



**SPREAD OF INFECTION WITHIN TANOAK (*LITHOCARPUS DENSIFLORUS*)
TREES INOCULATED WITH *PHYTOPHTHORA RAMORUM***

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In an experiment with mature naturally infected tanoak trees, *Phytophthora ramorum* was observed in sapwood and appeared to interfere with stem water transport. We postulated that colonization of the xylem could contribute to rapid spread within the tree and lead to development of crown mortality symptomatic of sudden oak death. In this field experiment, we compared the initial spread of *P. ramorum* within xylem and phloem of tanoak trees inoculated at specific locations in the bole, basal sprouts, and belowground tissues. We determined hydraulic conductivity of sapwood from inoculated vs. wounded boles and investigated the spatial and temporal development of tyloses in response to infection.

The experiment was conducted in a redwood-tanoak stand at El Corte de Madera Open Space Preserve in the Midpeninsula Regional Open Space District in San Mateo Co., California. Boles of understory tanoak trees (10-15 cm DBH) were inoculated in May 2006 with mycelial plugs of *P. ramorum* placed at the cambium. Bole controls received agar plugs without the pathogen. Twigs of basal sprouts and belowground tissue were inoculated similarly. There were twelve replicate trees for each of the four treatments (bole wounded control, bole-inoculated, sprout-inoculated and root-inoculated). Half of the trees were harvested in September 2006 and the remainder will be harvested in 2007. Sapwood samples were excised for hydraulic conductivity assays, and adjacent sapwood and phloem tissues were used for pathogen isolation, diagnostic PCR, and microscopy to determine the extent and location of *P. ramorum* infection. The location and frequency of tyloses were determined. The findings will be discussed in relation to epidemiology, disease physiology and symptom development.