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Comments: Dear Lolo Planning Team,

Thank you for your work in revisiting and updating the forest management plan. The theme of this letter is, Mycorrhizae Matter!

While I was unable to find the word mycorrhizae in the draft document, it seems necessary to acknowledge these absolutely essential partners to each and every conifer tree in a document dedicated to forest management. Mycorrhizal fungi provide 85% of the water and 100% of the mineral needs trees need to survive. (Maser, et.al ECOFORESTRY)

The Douglas Fir is known to form mycorrhizae with some 2000 species of fungi throughout its range, (PNW-GTR 371) utilizing a bevy of mycorrhizal co-sponsors to satisfy varying demands for nitrogen, phosphorus, and potassium, and to extract moisture from BCR during dry periods.

The first documented and best established mycorrhizal relationship is that between the genera of Pinus and Suillus. No pine seedling survives without its mycorrhizal fungus.

True fir species such as *A. grandis*, *A. lasiocarpa*, etc. are host to a range of mycorrhizal fungi that produce edible fruits that are valuable resources to wildlife, providing vitamins and fats that are unobtainable otherwise. In addition, true fir host commercially valuable species of edible mushrooms such as chanterelles, truffles, and corals.

Spruce forests are home to mushrooms found nowhere else. Prized edibles such as the Sweet Tooth, and a spectrum of mushrooms that feed elk, deer, squirrel and bear populations are found here.

Mycorrhizae also matter for carbon sequestration. A number of peer-reviewed studies concur that fungi constitute the majority of soil carbon in every ecosystem studied. Fungi are also the primary source of essential amino acids which we are unable to produce ourselves.

The importance of fungi as a source of protein and mineral rich food for wildlife cannot be ignored. Elliot, et. al. have published a series of research papers documenting the peer-reviewed reports of fungivory by invertebrates, non-mammal vertebrates, and mammals. Each paper documents thousands of examples of fungivory all across the animal kingdom. Locally, WMMA members have tracked over 40 spp of mushroom eaten by whitetail deer, and even more eaten by bears. I once tracked a bear for several miles up the Rattlesnake, following him from one Hygrophorus patch to another. I could tell it was the same bear because he had a snaggle tooth that left a unique mark on every mushroom he chomped off.

Humans, too, that wish to survive winters above the 45th parallel require more vitamin D than can be obtained without consuming supplements or fungi. Survivalists have frequently consulted me on the proper amount of mushrooms required to supplement their diet for the winter.

Finally, the crucial link between CWD, BCR, and mycorrhizae needs to be acknowledged, and accommodated, or the forest simply will not survive. This isn't a matter of opinion, it is a matter of survival. We fail to address the climate solution because we have been wasting time asking "do you BELIEVE in global warming" when the proper question is "do you UNDERSTAND global warming?" If we continue to manufacture ecosystem models with missing parts, the whole ecosystem is going to go boeing on us!

The role and need for BCR is real, and the supply in modern forests is dramatically depleted from historic levels, even levels of the late 20th century. BCR is essential to retaining moisture in our northern conifer forests, as it holds 5 to 8 times its weight in water. Past management practices have led to levels of BCR that are feet lower than they were when Big Larch campground was harvested. Go look at the marks on the stumps.

Without BCR, our montane soils have virtually no capacity to retain water. We have, in fact, benefitted from the millennia of BCR deposits since the last ice age, essentially a source of water fossilized in soil carbon.

Brown Cuboidal Rot is not a fuel, and should not be wrongly conflated with fuels. While wood in the air may be called a fuel, wood on the ground, especially CWD, needs to be evaluated for its value as soil carbon, fungus food, and water retention. Failure to acknowledge or even mention the importance of this component of soil carbon, nutrient cycling, water retention, as key elements of ecosystem services seems to be an oversight.

Thank you for reading this, if there are statements here that you wish to see citations for, I am glad to provide them.

Cheers,

Larry Evans