

Diversity of Ericoid Mycorrhizal Fungi on *Gaultheria shallon*

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ABSTRACT

The diversity of fungi in the field cannot be determined by looking at fruiting bodies alone. Fruiting body production varies from season to season and site to site. Small or inconspicuous fruiting bodies are easily overlooked. Many soil fungi do not fruit in the field and rarely do so in culture. So, how does one determine the diversity of fungal communities without depending on the unpredictable production of fruiting bodies? We explore here a molecular approach to determining fungal diversity. Ericoid mycorrhizal fungi are slow growing ascomycetes associated with the roots of ericaceous plants that provide their plant partners with nitrogen in nutrient poor soils. In British Columbia, fruiting bodies of ericoid mycorrhizal fungi have never been found in the field and isolates of these fungi usually remain sterile. We are using molecular techniques to identify diversity of ericoid mycorrhizal fungi associated with salal, *Gaultheria shallon* Pursh. We are culturing ericoid mycorrhizal fungi from adjacent 2-mm mycorrhizal root segments. To identify the fungi, we use polymerase chain reaction (PCR) to amplify the internal transcriber regions of the nuclear ribosomal DNA cistron. We then use restriction fragment length polymorphism (RFLP) analysis and DNA sequencing to match the isolates to known fungi. In this way we can approach the question of the "real" diversity of ericoid mycorrhizal fungi. Ultimately, this approach will reveal which fungi are common and important in ecosystem function, and which fungi are rare species in need of protection.
