Southern California's Collaborative Response to the Invasive Shot-Hole Borers in the Absence of Regulation or Significant Funding

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Invasive Shot-Hole Borers (ISHB)/Fusarium Dieback (FD)

ISHB and FD are non-regulated pests (B rated) = No Quarantine

- APHIS NPAG classified: No Action – Non Reportable
- County Ag Commissioners ill-equipped to regulate w/o State & Federal Funding

In the absence of regulatory authority, outreach and education became the focus to reach out to agriculture, and public and private tree owners.

May eventually affect agriculture and more than 137 tree species are at risk of attack (64 confirmed as reproductive hosts, and counting…)

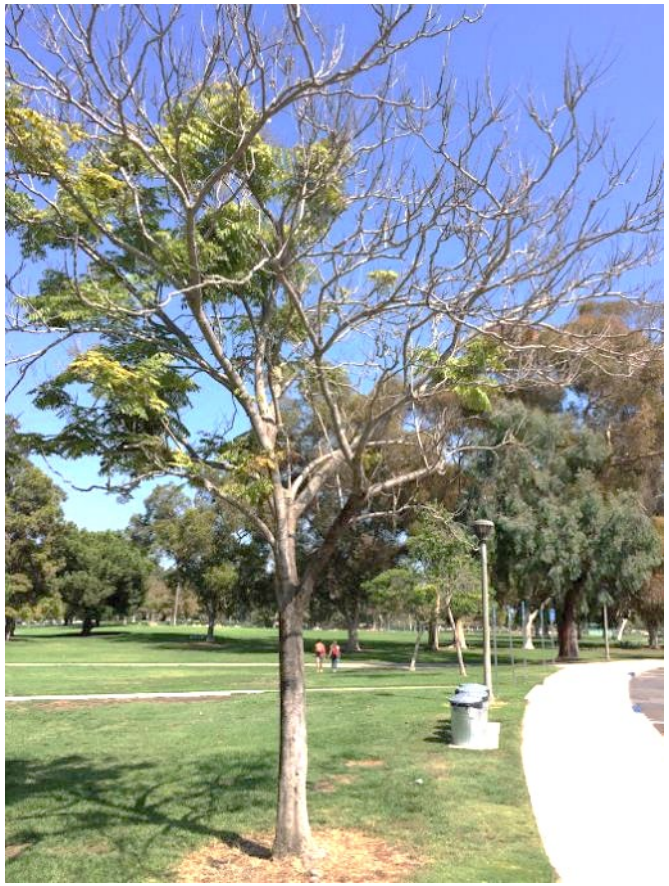
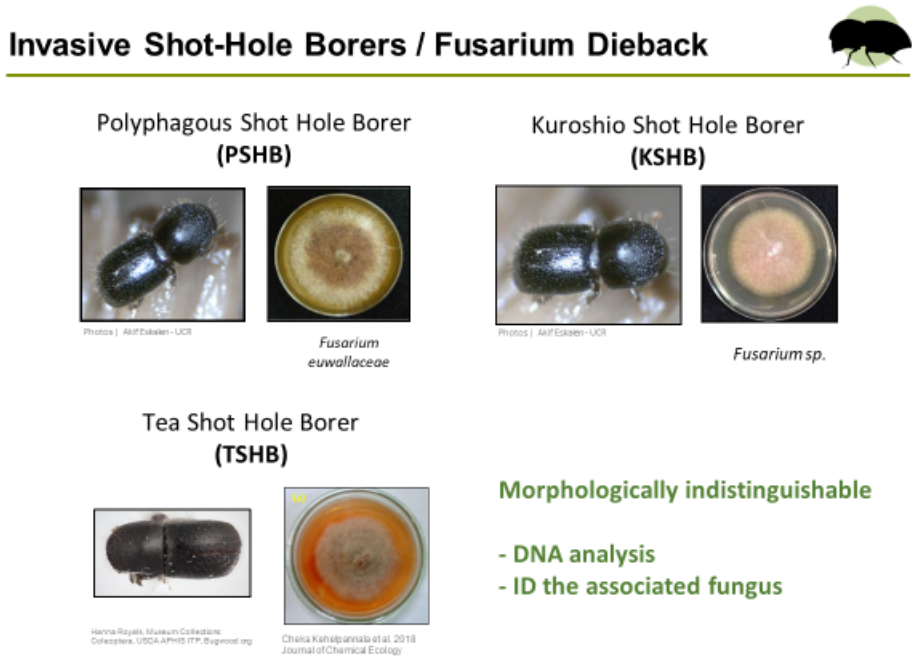


Photo | Beatriz Nobua-Benhrmann – UCCE Orange

Making Your Entrance



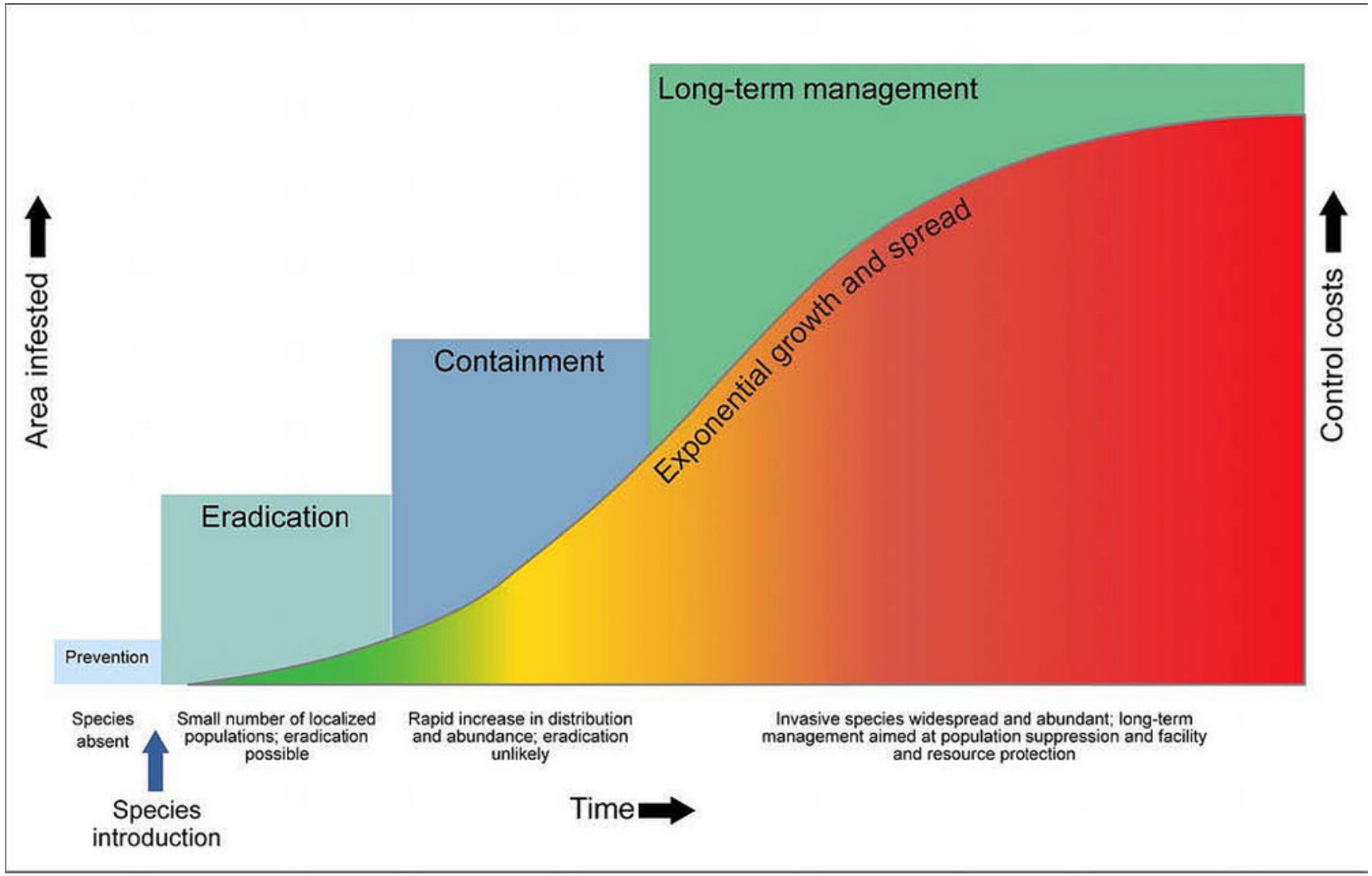
- Blend in with a crowd, preferably a really big crowd, like wood boring pests from Asia that travel in solid wood packing material.
- Have an Identical Twin that nobody is worried about.
- Synergize – a vector and a pathogen working together can amplify their damage and are harder to control.
- Divide and conquer – focus your attacks on separate opponents so they won't join forces against you.

Settling Into Your New Neighborhood

- Don’t disturb your new neighbors – initial impacts should be minimized. Attack a plant like Castor bean that nobody likes anyway. Limit the variety of victims to avoid alarming authorities.
- Party at home and mate with your siblings so you don’t need a pheromone that can be used to lure you into a trap.
- Don’t occupy the whole neighborhood at first. Quietly build up your population in a few urban trees before invading agriculture, riparian trees and native forests.
- Be an adventurous eater, just be selective. Try some new plants, but none that can afford to fight back hard enough to thwart your plan.
- Timing is everything – attack when your opponent least expects it and in overwhelming numbers.
- **Use the Stages of Grief to buy time, especially DENIAL**

Photos | Beatriz Nobua-Behrmann UCCE Orange

- Typically build up the population in one tree (amplifier trees) before invading the rest of the area



Sources: National Invasive Species Council; U.S. Department of Agriculture; National Park Service; U.S. Fish and Wildlife Service; Rodgers, L, South Florida Water Management District; Department of Primary Industries, State of Victoria, Australia; and GAO. | GAO-16-49

The Tijuana River Valley

Kuroshio Shot-Hole Borer/Fusarium Dieback impact on riparian habitat

The riparian forest at Dairy Mart Bridge before the beetle attack (May 2015).

Photos: John Boland, PhD/Southwest Wetlands Interpretive Association

The Tijuana River Valley

Kuroshio Shot-Hole Borer/Fusarium Dieback impact on riparian habitat

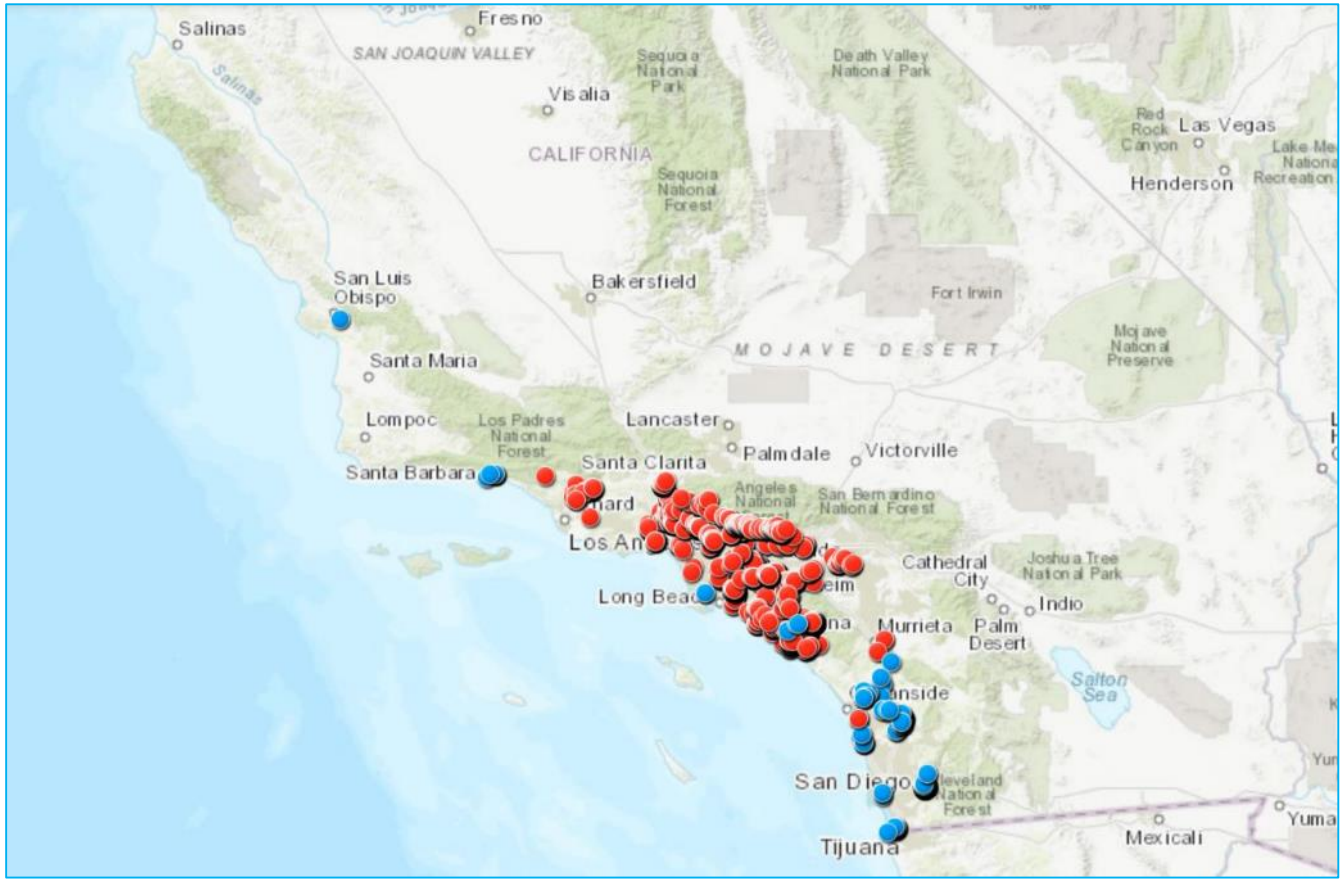
The forest at Dairy Mart Bridge after the beetle attack (February 2016).

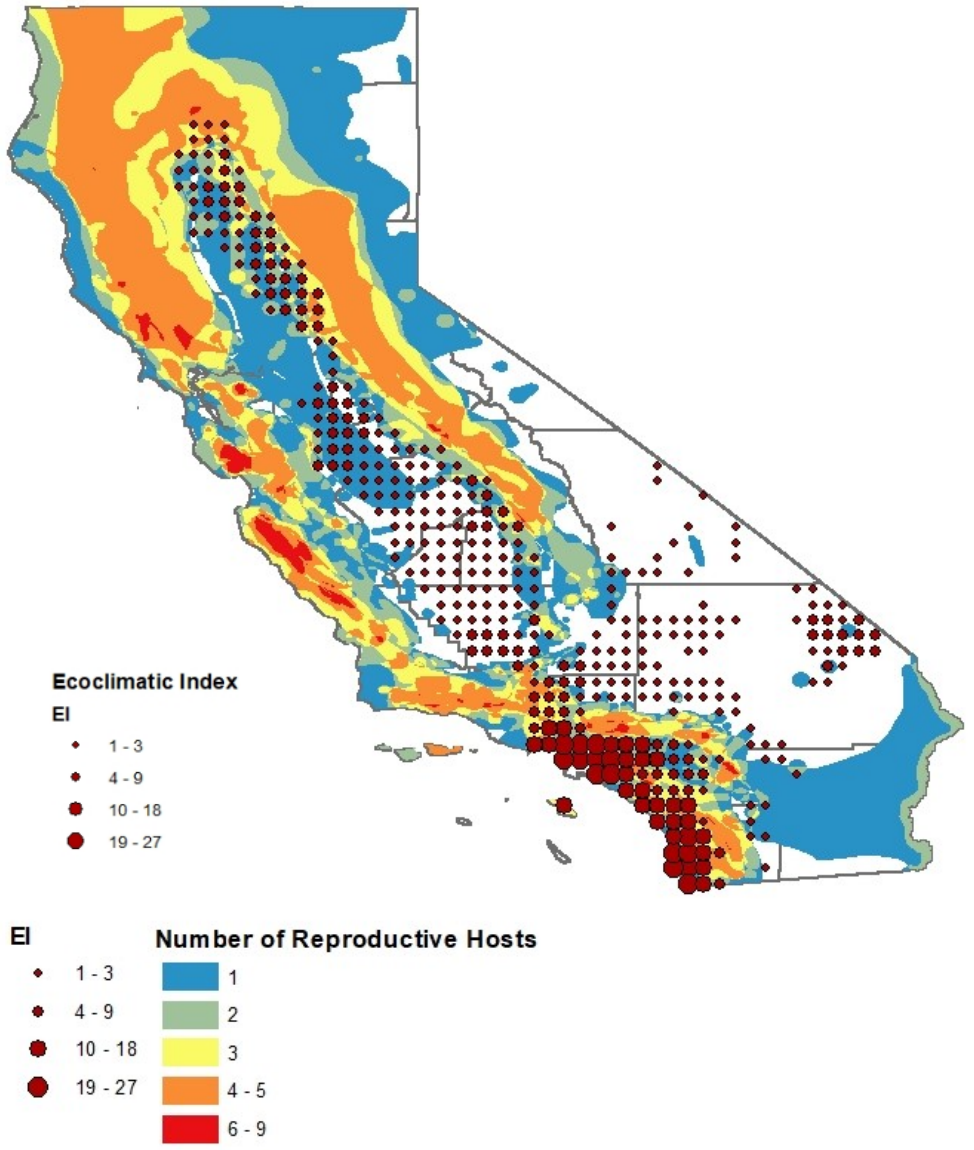
140,000 willow trees severely damaged; loss of ecological services such as endangered species habitat; fire and flood Hazard

Photos: John Boland, PhD/Southwest Wetlands Interpretive Association

What could happen if ISHB is not controlled?

Current Distribution in 2018 and Potential Spread in California



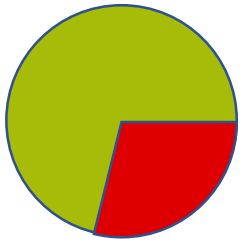


- 2003 initially introduced in Los Angeles County and misidentified as TSHB
- 2012 identified as Polyphagous SHB and Fusarium Dieback by UC Riveriside

Impact of Invasive Shot-Hole Borers

Credit: Luana Vargas – Forestry Images.org

- US Forest Service researcher* estimations:



70.8 Million total urban trees

23.2 Million especially at risk

Losing 50% of them will result in:

- Removal and replacement cost: ~ **$15.9 billion**
- Lost ecosystem services: **$616.8 million** annually or **$12 billion** over a 20-year life span.
- Health implications

Losing 80% of them will result in:

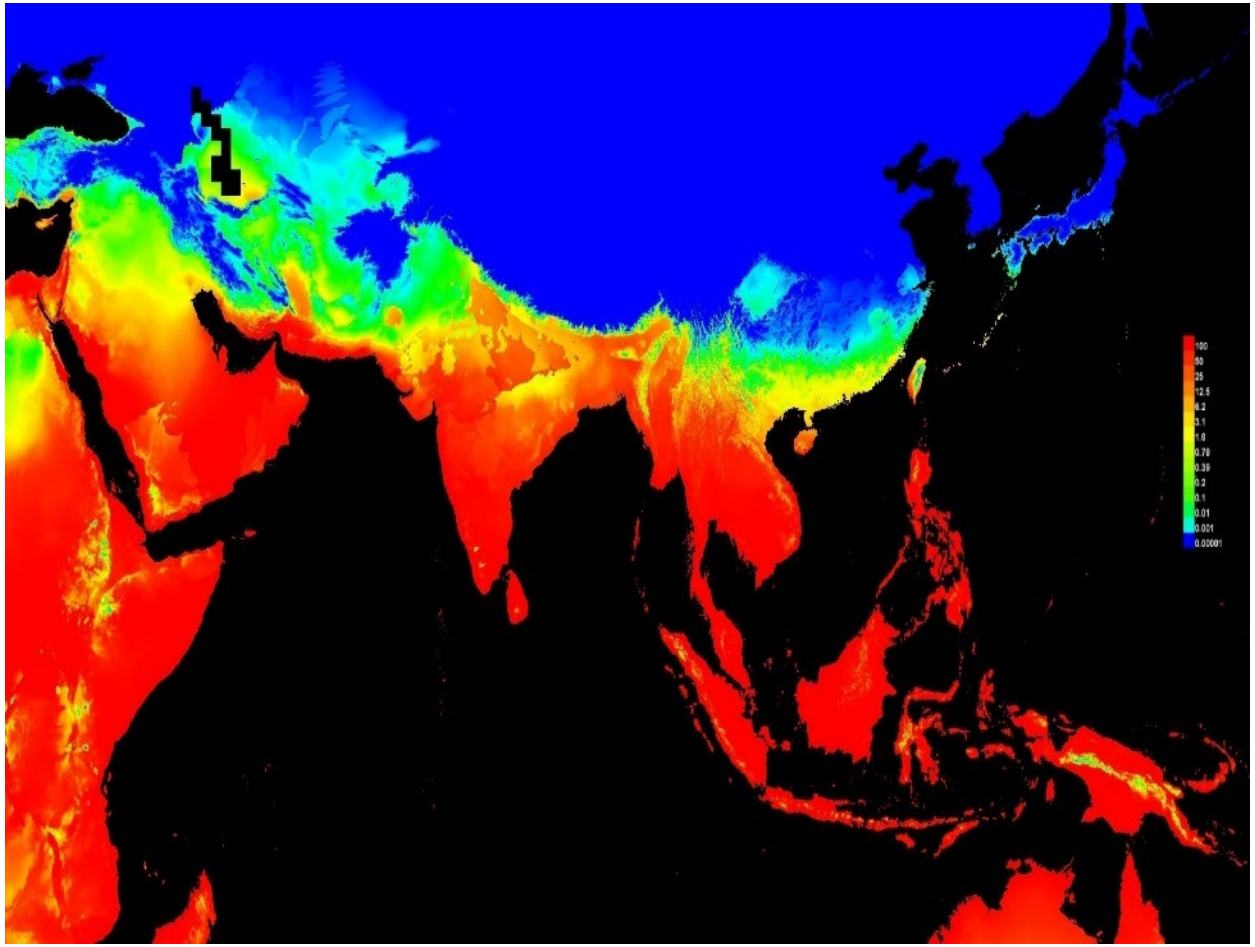
- Removal and replacement cost: aprox. $25.4 billion
- Lost ecosystem services valued at:

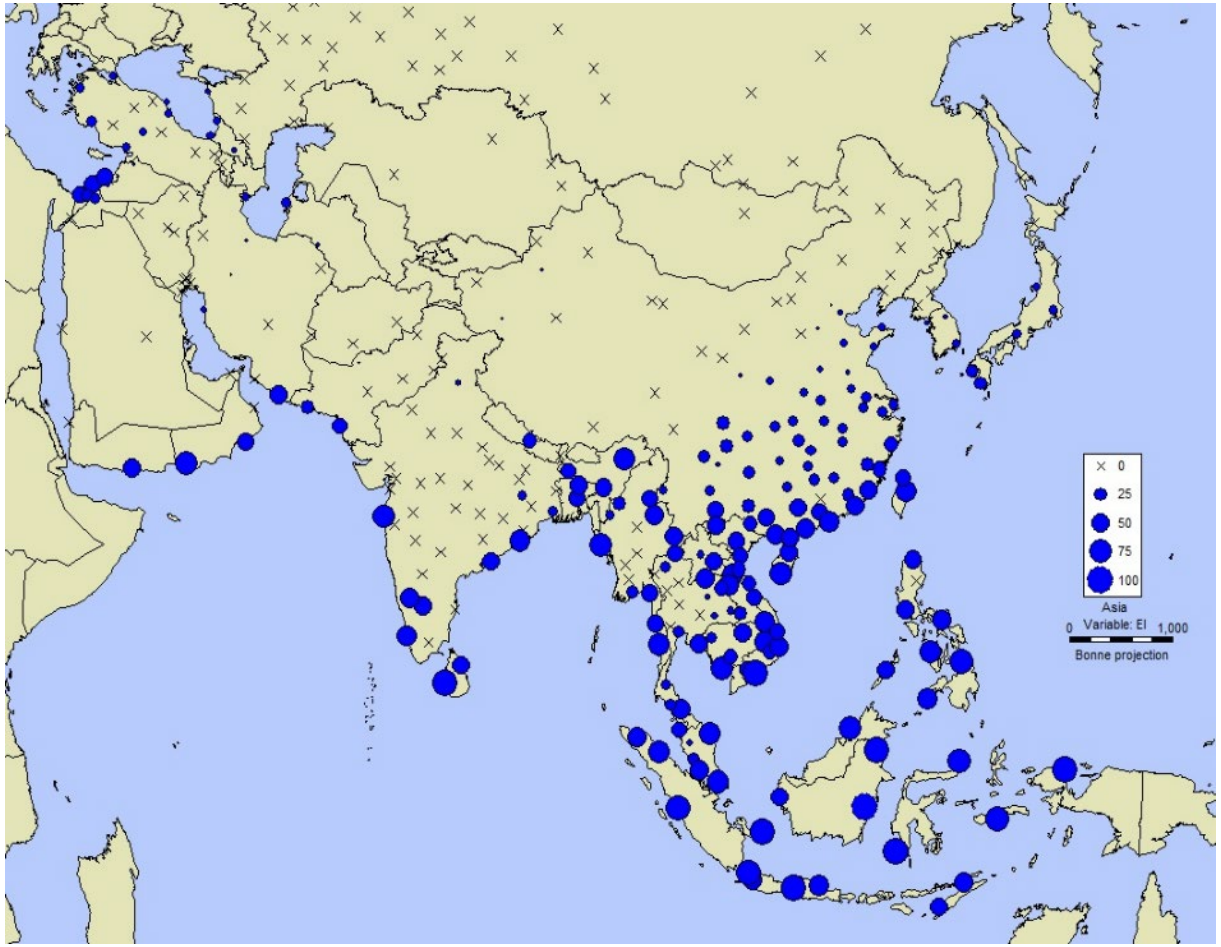
$987 million annually or
$20 billion over a 20-year life span.

- 100 Million trees at risk if moves into northern California
- Lack of Funding for a Coordinated Response because it is a “B” rated pest

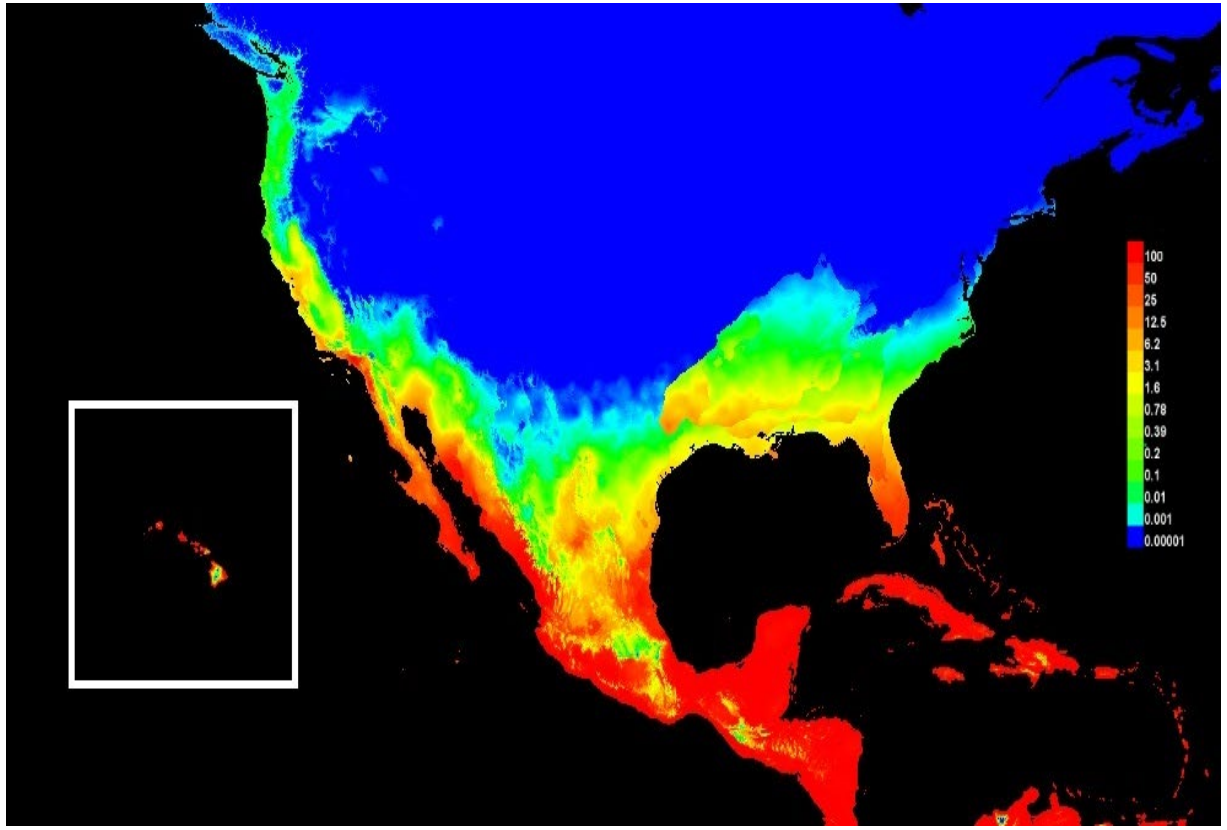
*E. Gregory McPherson,USDA Forest Service

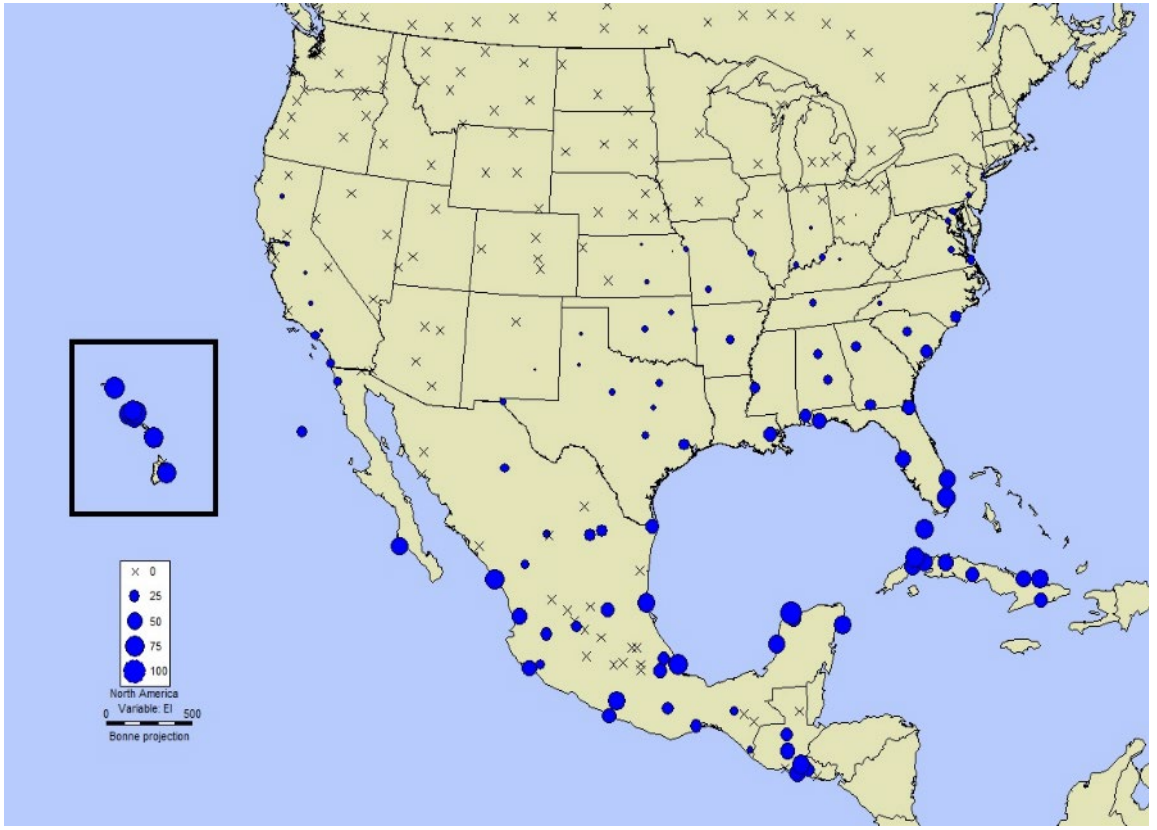
Native Distribution



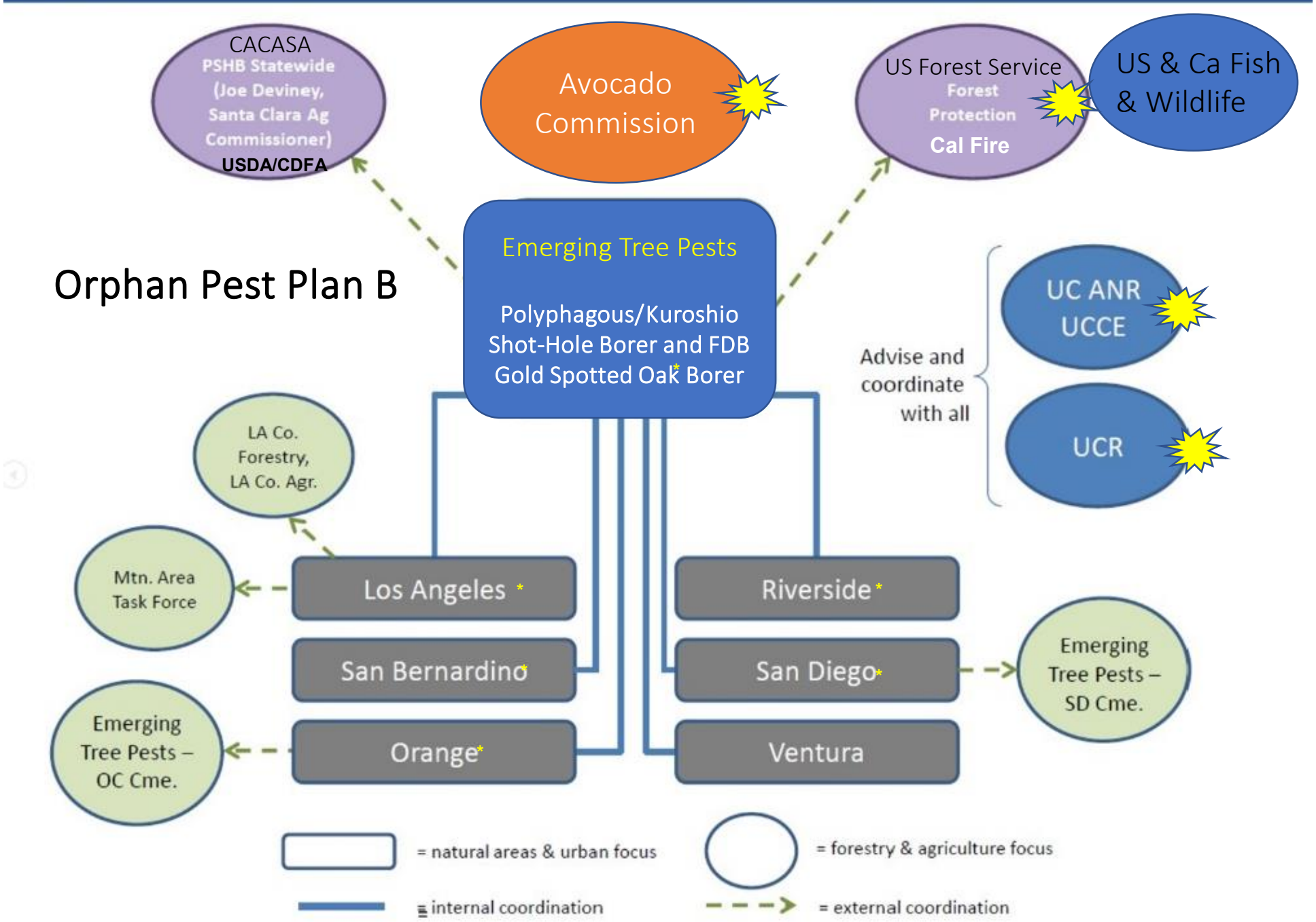


Potential US Distribution





Polyphagous Shot-Hole Borer is currently attacking trees in Israel and South Africa



Broad Coalition of Partners, Public and Private Addressing Orphan Pests

Collaborative Response in the Absence of Regulation or Significant Funding

Collaborative groups were in place and functioning before the Invasive Species Summit at the California State Capitol and the passage of State Assembly Bill AB 2470, funding and authorizing the Invasive Species Council of California and the California Invasive Species Advisory Committee.

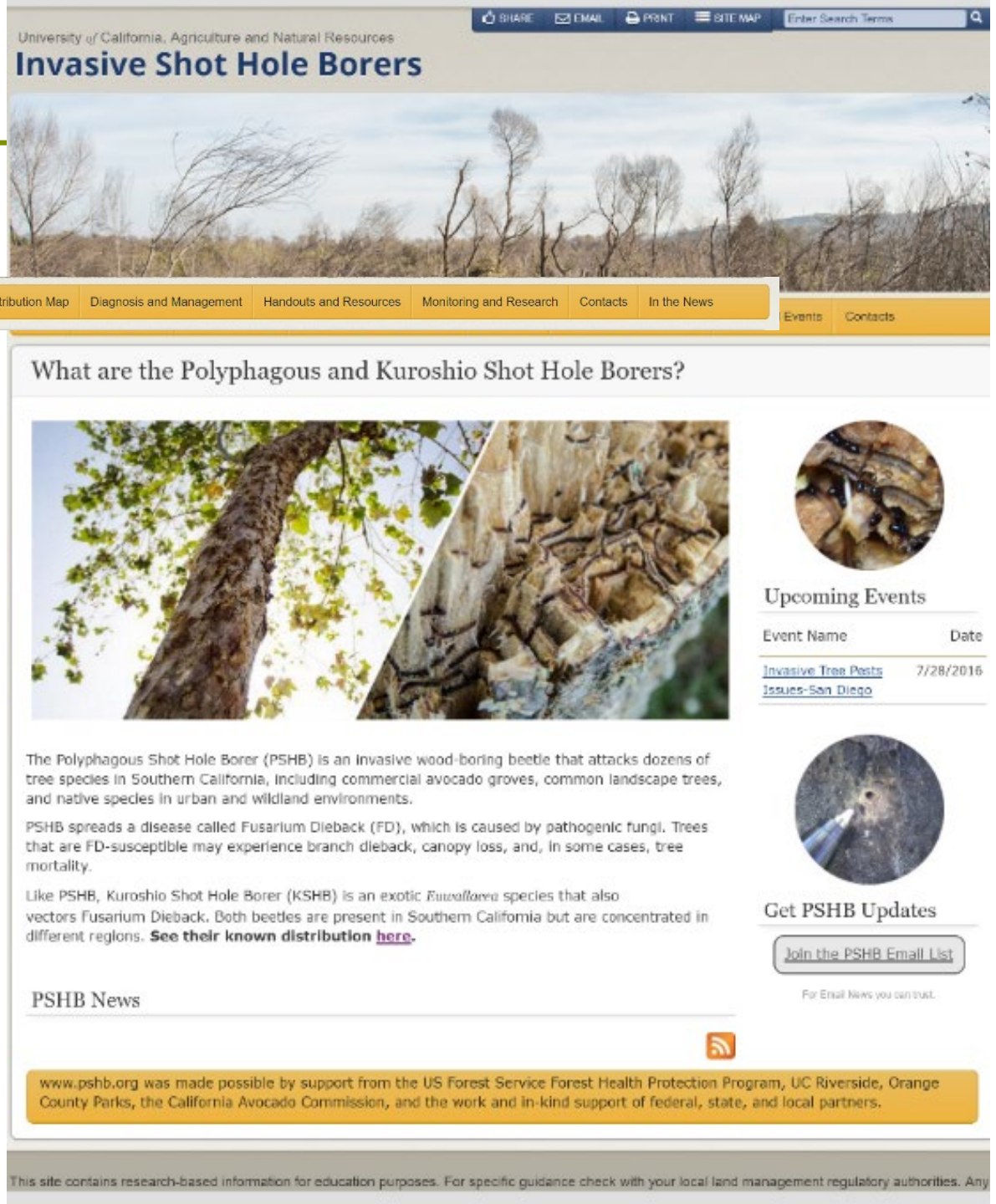
Recommendations from the Wise Sage, Kevin Turner

1. Engage local, state and federal agencies and universities w/responsibility or an interest.
2. Make private industry aware and seek their input.
3. Public outreach and education fosters awareness, concern, and involvement on multiple fronts.
4. Keep politicians informed.
5. Seek out local support:
    1. Fire Safe Councils
    2. Master Gardeners
    3. Other local and regional groups
6. Look for partners on the national stage
7. Take Advantage of every opportunity to spread the word (but not the pest!)

This information and MORE!

PSHB.ORG

https://ucanr.edu/sites/pshb/



Acknowledgements

Photo | Monica Dimson, UC Cooperative Extension

Akif Eskalen, Ph.D., UC Riverside

Tim Paine, Ph.D., UC Riverside

Richard Stouthamer, Ph.D., UC Riverside

Michele Eatough-Jones, Ph.D., UC Riverside

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Richard Demerjian, UC Irvine

Matt Deines, UC Irvine

OC Parks

California Avocado Commission

California Association of Nurseries and Garden Centers

Cal Fire

California Department of Fish and Wildlife

California Department of Food and Agriculture

Great Scott Tree Services

RPW Services Inc.

US Forest Service-Forest Health Protection

USDA Farm Bill and Specialty Crop Grants

West Coast Arborists