



How a non-native tree disease is threatening wildlife

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Sudden Oak Death (SOD)

caused by a non-native plant pathogen introduced via the nursery trade

Phytophthora ramorum





Silk
tassel



Bigleaf
maple

A few

Foliar Hosts



Coast
Redwood



Huckleberry



California
honeysuckle



Western
starflower

Photo gallery & more info at:

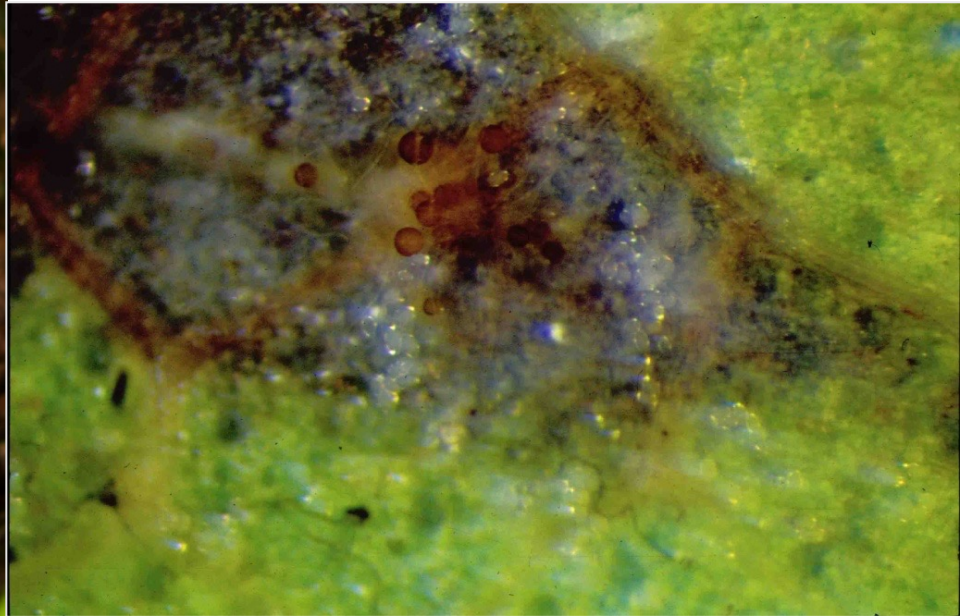
www.suddenoakdeath.org



California Bay laurel

(*Umbellularia californica*) leaves are very shiny and aromatic when crushed

- Where water hangs out the longest
- Irregular, jagged, pixelated dark lines
- Yellow halos
- Symptoms are very generic, the only way to know is to send samples to the lab





Oaks (*Quercus* sp.)

- Including coast live, Shreve, canyon live and black oak, NOT white oaks!!
- Red sap oozing from un-damaged bark
- Thinning canopies
- Trees with dead leaves



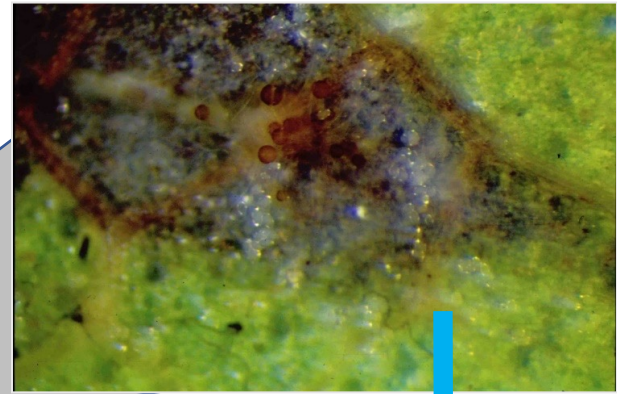


Tanoak

(*Notholithocarpus densiflorus*)

- Gets both trunk cankers and twig symptoms
- Can spread it and die from it, creating conservation challenges





Oaks do NOT infect other oaks!!

Why should we care?





Disease increases dead woody fuel in the forest



Increased woody debris leads to more intense fires



Higher soil burn severity

- Loss of nutrients
- Increased potential for erosion





Fewer trees survive

Micro-organisms & edible mushrooms



Ectomycorrhizal mushrooms live on the roots of oak trees. These special mushrooms aid in decomposition and fix nutrients for trees to use for growth.

Acorns feed many animals in our forests





Dusky-footed woodrat (*Neotoma fuscipes*)



Acorn Woodpecker (*Melanerpes formicivorus*)



Western Grey Squirrel
(*Sciurus griseus*)



Steller's Jay
(*Cyanocitta stelleri*)





Band-tailed pigeon
(*Patagioenas fasciata*)





Black-tailed deer

(Odocoileus hemionus columbianus)



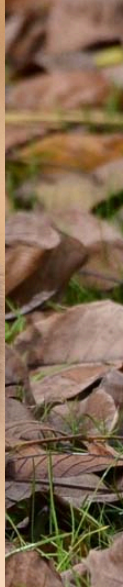


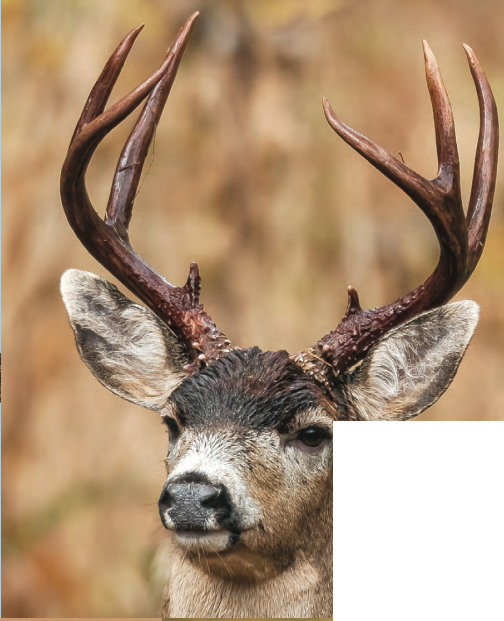
Black bear
(*Ursus americanus*)





Coyote
(*Canis latrans*)





Bobcat
(Lynx rufus)





Multiple Owl Species





Grey Fox
(*Urocyon cinereoargenteus*)





Cougar
(*Puma concolor*)

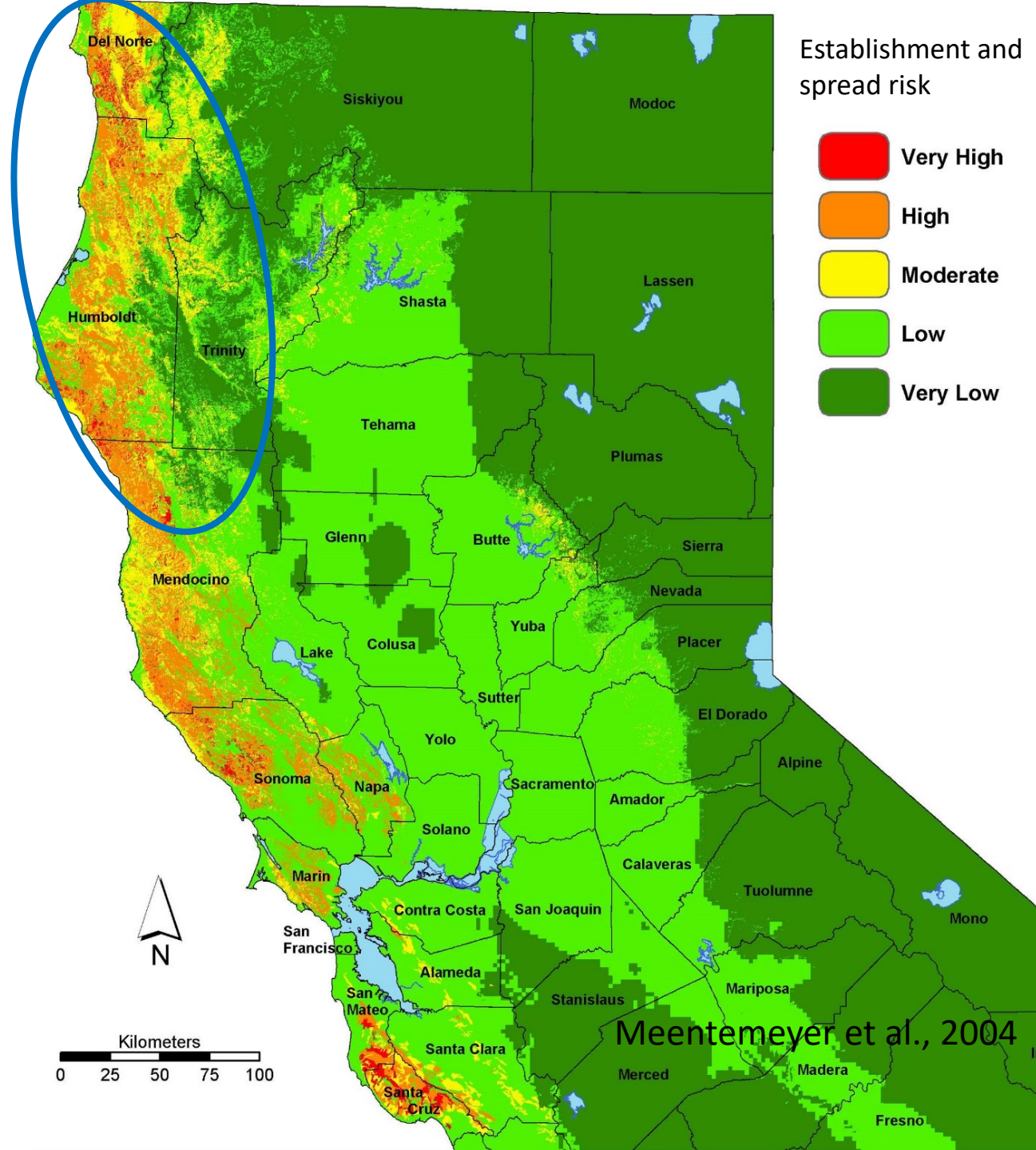


Mrs. Freddie (Hupa) processing acorns (1902). From the Phoebe A. Hearst Museum of Anthropology and the Regents of the University of California. Photograph by Pliny E. Goddard (Neg. No. 15-3329).

The Magnitude of Regional-Scale Tree Mortality Caused by the Invasive Pathogen *Phytophthora ramorum*

Cobb et al., 2020

“The pathogen *Phytophthora ramorum* has killed at least 48 million stems and infected about 150 million more since 1995, while about 1.8 billion remain at risk.”



What can YOU do?

Quarantine any new nursery purchases

Watch for foliar symptoms & don't plant anything that looks diseased



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What can **you** do?

Monitor the trees around you
Educate those around you



What can YOU do?

Manipulate the species composition

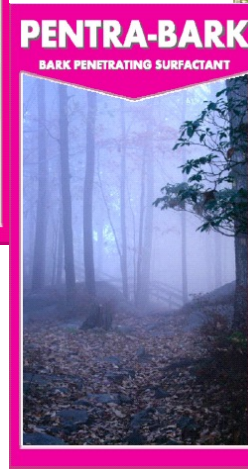
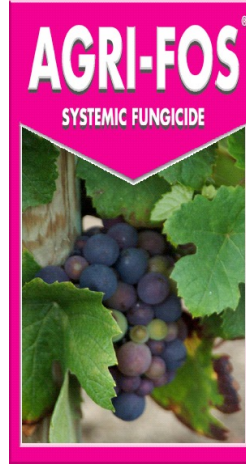
Selective Removal of Bay



- Oaks are infected by spores produced on leaves of California Bay laurel trees
- Selectively remove bay laurels around high value oaks
- Reduce overall bay density on property

What can YOU do?

Apply fungicides to individual trees



**Injection
Treatments**



Go to: SODBlitz.org

What can **you** do?

Prevent new introductions



Clean your shoes & gear before getting in the car to prevent disease **and** non-native species spread

What can YOU do?

Participate in the annual SOD Blitz!



Monterey County Sudden Oak Death Blitz

April 26th – April 30th

The Last
weekend
in April

Citizen Science while you hike.

Come help save your oak forest and contribute to information used to formulate management decisions at your home & throughout the State



Organized by the University of California Berkeley, Matteo Garbelotto Lab

www.sodblitz.org

Thanks to the
Monterey Regional Park District
for hosting!

