



# **Firewood movement: A threat to California's forests**

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Sidebar photographs courtesy of CA Dept of Food and Agriculture (CDFA)

# Background

- ▶ Summer 2002: Interstate movement of firewood implicated in rapid spread of emerald ash borer in northern Midwest.
- ▶ November 2009: Forest Service Washington Office “encourages” Regions to investigate potential effects of firewood movement on forest health, need for policies, etc.
- ▶ April 2010: Pacific Southwest Region Forest Health Protection staff creates a firewood team to investigate the issue.
- ▶ May 2010: Firewood team drafts action plan, which includes conducting a risk assessment based on available data.



# Risk Assessment Questions

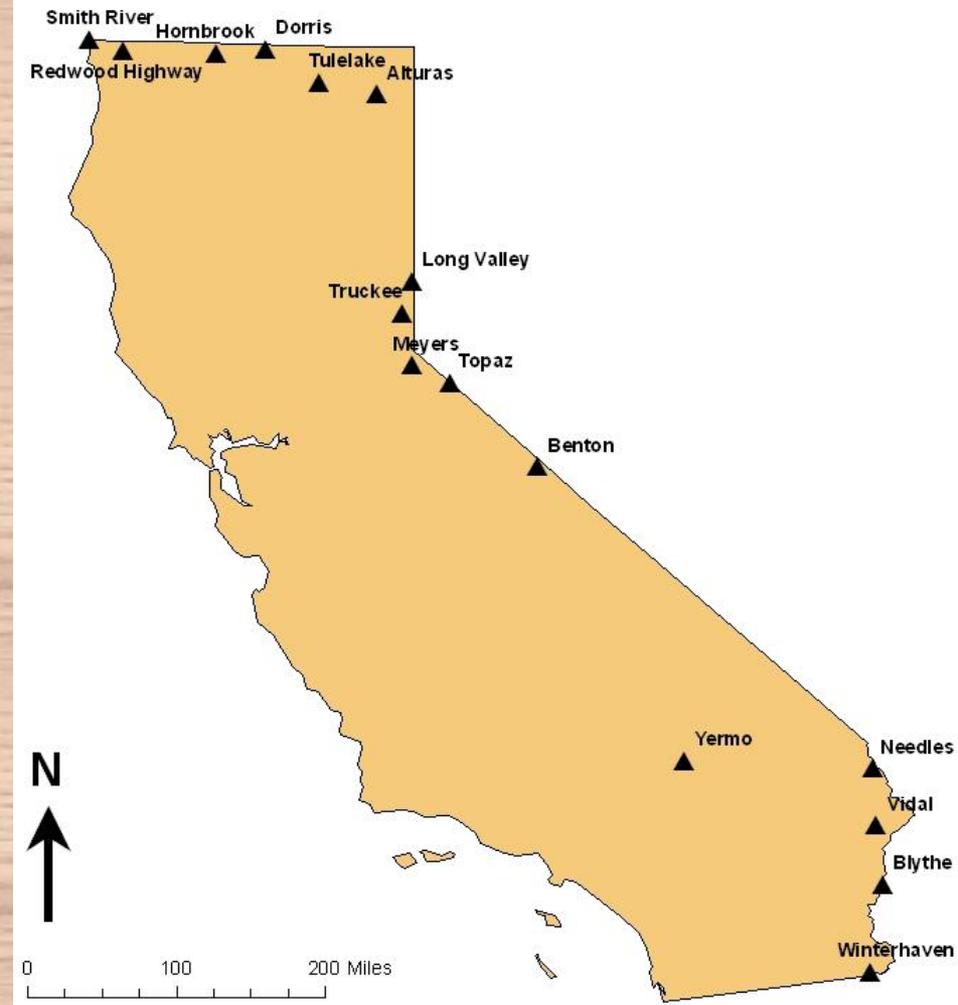
- ▶ Determine how much firewood is entering the state.
- ▶ Determine from where the firewood is coming, and where it's going.
- ▶ Determine what potential forest pests have been intercepted on firewood entering the state and their origins and destinations.
- ▶ Investigate the potential threat to CA forests and parks from pests transported on or in firewood.





# Data

- ▶ Firewood survey forms filled out at CDFA border stations whenever inspected, 2008-2010.
  - Quantity, origin, destination, presence of potential pests.
  - ID # of Pest Detection Report if filed.



- ▶ 1990-2010 Pest Detection Reports in CDFA database. Queried all border station records either referenced in firewood surveys, or where firewood named as host. Recorded taxon (identified to family), origin, destination.

# Key Findings – Firewood Surveys

- ▶ Over 22 million pounds of wood recorded between 2008 and late-2010. Hornbrook, Alturas, Redwood Highway top entry points.
- ▶ Wood arrived from 43 states, Canada, and Mexico; 93% coming from OR, CA, Canada, NV.
- ▶ 85% of all wood bound for a CA destination.
- ▶ 6% of all wood was in commercial loads bound for Reno, NV.
- ▶ Wood in commercial vehicles generally travels further than wood in private vehicles within the state; 95% of private wood travels less than 200 miles whereas 46% of the commercial wood travels between 200 and 400 miles.



# Key Findings – Firewood Surveys

- ▶ Out of 371 loads of firewood that generated a PDR, only 1 was in a commercial vehicle.
- ▶ A load of firewood arriving from out-of-state was almost 10 times more likely to generate a PDR, a statistically significant result ( $X^2 = 116.88$ ;  $df = 1$ ;  $p = 0.000$ )
- ▶ A load of firewood arriving from a non-adjacent state was over 3 times more likely to generate a PDR, also a statistically significant result ( $X^2 = 139.51$ ;  $df = 1$ ;  $p = 0.000$ )



# Key Findings – Pest Detection Reports

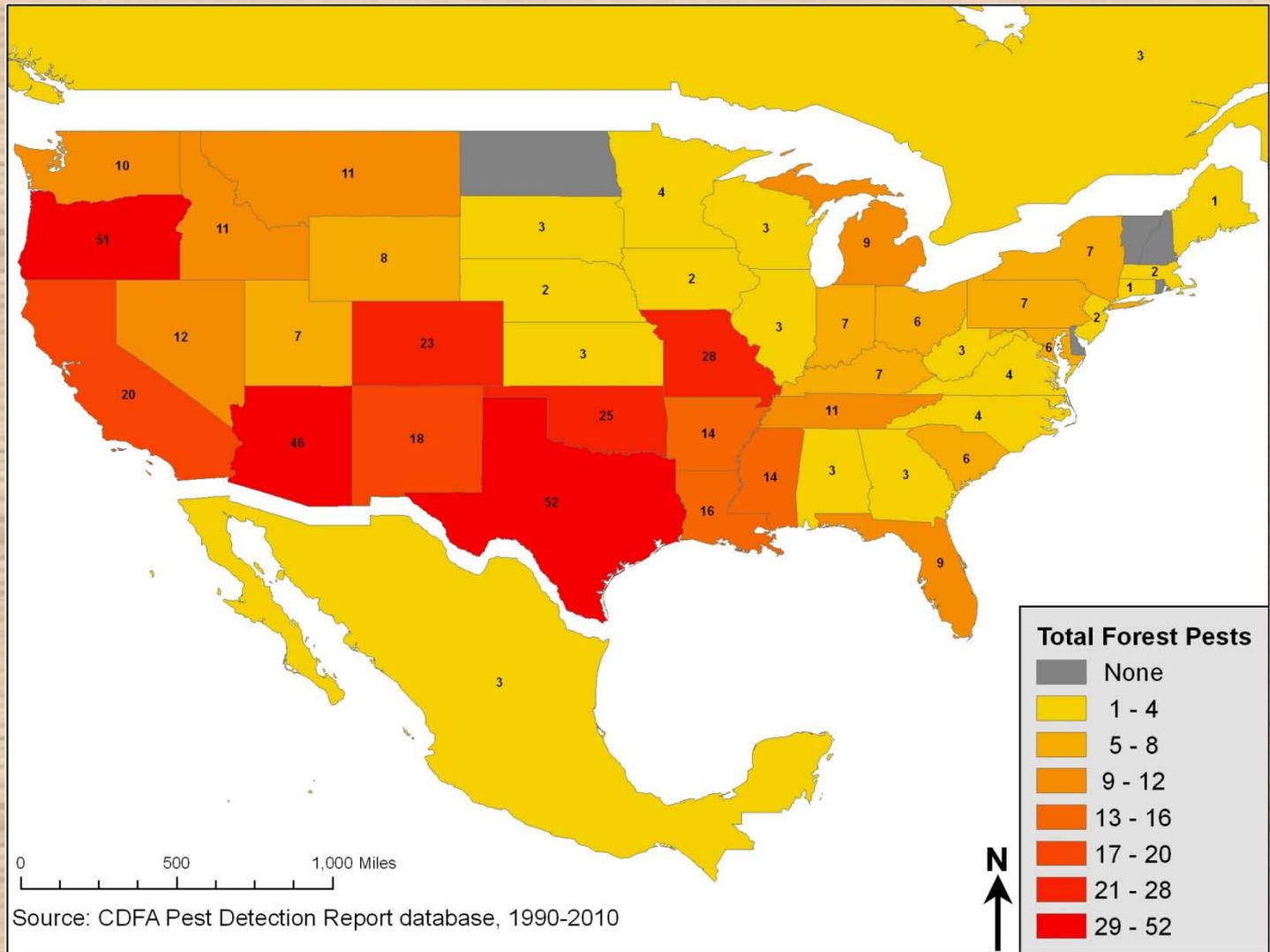
- ▶ PDRs generated on firewood from 46 states, Canada and Mexico.
- ▶ 497 potential forest pests were intercepted on firewood between 1990 and 2010; 79% of them in the last three years.

- ▶ 91% of the intercepted potential forest pests were beetles.

Potential Forest Pests	Total
<b>COLEOPTERA</b> (beetles)	
<b>BUPRESTIDAE</b> (wood borers)	105
<b>CERAMBYCIDAE</b> (longhorn beetles)	247
<b>SCOLYTINAE</b> (bark beetles)	93
<b>HEMIPTERA</b> (true bugs)	
<b>MARGARODIDAE</b> (scale bugs)	2
<b>ISOPTERA</b> (all families) (termites)	29
<b>LEPIDOPTERA</b> (butterflies and moths)	
<b>LASIOCAMPIDAE</b> (tent caterpillars)	7
<b>LYMANTRIIDAE</b> (gypsy/tussock moths)	12
<b>TORTRICIDAE</b> (leafrollers/budworms)	2
<b>Total</b>	<b>497</b>

# Key Findings – Pest Detection Reports

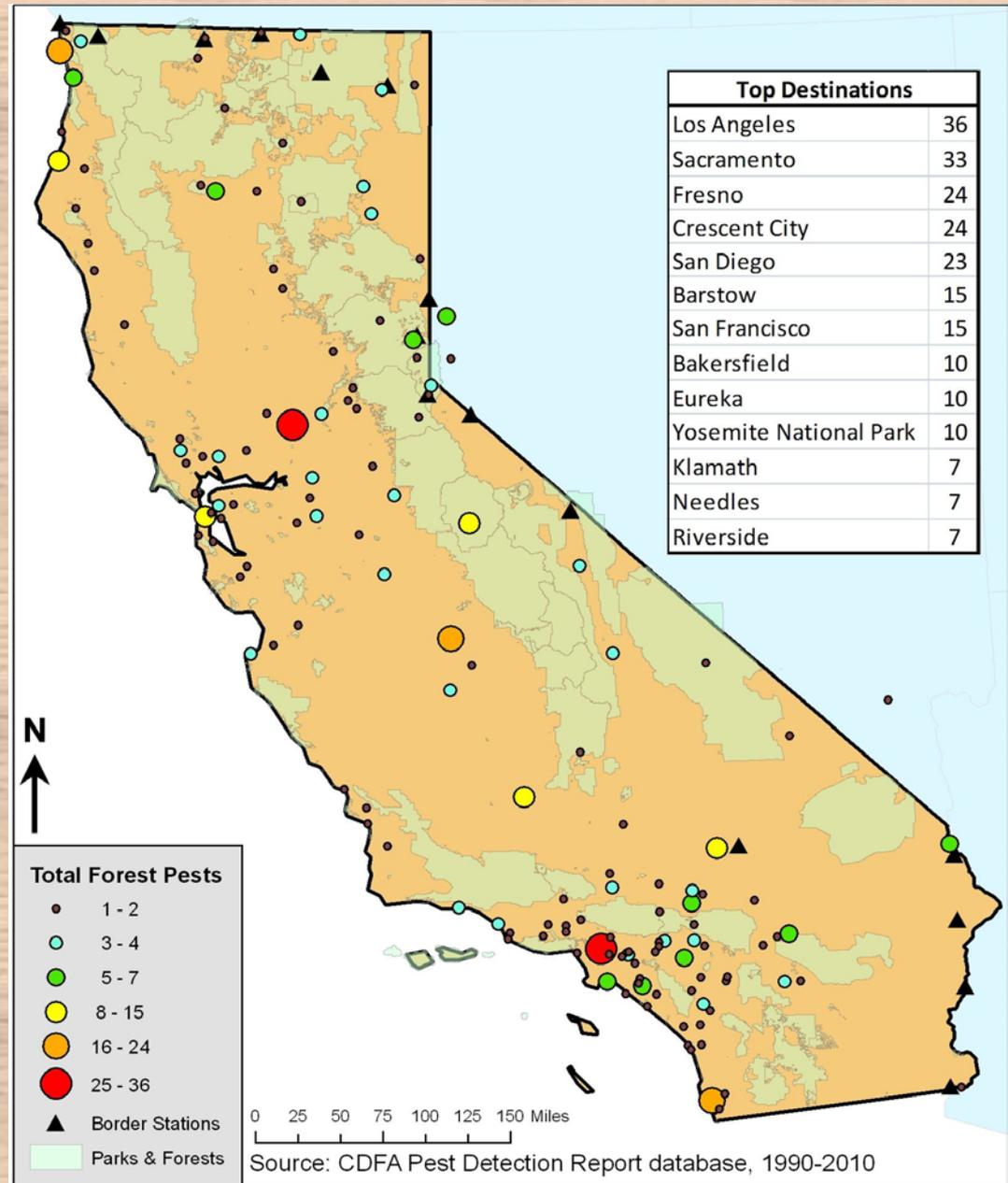
Potential forest pests came from 43 states, Mexico and Canada; 49% of them entered the state at Needles.



Source: CDFA Pest Detection Report database, 1990-2010

# Key Findings – Pest Detection Reports

Firewood with potential forest pests was traveling to 155 different destinations. Major CA cities and Yosemite NP were among the most common.



# Potential threat to CA forests and parks from pests transported on or in firewood

99.8% of California's land area is within 50 miles of a National or State Park or Forest.

Any forest pest that enters the state is a potential threat to our parks and forests!

