

Phytophthoras in Native Plant Habitats Work Group, www.calphytos.org

October 2018 – 2020 Accomplishments

The Phytophthoras in Native Habitats Work Group aims to minimize *Phytophthora* pathogen spread to native vegetation, especially sensitive, threatened and endangered plant species and natural communities. Accomplishments from fall 2018 through 2020 include the following publications, presentations and events.

Publications

Frankel, S.J.; Alexander, J.M., tech. cords. 2020. Proceedings of the seventh sudden oak death science and management symposium: healthy plants in a world with *Phytophthora*. Gen. Tech. Rep. PSW-GTR-268. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 121 p.

Frankel, S.J.; Alexander, J.; Benner, D.; Hillman, J. and Shor, A. 2020. *Phytophthora* Pathogens Threaten Rare Habitats and Conservation Plantings. *Sibbaldia*. 18: 53 - 65.

Frankel, S.J.; Alexander, J.; Benner, D.; Hillman, J. and Shor, A. 2020. Protecting restoration plantings from pathogens. *Fremontia*. Fall issue, November. 48(1): 39.

Frankel, S.J.; Conforti, C.; Hillman, J.; Ingolia, M.; Shor, A.; Benner, B. Alexander, J.A.; Bernhardt, E.; and Swiecki, T.J. 2020. *Phytophthora* Introductions in Restoration Areas: Responding to Protect California Native Flora from Human-Assisted Pathogen Spread. *Forests*. 11(12): 1291.

Lee, C.A.; Frankel, S.J.; Rizzo, D.M. 2019. *Phytophthora ramorum* and Congenerics Threaten Oaks and Other Plants Worldwide. *International Oaks*. 30: 349-356. Proceedings of the 9th International Oak Society Conference, October 21-24, 2018. UC Davis. ISSN 1941 -2061. <https://www.internationaloaksociety.org/content/phytophthora-ramorum-and-congenerics-global-threats-oaks>

Swiecki, T.J. and Bernhardt, E.A. 2019. Testing procedures for BMPs for producing clean nursery stock. Posted at <http://phytosphere.com/BMPsnursery/testingshell.htm>.

Swiecki, T.J.; Bernhardt, E.A.; Frankel, S.J. 2018. *Phytophthora* root disease and the need for clean nursery stock in urban forests. Part 2. *Phytophthora* in nurseries. *Western Arborist*. 44(4): 38-45.

Swiecki, T.J.; Bernhardt, E.A.; Frankel, S.J. 2019. *Phytophthora* root disease and the need for clean nursery stock in urban forests: Part 3. Prevention and management. *Western Arborist*. 45(1): 40-50.

Swiecki, T.J. and Frankel, S.J. 2019. Accreditation to Improve Restoration (AIR): Questions from Southern California Growers. 15 pages. Internal report.

Abstracts

Bourret, T.B.; Aram, K.; Meh, H.K.; Rizzo, D.M.; Rooney-Latham, S.; Swiecki, T.J.; Bernhardt, E.A. and Frankel, S.J. 2020. Ten new provisional species of *Phytophthora* and *Nothophytophthora* from California. Proceedings of the Seventh Sudden Oak Death Science and Management Symposium. June 25-27, 2019, San Francisco. PSW-GTR-268, Pacific Southwest Research Station, Albany, CA.

Frankel, S.J. 2020. *Phytophthora* pathogens threaten forests and restoration success. In, Reynolds, G.J.; Wilhelmi, N.P.; Palacios, P., Eds. Proceedings of the 66th Western International Forest Disease Work Conference, June 3-7, 2019, Estes Park, CO. Pages 69 -70.

Frankel, S.J. 2020. Sudden oak death, Phytophthoras and California forest health: Are we inadvertently degrading our forests? Abstract. USDA Agricultural Research Service, Pacific West Headquarters Seminar Series. April 22, 2020.

Frankel, S.J. 2019. What's Eating the West? Invasive Species in Pacific forests. 2019 North American Invasive Species Management Association (NAISMA) Conference, Saratoga Springs, NY, Sept. 30 – Oct. 3 <https://www.naisma.org/>.

Frankel, S.J. and Hillman, J. 2019. Keeping restoration sites free from invasive pathogens: How can planners prevent pathogen introductions? Waves of Change. Association of Environmental Professionals, March 24-27, 2019, Monterey.

Frankel, S.J., Hillman, J.; Benner, D.; Alexander, J. and Shor, A. 2019. Preventing *Phytophthora* introductions into California restoration sites. IUFRO Phytophthoras in Forests and Natural Ecosystems. 2019 meeting, Sardinia, Italy. October 18 - 25.

Frankel, S.J.; Swiecki, T.; Bernhardt, E.A.; Benner, D.; Blomquist, C.; Rooney-Latham, S. 2020. Accreditation to Improve Restoration Program Shows Promise for Pathogen Prevention. Proceedings of the Sudden Oak Death Seventh Science and Management Symposium. San Francisco. June 25 -27. PSW-GTR-268. Pacific Southwest Research Station, Albany, CA.

Presentations

Benner, D.; Frankel, S.J.; Swiecki, T.; Bernhardt, E.A.; Blomquist, C.; Rooney-Latham, S. 2019. Accreditation to improve restoration program shows promise for pathogen prevention. Sudden Oak Death Seventh Science and Management Symposium. Golden Gate Club, The Presidio, San Francisco. June 25 -27.

Bourret, T.B.; Aram, K.; Meh, H.K.; Rizzo, D.M.; Rooney-Latham, S.; Swiecki, T.J.; Bernhardt, E.A.; Frankel, S.J. 2019. Ten new provisional species of *Phytophthora* and *Nothophytophthora* from California. Seventh Sudden Oak Death Science and Management symposium. June 25-27, 2019, San Francisco.

Frankel, S.J. 2020. Plant pathogen introductions into restoration areas on the Angeles National Forest. US Fish and Wildlife field staff, Carlsbad, March 2.

Frankel, S.J. 2020. Managing plant pathogens in restoration nurseries. Southern California *Phytophthora* committee meeting. Rancho Santa Ana Botanic Garden. March 3.

Frankel, S.J. 2020. Sudden oak death, Phytophthoras and California forest health: Are we inadvertently degrading our forests? USDA ARS Pacific West Headquarters monthly seminar series. April 22. Albany, CA

Frankel, S.J. 2019. Accreditation to Improve Restoration Pilot Program. National Ornamental Research Site, Annual Board Meeting. March 13, Dominican University of California, San Rafael.

Frankel, S.J. 2019. Invasive forest pests. Pesticide Applicators Professional Association Seminar. San Leandro. April 3.

Frankel, S.J. 2019. What's eating the West? Invasive species in Pacific forests. 2019 North American Invasive Species Management Association (NAISMA) Conference, Sarasota Springs, NY, Oct. 1 <https://www.naisma.org/>).

Frankel, S.J. 2019. A Review of *Phytophthora* concerns on native plants in California. Western International Forest Disease Work Conference. June 6, 2019, Estes Park, Colorado.

Frankel, S.J. 2019. Watch out: Plant pathogen introductions into restoration areas on the Angeles National Forest. Weed Management Area meeting, August 22, Los Angeles County Agriculture Department, Arcadia.

Frankel, S.J.; Benner, D.; Alexander, J.; Hillman, J. and Shor, A. 2020. Recent *Phytophthora* detections associated with California native plants and restoration. 2020 California Oak Mortality Task Force meeting, July 29 (Virtual).

Frankel, S.J.; Benner, D.; Hillman, J.; Shor, A.; Alexander, J. 2018. *Phytophthora* threats to native vegetation: Fighting back! CAL Invasive Plants Council (Cal-IPC) 2018 symposium, Monterey, November 7 to 9.

Hillman, J. and Frankel, S.J. 2019. Prevention of plant pathogen introductions during restoration activities. Water Quality Certification Roundtable. February 28, CAL EPA. Sacramento.

Hillman, J. and Frankel, S.J. 2019. Why the concern over Phytophthoras in restoration plantings? Association of Environmental Professionals, March 24-27, 2019, Monterey

Hillman, J.; Swiecki, T; Bernhardt, E. 2020. *Phytophthora* testing of nursery container stock prior to planting. Phytophthoras in Native Habitats Work Group Virtual meeting, June 30, 2020.

Ingolia, Mia.; Candiloro, B. 2020. SFPUC Sunol Native Plant Nursery History and Design. Merritt College Oakland, CA. October 22, 2020.

Ingolia, Mia. 2019. Plant Pathogens Taking Root: Reframing Stewardship and Habitat Restoration Practices When Confronted with *Phytophthora* Introductions. East Bay Regional Parks District Stewardship Seminar, Oakland, CA. November 6, 2019.

Ingolia, Mia. 2019. Plant Pathogens Taking Root: Reframing Stewardship and Habitat Restoration Practices When Confronted with *Phytophthora* Introductions. CNPS Chapter Meeting, Sacramento Valley California Native Plant Society, Sacramento, CA. May 9, 2019.

Shor, A. 2019. Preventing plant pathogens in restoration nursery production. International Plant Propagators Society. Western Region, annual meeting. Santa Cruz. September 28.

Swiecki, T. 2020. Threats to oaks and other native plants from root-rotting *Phytophthora* species. California Oaks Health Workshop webinar. April 21, 2020.

Swiecki, Ted. 2019. Detecting root-rotting *Phytophthora* species by baiting with green pears – why and how. CNPS Workshop on Testing Methods for Detecting *Phytophthora* in Container Plants, Solano Community College, Fairfield, CA. June 22.

Swiecki, Ted. 2019. Sampling for soil-borne *Phytophthora* species in wildlands. Field trip presentation, Mt. Tamalpais. 7th Sudden Oak Death Science Symposium, San Francisco, CA. June 27.

Swiecki, T. 2019. Assessing threats posed by *Phytophthora* in the Santa Clara Natural Community Conservation Plan (NCCP) area. SERCAL 2019 Conference, Santa Barbara, CA. April 10.

Swiecki, T. 2018. Pear baiting 101: Using pears to catch *Phytophthora*. Demonstration of leachate baiting methods for detecting *Phytophthora*. 2018 California Invasive Plant Council Symposium Workshop, Monterey CA. November 7, 2018.

Swiecki, T. and Bernhardt, E. 2019. Evaluating threats posed by exotic *Phytophthora* species to sensitive plant communities in the Santa Clara Natural Community Conservation Plan (NCCP) area. 7th Sudden Oak Death Science Symposium, San Francisco, CA. June 26.

Education & outreach resources

Other *Phytophthora*s in California's Native Habitats website (www.calphytos.org) and associated e-mail list.

California Oaks. Spring/Summer 2020. "Information about nurseries and transmission of *Phytophthora* pathogens". Features papers by *Phytophthora*s in Native Habitats, California Oak Mortality Task Force and AIR Accreditation pilot project.

Campbell, F. 2018. Worldwide – and U.S. – Proliferation of *Phytophthora* via the Nursery Trade – an Update. Blog. November 12. Center for Invasive Species Prevention, Washington, DC.

Cooke, Brian. *In press.* Pathogens A Threat to Ecological Investments: Preventing Plant Pathogens in Landscape Restoration Areas. Risk to high-value habitats. USDA Forest Service, Northern Research Station. Cross Pollinator Research Series.

Technical Guidance

SB 287, Dodd, Habitat Restoration: Invasive species: *Phytophthora* pathogens. Provided technical guidance for proposed legislation to prevent *Phytophthora* introductions via restoration plantings.

On-going technical guidance is provided to the California Native Plant Society, Phytophthoras Adhoc Committee.

Meetings or events organized

Frankel, S.J. 2019. *Phytophthora* in Nurseries and Planting Areas. IUFRO Phytophthoras in Forests and Natural Ecosystems. 2019 meeting, Sardinia, Italy. October 18 - 25, 2019.

Frankel, S.J. and Alexander, J.A. 2020. Virtual meeting of the Phytophthoras in Native Habitats Work Group. June 30, 2020.

Frankel, S.J. and Alexander, J. 2019. Phytophthoras in Native Habitats Work Group meeting, September 24, 2019, Pacific Southwest Research Station, Albany.

Frankel, S.J.; Alexander, J.; Nielsen, B. and others. 2019. Sudden Oak Death Seventh Science and Management Symposium (SOD7). June 25 -26, Golden Gate Club, The Presidio, San Francisco.

Lee, C. and Frankel, S.J. 2018. International oak health panel for 9th International Oak Symposium, International Oak Society. UC Davis. October 22-24, 2018.

Shor, A. 2019. Field Trip. The Presidio Nursery. Sudden Oak Death Seventh Science and Management Symposium (SOD7). June 25 -26, Golden Gate Club, The Presidio, San Francisco.