

Examining the Strength and Possible Causes for the Relationship between Fire History and Sudden Oak Death

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Fire is often integral to forest ecology and can affect forest disease dynamics. An emerging disease epidemic, 'Sudden Oak Death,' is attributed to a new pathogen called *Phytophthora ramorum*. This disease has spread across a large, fire-prone portion of California, killing great numbers of oaks and tanoaks and infecting most associated woody plants. Suitable hosts cover a broad geographic range, raising concern over where the disease may spread. To understand the strength and potential sensitivities of fire-disease dynamics, we examined spatial patterns of confirmed infections in relation to past fire history, using a geographic information system (GIS). We found that the disease is extremely rare inside recently burned areas (since 1950). Based on spatial analysis of sampling patterns, the lack of *P. ramorum* infections in burned areas is not caused by sampling bias with respect to fire history. This striking pattern of disease avoidance is statistically significant, and it is robust to variation in host abundance scenarios and elimination of spatially dependent samples. In addition to describing analyses and findings, we will discuss known fire effects (e.g., on nutrient cycling and successional stages) that could cause lower incidence of the disease in landscapes that have burned in the relatively recent past.