Restoration Outplantings of Nursery-Origin Californian Flora Are Heavily Infested with *Phytophthora*[1]

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Abstract

A survey of areas previously anthropogenically disturbed and revegetated with woody nursery-reared native Californian vegetation was conducted in Santa Clara County between August and December of 2015. Previous sampling of revegetation sites had found nursery-origin transplants to be infested with *Phytophthora* species. Samples of roots and soil were collected from underneath dead, symptomatic, and non-symptomatic transplants at 24 sites and baited with a combination of pear fruit and *Rhododendron* leaves. Strains were isolated in 18 (75%) of the sites surveyed and 55 of the 145 samples baited, resulting in 103 *Phytophthora* species by sample combinations. Thirty-one different *Phytophthora* species were identified based on analysis of ITS rDNA sequences, including novel taxa, putative hybrids, and quarantine pathogens. No strong associations between species and host plants were found. DNA was extracted directly from soil of all samples and preliminary evidence indicates oomycete ITS sequences can be reliably amplified; these will be sequenced with Illumina MiSeq and analyzed. Ongoing work includes resampling of infested sites to investigate the persistence and spread of *Phytophthora* followed by treatment efforts.

[1] A version of this paper was presented at the Sixth Sudden Oak Death Science Symposium, June 20-23, 2016, San Francisco, California.

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