

Making Connections: Assisted Migration, *Phytophthora* and Forest Health

An interview with:

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As movement of plant materials across regions becomes more commonplace, risk of spreading pathogens like *Phytophthora* increases. Partners at Oregon and Washington Extension are collaborating on: “**Preventing *Phytophthora* infestations in restoration nurseries and wildland plant communities**”, with Jennifer Parke (OSU, College of Agricultural Sciences), Dave Shaw, (OSU, College of Forestry) and Alicia Christiansen, (OSU, Extension Agent).

How does *Phytophthora* relate to habitat/wildlands restoration?

NORMA: In the West we have invasive *Phytophthora*, a pathogen that is inadvertently introduced to wildlands that has had significant effects on ecosystems in the northwest. Recently California discovered that invasive *Phytophthora* has moved into restoration plantings on nursery stock. Essentially, areas that were trying to be restored and are already suffering were then inadvertently

introduced to this deadly pathogen. As these issues came to light, there have been tremendous efforts in California to develop best management practices for *Phytophthora*. In Oregon, Jennifer Parke had a body of work on this subject that has been trying to get the message across to restoration professionals and nurseries to be extremely cautious about introducing these pathogens into their plant stock. The intent of this entire publication is to promote best management practices and make the issue clearer to folks as to why these practices are extremely important to use when planning for restoration and planting.

DAN: Our goal is also to provide colleagues and partners with the tools and information to disseminate out into local groups and restoration efforts. In California many of the affected restoration nurseries were “mom and pop” operations that may not have had access to the preventative measures and best management practices available to larger nurseries - and were therefore growing and spreading infected plants. This project aims to meet the



Best management practices in a nursery – gravel bed, limited contact of pots with substrate prevents infection by *Phytophthora*, good air circulation reduces foliar diseases.

Audience for this project:

- 1 Nurseries, especially smaller-scale restoration nurseries
- 2 Restoration professionals
- 3 Master Gardeners and other volunteers who are working within the restoration community. The more people that know about it, the better.

Characteristic hyphae and chlamydospores of *Phytophthora ramorum*, the cause of Sudden Oak Death, as seen in the microscope.

needs of the nurseries most affected by pathogens and provide them with the resources they need to do practical tasks like how to monitor for *Phytophthora*.

How does this work complement your role as Extension Agents?

DAN: We really want to hear from those that work in restoration nurseries. As extension agents, effectively communicating science is ingrained in what we do, and that is something I am always working on. The goal is to make sure that what is being communicated is also being understood.

MARIANNE: It is really important to talk to nurseries about what they are seeing, what the issues are, where the problems lie, etc. We can't ask them to enact practices without knowing the needs and thoughts of practitioners.

What are the unique threats of *P. ramorum* to restoration nurseries and planting sites?

DAN AND MARIANNE : The impacts to restoration nurseries can be enormous. A lot of people do this work because of a love of what they do and a desire to contribute meaningfully to land stewardship.

Unique threats or considerations include:

- Smaller nurseries can lack access to resources like monitoring protocols

that support containment and Early Detection and Rapid Response (EDRR)

- Local restoration nurseries may propagate diverse native species. These nurseries play a critical role and each new procedure can increase costs and make their businesses less viable. We want to support them so they can continue to serve the groups who rely on them.
- Some small restoration nurseries work differently than large wholesale nurseries because of their size. For example, they might do things like reuse potting media which can build up disease. Recycling is usually great but can also be the cause of more problems.
- The fragility of many restoration sites makes them vulnerable to introduced pathogens, which can further strain or endanger native plants. Some endemic manzanita species in California are really important ecologically, so the potential impact of introducing a *Phytophthora* or other pathogen is exacerbated as it can spread to other manzanitas and other susceptible host plants.

DAN: Once they are aware, restoration nurseries are so on board with how to make these quick fixes. Practical phytosanitation practices or best management practices are effective and can have a large impact. In California, the lifting of plants a foot or two off the ground and not keeping in contact with puddles or soil immediately helped with disease prevention.

What are the benefits of collaboration?

NORMA: Since we are focused on outreach and education there is a level of trust that folks have with communicating with us. This allows us to evolve interesting and impactful relationships with folks from all over (landowners, nurseries, etc).

DAN: Building relationships across regions is so important to show unity between agencies and players involved. We need more alignment for fire, pest management, and forest management. Things move across borders all the time, the more we can get management and regulatory agencies on board, the better. All of the players are key to potential spread pathways of disease. As Extension, we are trusted partners in our communities. People are coming to us for information.

What is next?

MARIANNE: I see some important things to come, like an easy way to test for *P. ramorum* on a small scale. It is really important that people get correct information and don't jump to conclusions as it is easy to get alarmed with the threat of this pathogen. We are going to try and get them the right information so people can put it into practice.



The brown seedlings in this greenhouse bed are infected with *Phytophthora cinnamomi*. The pathogen can easily move in soil water to other seedlings.

Selected common restoration species that can host and/or are susceptible to *Phytophthora*:

California Black Oak
(*Quercus kelloggii*)

Pacific Madrone/Madrona
(*Arbutus menziesii*)

Alder, Red, White
(*Alnus rubra*, *Alnus rhombifolia*)

Coyote Brush
(*Baccharis pilularis*)

Manzanita Spp.
(*Arctostaphylos*)

Douglas Fir
(*Pseudotsuga menziesii*)

Tall and Low/Dull Oregon Grape
(*Mahonia* or *Berberis*)

Salal
(*Gaultheria spp.*)