

## Is Sudden Oak Death Becoming a Threat to California's Chaparral Ecosystem? First Indications for *Phytophthora ramorum* Moving into Drier and Warmer Habitats<sup>1</sup>

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### Abstract

Since its introduction into California, *Phytophthora ramorum* was found predominately on a rather narrow band along the coast characterized by mild temperatures and abundant year-long moisture (in the 'fog belt'). The presence of foliar hosts, especially California bay laurel (*Umbellularia californica*), common in this ecosystem, is an essential driver for the spread of the disease to 'dead-end hosts', such as coast live oak (*Quercus agrifolia*). Recently, *P. ramorum* was detected on several plants typical for the chaparral plant community (manzanita, *Arctostaphylos* spp.; chaparral pea, *Pickeringia montana*) on a high, sun-exposed ridge in Marin County (Rooney-Latham and others 2017). During 2018, a severe outbreak of disease was observed on chaparral plants on Mt. Tamalpais in Marin Co., with symptoms including wilting, branch dieback and occasionally plant death. Leaves and branches of several plants showed a positive reaction for *Phytophthora* spp. using immuno-strips; and *P. ramorum* was detected using PCR from a manzanita stem. In addition, *Neofusicoccum australe* (Botryosphaeriaceae) was isolated from a symptomatic plant. The infested area is on a southern slope with no apparent presence of California bay laurel or tanoak (*Notholithocarpus densiflorus*). Potted rhododendron plants were placed near symptomatic plants on Mt. Tamalpais to monitor the possible spread of airborne inoculum during winter 2018/19 and the effect of environmental parameters such as rainfall on the timing and appearance of disease symptoms. Inoculation experiments using *P. ramorum* on several *Arctostaphylos* species are on-going. While it is still unclear whether the observed symptoms are caused by a disease complex, and which role *P. ramorum* has in it, mounting evidence indicates that *P. ramorum* is expanding its host range and moving into new environments.

### Literature Cited

Rooney-Latham, S.; Blomquist, C.L.; Williams, A.; Gunnison, E.; Pastalka, T. 2017. Identification of five new hosts of *Phytophthora ramorum* in an infested forest in California. In: Frankel, S.J.; Harrell, K.M., tech. coords. Proceedings of the sudden oak death sixth science symposium. Gen. Tech. Rep. GTR-PSW-255. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Pages 83-84.

<sup>1</sup>A version of the paper was presented at the Seventh Sudden Oak Death Science and Management Symposium, June 25-27, 2019, San Francisco, California.

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