

Distribution of *Phytophthora quercina* in the Midpeninsula Regional Open Space District

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Detections of *Phytophthora* spp. in native habitats have precipitated the need to understand *Phytophthora* diversity in restoration sites and surrounding wildlands. Typically, *Phytophthora* diversity is assessed by collecting and baiting soil or stream water. While baiting successfully recovers several different species, it strongly selects for those adapted to the assay conditions. As a result, many *Phytophthora* species in the sample may not be detected.

As part of surveys in the Midpeninsula Regional Open Space District (MROSD), we collected soil from restoration sites and adjacent non-planted areas in December 2017. In addition to soil baiting using pears, we extracted DNA from a 10 g subsample of each soil. The ITS1 region was amplified and PCR products were submitted for Illumina MiSeq high-throughput sequencing and metabarcoding analyses in an attempt to identify the oomycete species present. Numerous species were detected in the metabarcoding analyses which were not detected by baiting, including the oak root pathogen, *Phytophthora quercina*.

Phytophthora quercina may contribute to oak decline in Europe (Jung et al. 1999) and was not known to be in the United States until its recovery from outplanted valley oak (*Quercus lobata*) in neighboring Santa Clara County in 2016 (Bourret et al. 2018). We detected this species via metabarcoding in 13 soil samples across 4 different MROSD preserves. Of these, 11 samples were from unplanted, minimally disturbed areas. The distribution and results from our attempts to bait *P. quercina* from soils collected in 2018 using different methodology will additionally be presented.

References

Bourret, T.B. 2018. Efforts to detect exotic *Phytophthora* species reveal unexpected diversity. Ph.D. dissertation, University of California Davis.

Jung, T. et al. 1999. *Phytophthora quercina* sp. nov., causing root rot of European oaks. Mycological Research. 103(7):785-798.