

Mycelium Swimming

By Corinne Hughes

In the past year, since moving to the state of Washington, I have become fascinated by these strange, gooey things on the forest floor: mushrooms! What started last fall as a small passion for the delicious edibles has grown as I have learned more and more about them. First, I learned that mushrooms are the fruiting bodies of a larger organism: mycelium. Then I learned that mycelium is one of the greatest filters on earth. I learned about mycoremediation, using fungi to degrade or remove toxins from the environment.

However, what does all this have to do with salmon? If you have met anyone involved with the Skagit Fisheries Enhancement Group, you know that every one of them is obsessed with the connection of everything in the world around us. Education events express the importance of remembering the connection between trees and salmon, birds and salmon, insects and salmon. Well, consider another connection: mushrooms and salmon. During the first volunteer planting party this fall at Cascade River Park in Marblemount, I noticed a significant number of mushrooms growing in the pots. Ever since, I have kept a close eye on the amount of mycelium we plant. Almost every single pot has the white, web-like growth of mycelium attached to the soil. As good as it is to plant trees, I feel a tremendous boost in confidence by planting mycelium with them.



First, mycelium is good for the trees. Mycorrhizal fungus attaches to the roots of trees, sometimes growing into the roots, to attain access to the carbohydrates produced during the tree's photosynthesis. In exchange, the tree attains access to the mycelium's large surface area. Mycelium transports water, minerals, and nutrients in the soil and fixes carbon into the air. Mycorrhizal plants are often disease-free and drought-resistant. One of the best examples of this type of relationship is shown in hemlocks. Have you ever noticed that hemlocks are one of the first trees growing out of old stumps? That is because the rotting wood is a host to mycelium breaking it down. Hemlocks connect with the mycorrhizal fungus and absorb nutrients even above the forest floor! These nutrients are inside the mushrooms too. When they rot, they provide nutrients to insects, slugs, and bacteria as well.

Second, mycelium is good in terrestrial and aquatic ecosystems for its decomposition of plant material, filtration, and erosion control. Mycelium hyphae, each branch of mycelium, break

down plant material by secreting enzymes onto a food source to break it down until it is absorbed into the mycelium and transported. These enzymes are powerful enough to break down lignin and cellulose, making mycelium one of the only organisms on earth with the ability to break down wood. If mycelium were not able to do this, all fallen trees would simply pile up into a great big mess. This massive system also acts as a giant filter in the forest floor and provides stability in the soil by balancing the water concentration. Mycelium filters pathogens (including protozoa, bacteria, and viruses), silt, and chemical toxins from the watershed and breaks them down. Fungi actually disassemble molecules into simpler, less toxic chemicals. In Skagit County, this process is vital to control the amount of E. Coli entering the water system from dairy farms.

Third, mycelium is good for salmon! While the salmon make their nests in the cold, clear, consistent water of the Pacific Northwest, tiny white webs pump beneath the forest floor to keep the trees above them healthy, the soil around them strong, and the water engulfing them pure. Perhaps, it is a large jump to think of those tiny white button mushrooms we buy at the store for our salads saving salmon, but, in a way, it is true. However, it is not the buttons; it is the chanterelles, the oysters, the angel wings, the shaggy manes, and the morels.

The season of fall fruiting for mycelium is ending, though you can still find a honey mushroom or a looming stropharia below a fern. I encourage anyone to study their local mushrooms or join a mycological society. To help you with identification, I recommend David Arora's All that the Rain Promises and More. For more information on mycoremediation, read Mycelium Running by Paul Stamets or visit his website at www.fungi.com. Give a nod to the next pot you find covered in the white grip of mycelium. Salmon may not be able to know how much they love the mushrooms, but we can!