

Epidemiological Aspects of *Phytophthora ramorum* in Redwood Forests of the Coast Range of California: A 3-Year Look¹

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Abstract

Understanding the epidemiology and disease dynamics of *Phytophthora ramorum* in redwood forest communities will allow researchers and land managers to predict the effects on forest structure, as well as other key ecosystem processes. As part of a long-term study on the epidemiology and ecology of *P. ramorum* in redwood forests, 120 plots were established and censused yearly since 2002. The main hosts and tree species are coast redwood (*Sequoia sempervirens*), tanoak (*Lithocarpus densiflorus*), and bay laurel (*Umbellularia californica*). Baseline disease incidence across the 120 plots was 17 percent in the initial sampling in 2002. Overall disease incidence on the plots increased in 2003 and 2004 to 24 and 29 percent, respectively. This was an increase by 42 percent in 2003 and only 19 percent in 2004. We have also found that mortality rates of tanoak have been elevated in *P. ramorum*-infested locations as compared to uninfested locations. The number of new, individual host trees becoming infected has declined, but new infections are still occurring. Explanations for increases, decreases or leveling off may be a function of pathogen and host biology, as well as interannual variation in climate affecting *P. ramorum* sporulation and dispersal. Mortality rates and rates of disease increase are discussed further.

Key words: *Lithocarpus*, tanoak, disease ecology, disease progression

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