

## Surveying and Monitoring Sudden Oak Death in Southwest Oregon Forests

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*Phytophthora ramorum*, the causal agent of Sudden Oak Death, was first discovered in Oregon by aerial survey in July 2001. Ninety-one infected trees on nine infested sites (site size 0.5 to 11 acres, and total area approximately 40 acres) were initially detected within a nine-square-mile area in the extreme southwestern corner of the state. Tanoak (*Lithocarpus densiflorus*), Pacific rhododendron (*Rhododendron macrophyllum*), and evergreen huckleberry (*Vaccinium ovatum*) were found to be infected. Each year since 2001 we have conducted at least two aerial surveys to search for recently killed tanoaks. The area surveyed ranges from 250,000 to 1,800,000 acres. Over 95 percent of all dead tanoaks identified from the air are visited on the ground to determine cause of death. Mortality agents identified include *P. ramorum*, *P. nemarosa*, *Armillaria mellea*, *A. gallica*, herbicides, and mechanical damage. The number of *P. ramorum*-infected tanoaks discovered each year has decreased since the initial detection of the pathogen. A total of approximately 64 acres within an 11.5-square-mile regulated area are considered infested as of October 2004. All sites are undergoing eradication treatment. Numerous ground-based surveys, both within and surrounding the regulated area, to look for early indicators of infection are also routinely done in forested areas in southwestern Oregon. These include monitoring vegetation on permanent plots established outside of treated sites, larger scale systematic surveys of uninfested forest land within the regulated area, and transect surveys of host vegetation along popular trails and in high-use campgrounds near the Winchuck and Chetco Rivers. New positive *P. ramorum* finds have almost always resulted from either aerial detection surveys or eradication treatment perimeter plots and reconnaissance. New hosts of *P. ramorum* in Oregon have been identified as well; they include *Toxicodendron diversiloba*, *Rubus spectabilis*, and *Rhamnus purshiana*. Rainwater traps have been monitored throughout the regulated area. We have not recovered *P. ramorum* from rainwater collections within or near infested sites (although *P. ramorum* was recovered two times in 2002 from rainwater that accumulated in insect traps at the edge of one site). A wide network of streamwater monitoring sites using rhododendron and tanoak leaves for baiting *Phytophthora* species exists inside and around the regulated area. We detected *P. ramorum* in several streams associated with eradication sites, and rarely in streams not clearly associated with known infestations. *P. ramorum* has not been detected in streamwater outside of the regulated area.