

Plotless Evaluation of *Phytophthora ramorum* Incidence in Oaks and Tanoaks in Two Different Forest Types in California

Brice A. McPherson and Richard B. Standiford, Center for Forestry, Department of Environmental Science, Policy, and Management, 145 Mulford Hall, University of California, Berkeley, CA 94720; (510) 642-5806; aoxomoxo@nature.berkeley.edu; David L. Wood, Department of Environmental Science, Policy, and Management, Division of Insect Biology, University of California, Berkeley, CA 94720; N. Maggi Kelly, Department of Environmental Science, Policy, and Management, Ecosystem Sciences Division, University of California, Berkeley, CA 94720; Andrew J. Storer, School of Forest Resources and Environmental Science, Michigan Technological University, Houghton, MI, 49931

Sudden oak death has a patchy distribution in the forests of central California. In 2001, we established an array of transects across the 600 ha China Camp State Park (CCSP) in Marin County and the 1070 ha Soquel Demonstration State Forest (SDSF), in Santa Cruz County, using the point-centered quarter method to estimate infection and mortality in oaks and tanoaks over watershed scales. CCSP features coastal oak woodlands, montane hardwood, and montane-hardwood-conifer forest types. SDSF is primarily redwood-tanoak woodland. Up to four trees were evaluated in each of 89 (CCSP) and 139 (SDSF) sites. These studies were designed to provide unbiased estimates of infection and mortality caused by *Phytophthora ramorum*, as well as change over time, in a spatial context.

The number of symptomatic coast live oaks declined by 2004 in CCSP, but increased for black oaks. In SDSF, the numbers of bleeding and dead coast live oaks and tanoaks increased by 2003, but Shreve oaks showed very low and unchanged responses to the presence of *P. ramorum* in the forest.

In 2004, we doubled the CCSP sample size and cultured from bleeding cankers to estimate the distribution of *Phytophthora* spp. in symptomatic oak trees.