Snow plant (*Sarcodes sanguinea*) is a remarkable and beautiful bright-red flowering plant that grows in the mountains of California; once you have seen it you will always remember it as it is like no other plant in our area. Its scientific Latin name translates roughly to blood-red fleshy thing.

This plant is in the heath family, the same family as manzanita, and if you look closely at the flowers, the resemblance will be clear: drooping urn-shaped flowers with five very small petals (little projections) at the tip of the flower opening. It grows from 6 to 18 inches tall with red bracts, but no true leaves. As the flowers mature, they turn light pink and eventually brown.

Despite its name, snow plant does not grow in the snow but only pops up from the forest floor with warming temperatures after most of the snow has melted in springtime, although there may be some snow nearby or a late snowstorm may have partially covered the plant. You can find it growing on the forest floor duff under conifers at Lassen Volcanic National Park and around Mt. Shasta, usually above 5,000 feet in elevation.

Another misconception is that it is a saprophyte; that is, it lives off dead and decaying plant matter on the forest floor. If you learned this in college, don’t feel bad. Many field guides and college introductory botany textbooks spread this myth until very recently,
and some may still do so, each author apparently looking at what prior books had written. Actually, snow plant is a parasite and it lives in part off the nearby conifers through the medium of mycorrhizal fungi.

To understand this parasitic relationship, it is first necessary to understand what is happening underground between the roots of plants in the forest and the fungi in the soil, and this applies to oak woodlands, too. About 90% or more of the plants in conifer and hardwood forests have roots that are directly connected to mycorrhizal fungi living in the soil in what is a mutually beneficial relationship. Plants produce sugars through photosynthesis and they transfer these sugars to the fungi that have “infected” their roots. In return for the sugars, the fungi, which spread over a very large area in the soil, give the roots water and mineral nutrients in larger quantities than the plant can obtain with its own roots.

Where does the snow plant enter into this relationship? The snow plant cannot produce its own food through photosynthesis as it has no chlorophyll, so to exist, it has to parasitize the fungi to get its food. Its roots are infected by the same mycorrhizal fungus that an adjacent conifer has and it takes the sugars, water, and nutrients from the mycorrhizal fungus, which in part came from the conifer, so one could say that snow plant also indirectly parasitizes the adjacent conifer as it is primarily looking for the sugars.

Plants that do not produce their own food through photosynthesis but get it through mycorrhizal fungi are called mycotrophs or heteromycotrophs. Two other mycotrophs that you may find in shaded areas in our local forests are pinedrops and sugarsticks, which are also in the heath family. Pinedrops (Pterospora andromedea) grows up to three feet tall and has a pink to red-brown stem with cream, yellow, or pink urn-shaped drooping flowers on the upper half of the stem. Sugarstick (Allotropa virgata) has a white stalk up to 15 inches tall with red stripes like a candy cane, and white to red urn-shaped flowers pointed upward until mature when they turn down, perhaps for seed dispersal. Pinedrops can be seen with snow plant on the Paradise Meadows Trail in Lassen Volcanic National Park, but do not pick the flowers as there are very few for other people to observe, and you might be eliminating a population as they have very limited numbers and have a slow population growth rate.

Another fascinating mycotroph, but one that doesn’t grow locally, is ghost plant (Monotropa
uniflora)—a rare, all white plant 2 to 10 inches tall with one drooping urn-shaped flower with overlapping petals and a bare stem. It grows at low elevations in the Klamath Range and on the coast. This is another plant you will immediately know when you see it as it does definitely look like a ghost.

So when you are in the forest and see one of these plants, look at the nearby trees and imagine which tree or trees is feeding this beautiful plant, and how far the mycorrhizal fungi are spread. The largest mycorrhizal fungus discovered in the United States covers over 2,000 acres.

To learn more about snow plants, google Sarcodes sanquinea and view the beautiful pictures. Add “mycotroph” to the search and you may find a scientific article. Then when you trek up to Lassen this spring you will be able to identify the plant immediately if you are lucky enough to find one, and you can tell your botanical friends that it is a parasite, not a saprophyte!