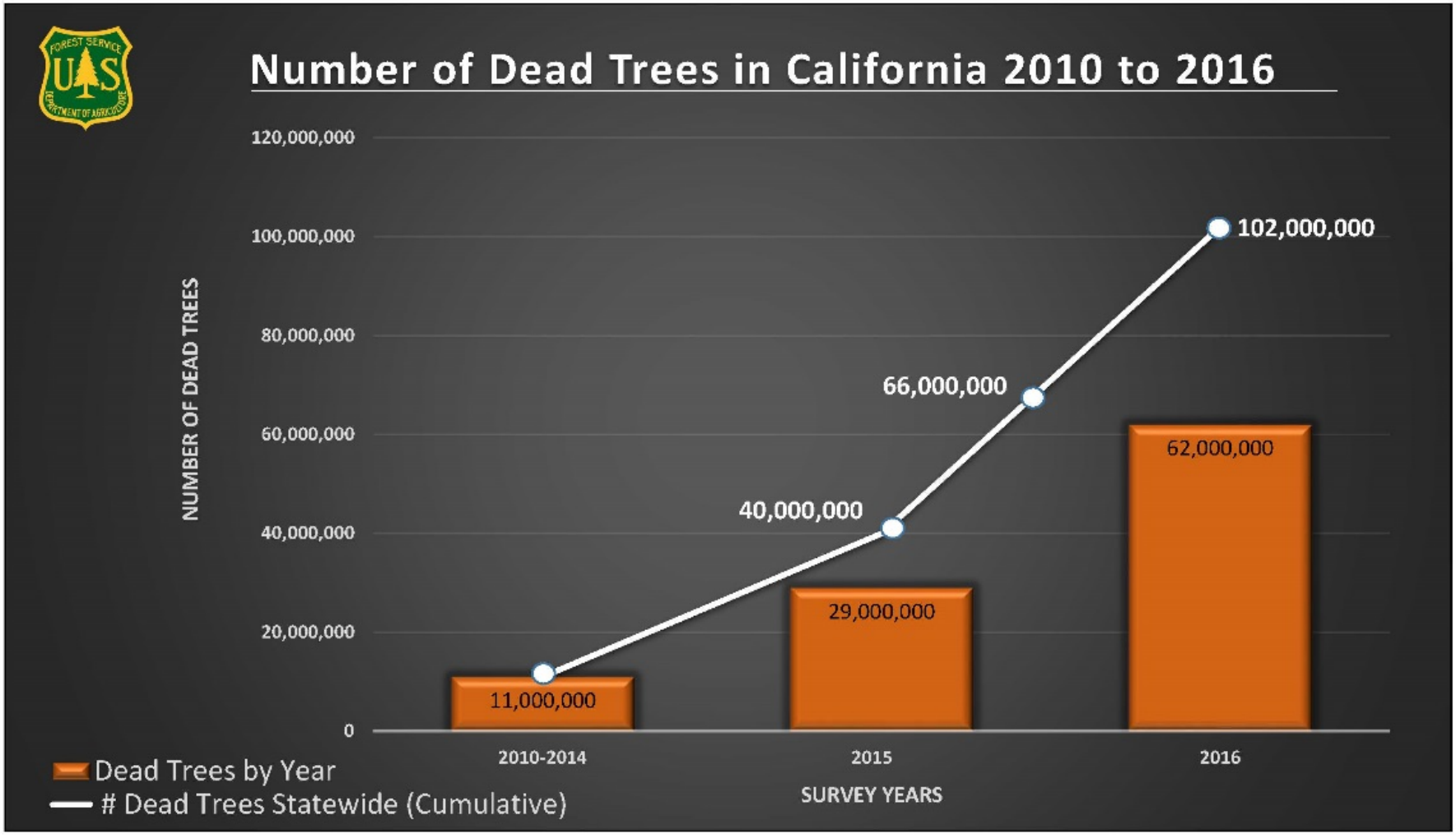
2016



2017-to date




USDA
UNITED STATES DEPARTMENT OF AGRICULTURE
2014
2015
2016
FOREST HEALTH PROTECTION
AERIAL DETECTION MONITORING
PROGRESSION OF
TREE MORTALITY
2014, 2015, and 2016 Surveys
Tree mortality
County boundary
National Forest
0 50 100 Miles
0 50 100 Kilometers
ENLARGED AREA
Dead Trees per Acre
Less than 5
5 – 10
10 – 15
15 – 20
20 – 35
More than 35
SHASTA
TRINITY
LASSEN
PLUMAS
TAHOE
LAKE TAHOE BASIN
ELDORADO
STANISLAUS
SIERRA
INYO
SEQUOIA
Redding
Susanville
Quincy
Willows
RENO
Nevada City
South Lake Tahoe
Placerville
SACRAMENTO
Sonora
Bishop
Clovis
Fresno
Porterville
Bakersfield
FOREST SERVICE
v5 October 28, 2016


Number of Dead Trees in California 2010 to 2016
120,000,000
100,000,000
80,000,000
60,000,000
40,000,000
20,000,000
0
NUMBER OF DEAD TREES
102,000,000
66,000,000
62,000,000
40,000,000
29,000,000
11,000,000
2010-2014
2015
2016
SURVEY YEARS
Dead Trees by Year
Dead Trees Statewide (Cumulative)

Summary of mortality on NFS lands in the Sierra Nevada Range from 2010 through September 2016 as mapped by ADS

National Forest	Acres			Proportion of Unit Affected
	NFS Lands	Mortality	Unaffected	
Eldorado	611,754	219,587	392,167	36%
LTBMU	152,186	21,195	130,991	14%
Sequoia	1,114,345	594,331	520,014	53%
Sierra	1,316,506	695,963	620,543	53%
Stanislaus	899,193	376,706	522,487	42%
Tahoe	843,025	177,667	665,358	21%
Total	4,937,008	2,085,448	2,851,560	42%
South Sierra Forests (3S)	3,330,043	1,666,999	1,663,239	50%

Native Bark Beetles
Primary tree killers in CA forests

- **Western pine beetle**
- **Mountain pine beetle**
- **Jeffrey pine beetle**

Fir engraver beetle

Prevention of conifer tree mortality

- Reducing tree density
- Insecticide applications for high value trees
- Supplemental watering
- Semiochemicals

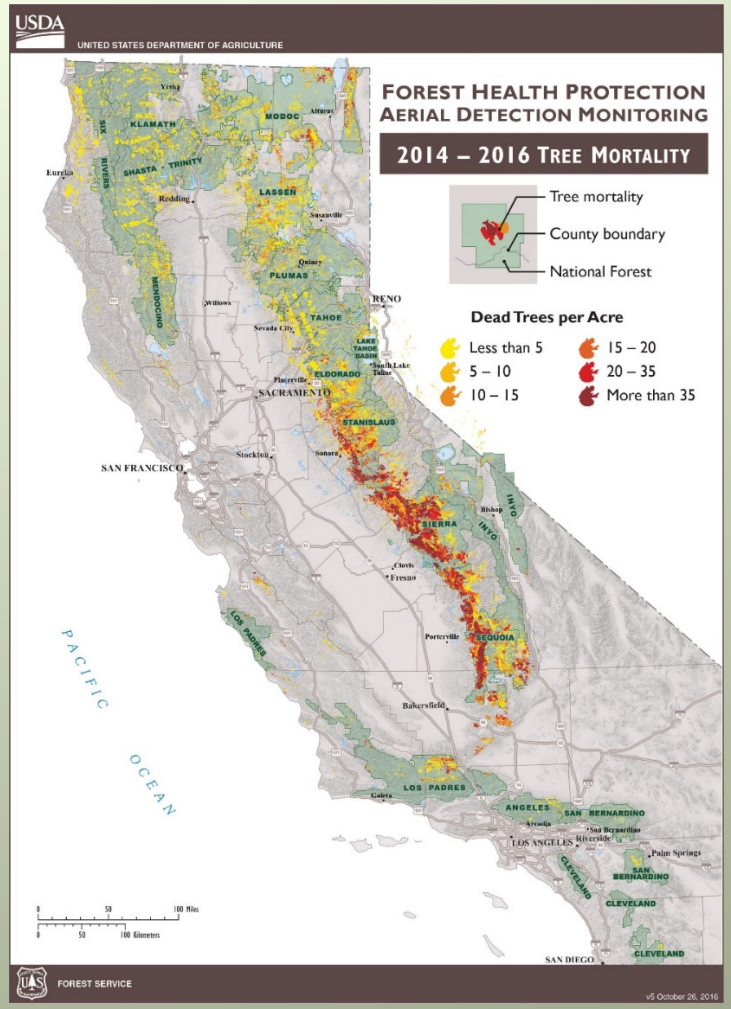
High levels of sugar pine mortality – Sequoia NF

State Task Force

- Governor's State Tree Mortality Task Force
  - Task Force Working Groups
    - Forest Health and Resilience
    - Mapping and Monitoring
    - Prescribed Fire
    - Public Outreach
    - Regulations
    - Resource Allocation
    - Utilization-Bioenergy
    - Utilization-Market Development
  - Ensuring a unified and strategic response approach
  - Totals All Agencies 423,000 trees mitigated, 51,000 miles of roads and powerlines, 26,000 acres treated.

Impacts

- 7,500 miles of road on NFS lands (58%)
- 2,300 miles of non-motorized trails (36%)
- 340 miles of powerlines (45%)
- 485 recreation sites (45%; includes recreation residence tracts)
- 140 communities within and adjacent to NFS lands (43%)
- Wildlife habitat
- Increase in fuel loading



USDA FS reprioritized $43 million; CALFIRE has expended over 80,000 hours of staff time and redirected/focused $10.2 million; CALTRANS - $56 million (anticipating $150-200 million more over next 2-3 years; utility companies - $ millions; County budgets heavily impacted

Utilization

The Forest Service's strategy encourages utilization of dead trees for processing at forest product or biomass power facilities.

So Cal NFS

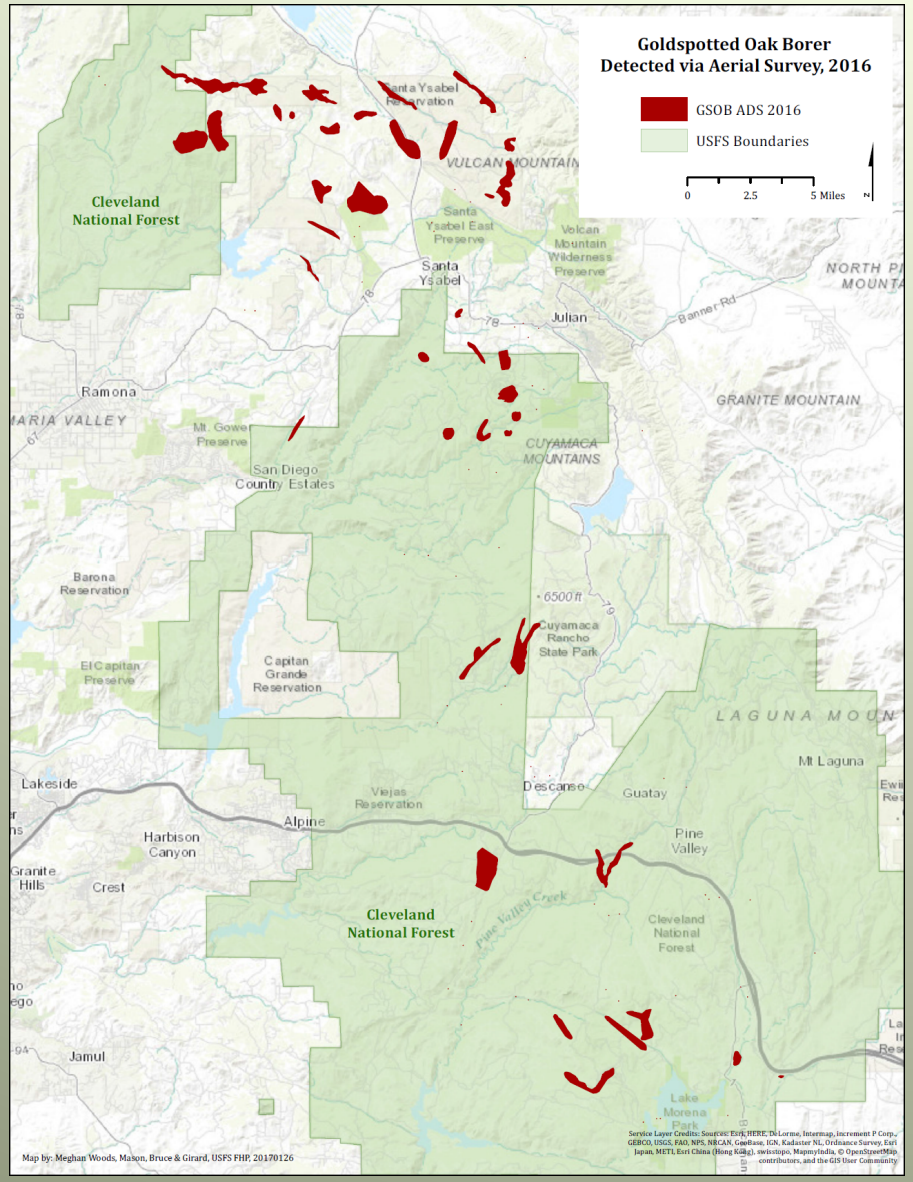
Number of dead trees as detected by ADS

National Forest	2014	2015	2016	TOTAL
Angeles	14,000	50,000	27,000	91,000
Cleveland	1,500	27,000	3,000	31,500
Los Padres	284,000	80,000	260,000	624,000
San Bernardino	2,700	45,000	15,000	62,700
			TOTAL	809,200

Jeffrey pine mortality, Los Padres NF

Jeffrey pine mortality, Tehachapi Range near Twin Lakes

pinyon pine mortality, north of Mt. Pinos, Los Padres NF



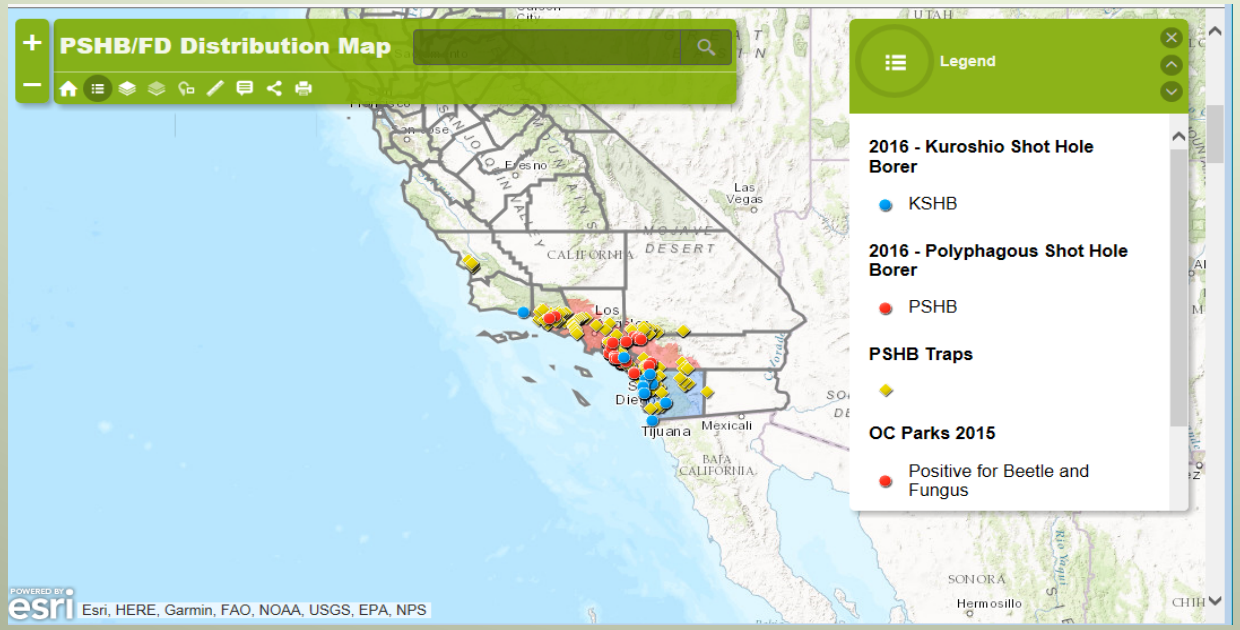
goldspotted oak borer

7,300 acres with mortality (2016 ADS)
10,800 of dead trees (2016 ADS)
More site specific ground surveys

- Wildlife habitat
- Cultural significance
- Property values/replanting $
- Loss of shade
- Recreation
- Fuel loading
- Hazard trees
- Utilization issues

- San Diego, Orange, Riverside, Los Angeles Counties (Angeles, Cleveland and San Bernardino NFs)
- Kills coast live oaks and CA black oaks; IPM options available; movement in infested material

Polyphagous and Kuroshio Shot Hole Borers (*Euwallacea* sp.)



PSHB: Los Angeles, San Bernardino, Riverside, Ventura, Orange Counties

KSHB: San Diego, Orange, Santa Barbara Counties; San Luis Obispo County (1 beetle/trap)

- transmit *Fusarium* sp.
- Tijuana River Valley: >280,000 willows infested – highest in units that were wet (Boland 2016)
- movement in infested material
- altered forest structure; impacts to riparian areas, wildlife, migratory songbirds, etc.
- Increases fuel loading/hazard trees
- invasive plants establishing/spreading
- high cost of tree removal/re-planting
- utilization issues
- work continues on IPM tools

Thank you!

- Jan Gonzales
- Others that organized the workshop
- Kevin Turner and Tom Scott
- Sabrina Drill
- Akif Eskalen and Richard Stouthamer
- John Kabashima
- Anabele Cornejo
- All partners combating invasive species in So Cal

USDA is an equal opportunity employer and provider.