



## Adaptive management of Sudden Oak Death in California woodlands

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Sudden Oak Death is an emergent disease caused by the exotic pathogen *Phytophthora ramorum*. This newly described *Phytophthora* is also responsible for a disease of ornamental plants, and multiple lines of evidence indicate its introduction in North America is linked to the trade of infected ornamental plants. *P. ramorum* is predominantly aeroally transmitted, but a soil and water phases, not unlike other forest *Phytophthora*s are also present. One striking feature of the epidemiology of the disease is that the largest amounts of infectious aerial sporangia are produced on bay laurel leaves, while oaks appear to be non-infectious.

Our strategy to deal with the disease has been multiple and involves the following aspects:

- 1)- Understand the mode of introduction of the pathogen, and monitor potential new escapes in the wild;
- 2)- Understand factors linked to the reproductive and spread potential, e.g. seasonal patterns in the life cycle of the pathogen and distance of spread;
- 3)- Define the relationship between ecological stand characteristics and severity of the disease, inclusive of predictive modeling;
- 4)- Qualify precise pathways for infection;
- 5)- Reduce infection rates by modifying known infection pathways;
- 6)- Change stands characteristics to make them less favorable to the spread of the disease, e.g. by selective thinnings;
- 7)- Protect individual trees and some populations of the highly susceptible tanoak using phosphonate chemical treatments.

Because our knowledge of the epidemiology and biology of the disease is still rather limited, recommendations are expected to change in time, as our understanding of the disease improves.