

# Foamy Bark Canker-Western Oak Bark Beetle

A. Eskalen<sup>1</sup>, S.C. Lynch<sup>1,2</sup>, S.Rooney-Latham<sup>3</sup>

<sup>1</sup> Department of Plant Pathology, UC Davis

<sup>1,2</sup> Department of Environmental Studies, UC Santa Cruz

<sup>3</sup> California Department of Food and Agriculture, Plant Pest diagnostic Lab.

# Background

Declining oak species have been found in urban landscapes and open spaces throughout the coast range of California. A new, yet undescribed fungal species, *Geosmithia* sp. #41, was recovered from symptomatic plant tissues in association with the western oak bark beetle (WOBB) *Pseudopityophthorus pubipennis* (Coleoptera: Curculionidae: Scolytinae). WOBB appears to attack trees stressed by drought, disease, injuries, or other factors that may stress the tree.

Pathogenicity tests confirmed *Geosmithia* sp. causing disease on coast live oak.

# Symptoms

Symptoms occurring on the trunk and primary branches include wet discoloration seeping through WOBB entry holes. Removal of the outer bark reveals phloem necrosis surrounding the entry hole. Multiple entry holes may be observed on each tree. At the initial phase of attack, a reddish sap may ooze from the entry hole, followed by a cream-colored foamy liquid running as far as 2 feet down the trunk.

**The beetle:** Western oak bark beetle is a small beetle that burrows through the bark, excavating shallow tunnels between the bark and cambium across the grain of the wood. Female beetles lay their eggs in the tunnels; the developing larvae tunnel at right angles to these, but mostly within the phloem (inner bark) close to the surface (Costello et al. 2012).

# Coast Live Oak Mortality



A decline of coast live oak in California has been observed since late 2012 throughout urban landscapes and private lands in Los Angeles, Orange, Riverside, Santa Barbara, Ventura and Monterey counties

# Coast Live Oak Mortality



Photo: Robert Sartain, Santa Clarita  
Santa Clarita, Los Angeles County CA  
Open Space

# Foamy Bark Canker on Coast Live Oak



Symptoms occurring on the trunk and primary branches include wet discoloration seeping through WOBB entry holes

# Foamy Bark Canker on Coast Live Oak



Thousands Oaks,  
Ventura County  
Private Property

# FBC Symptoms on Coast Live Oak



Photo Credit: Sabrina Drill

# FBC Symptoms on *Quercus wislizeni*



Suzanne Rooney Latham



Suzanne Rooney Latham

Photo: Jessica Honeycutt from El Dorado Co. Dept of Ag.

# Symptoms of Foamy Bark Canker



# Symptoms of Foamy Bark Canker



At the initial phase of attack, a reddish sap may ooze from the entry hole, followed by a cream-colored foamy liquid running as far as 2 feet down the trunk.

# Western Oak Bark Beetle

## *Pseudopityophthorus pubipennis*



- Morphological ID:
  - Dr. Robert Rabaglia  
USDA Forest Service

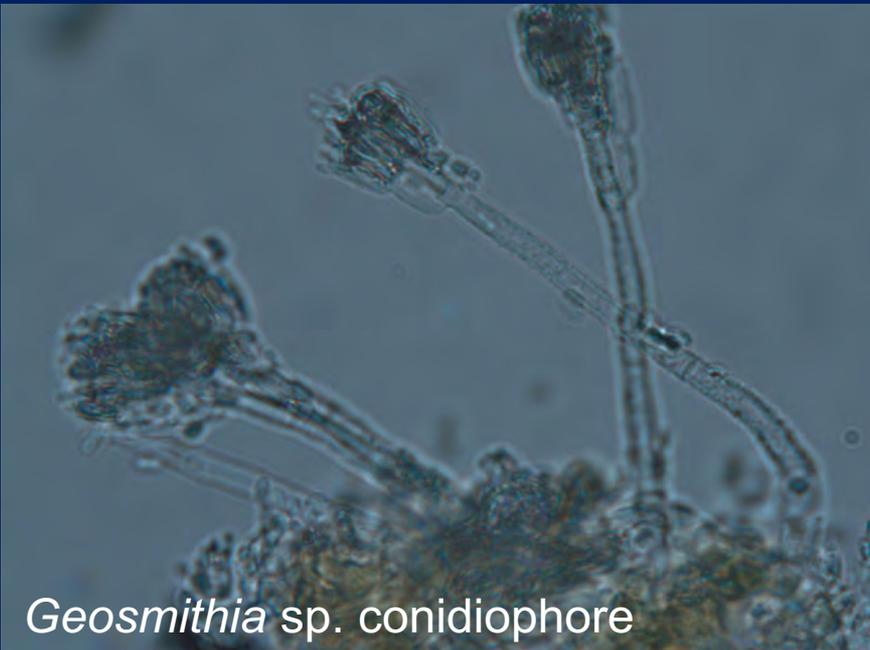
- Molecular ID:
  - Stouthamer lab UCR
  - 94% Match based on  
COI gene

Western oak bark beetle is a small beetle that burrows through the bark, excavating shallow tunnels between the bark and cambium across the grain of the wood. Female beetles lay their eggs in the tunnels; the developing larvae tunnel at right angles to these, but mostly within the phloem (inner bark) close to the surface (Costello et al. 2012).

# Fungus and Beetle Association



*Geosmithia* sp.

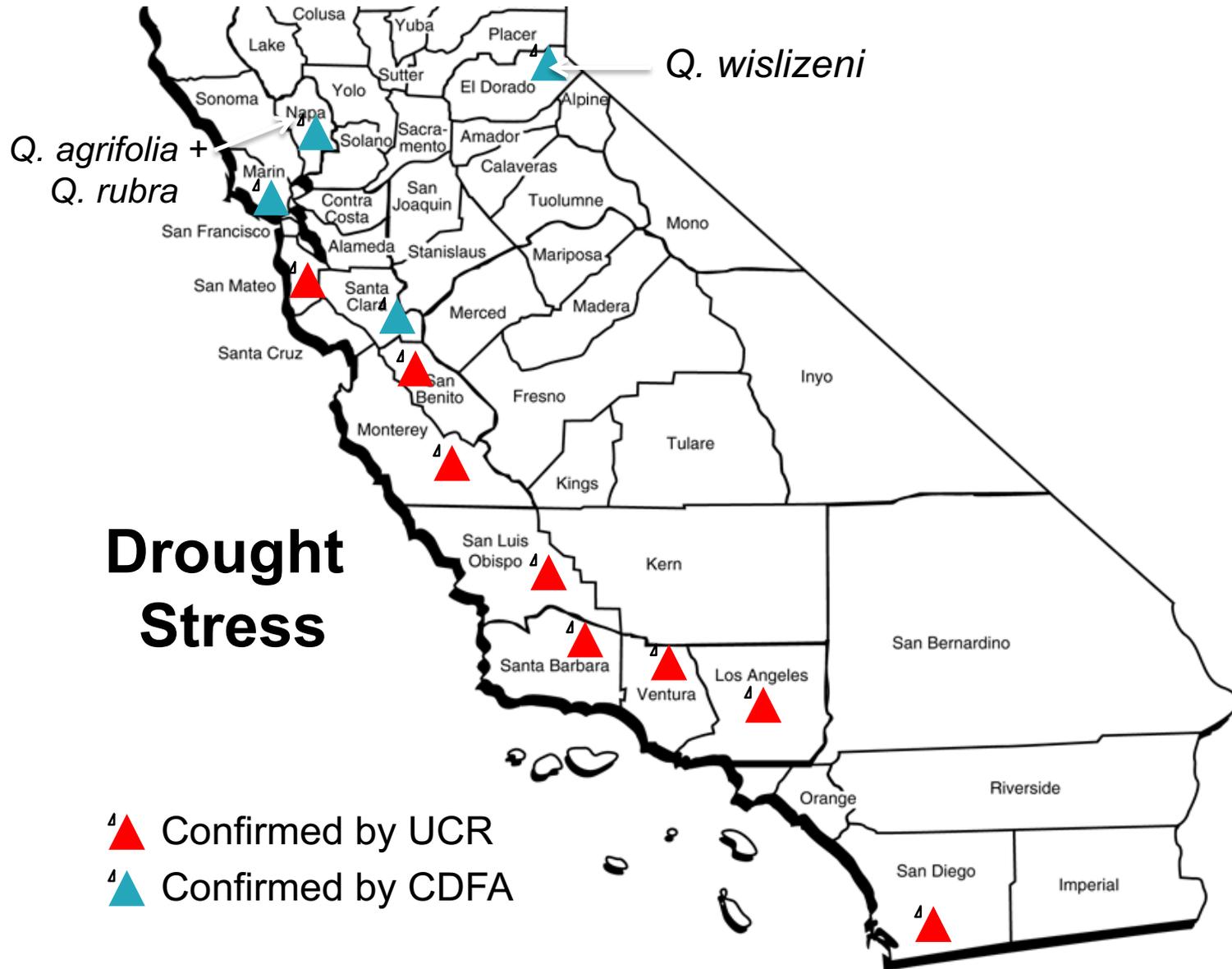


*Geosmithia* sp. conidiophore



*Geosmithia* sp. conidia

# Area of Detection in California

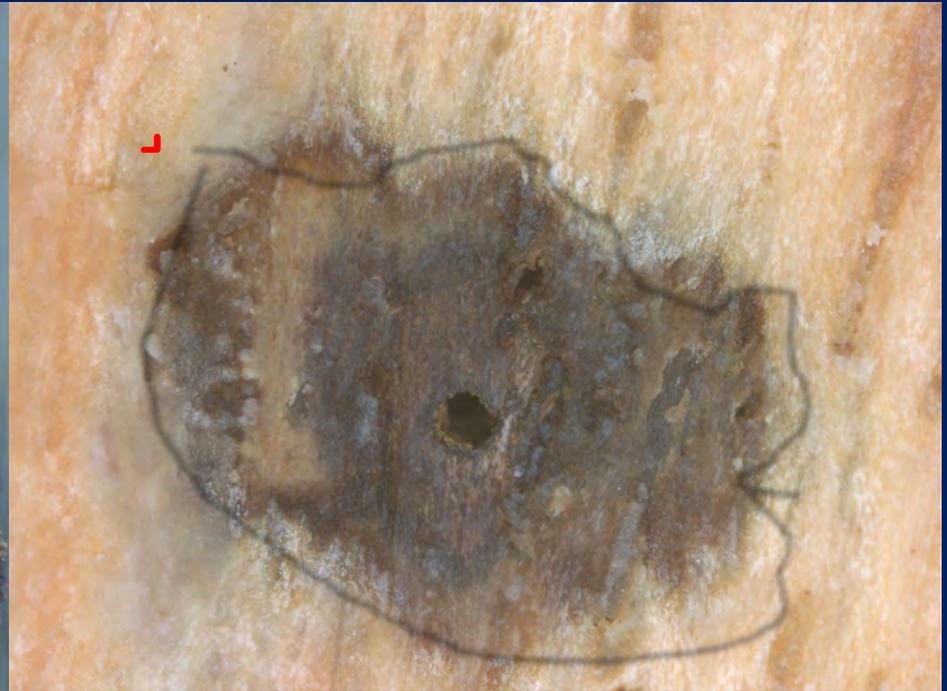


# Symptoms of Foamy Bark Canker



Removal of the outer bark reveals phloem necrosis surrounding the entry hole. Multiple entry holes may be observed on each tree.

# Symptoms of Foamy Bark Canker



# Larval Galleries

Parent Gallery



Fungal grows within the secondary gallery walls.



# Phloem necrosis and xylem streaking caused by the fungus



Thousand Oaks, CA



Santa Barbara, CA

<https://ucanr.edu/sites/eskalenlab>