Plant of the Month

Noccaea fendleri – alpine pennycress or wild candytuft; synonyms *Thlapsi montanum*

Family: Brassicaceae, mustard family

Habit: Small forb growing 5 – 32 cm tall; leaves at base of the plant (basal) oval to oblong in shape and 4-19 mm wide, stem leaves 7-16 mm wide and clasp the stem; flowers contain 4 white petals and are grouped into tight clusters, buds are purple in color; fruit is a disc-shaped fruit called a silicle. Blooms from April to August.

Habitat: Rocky slopes, alpine, forest openings, 5,200 – 14,300 ft. It can be found on properties such as Bald Mountain, Caribou, and Hall Ranch.

Though small in stature, alpine pennycress, demands your attention. This is because it grows in areas with little competition, and it is among the earliest species to emerge in spring. It also has a wide elevational range, from the rocky slopes of the foothills to the top of the mountains in the alpine zone. It will bloom earlier at lower elevations and later in the summer at high elevations. This allows one to follow the blooms from spring to late summer.

Have you ever heard of plants getting rust? Members of the mustard (*Brassicaceae*) family are hosts to *Puccinia*, a genus of rust fungus. The fungus's spores infect a plant's tissue and steal nutrients. Under the control of the rust fungus, the mustard is sterilized and unable to produce flowers; instead, it forms pseudo-flowers. These false flowers are the host's mutated leaves, covered with yellow spore cups that contain sticky, sweet nectar. The yellow spores also reflect UV light, which acts as a beacon to pollinators. Pollinators are attracted to the infected plant, become covered in spores, and transfer them to a new host.

Alpine pennycress is in a unique class of plants called hyperaccumulators. These are plants that absorb and store large amounts of heavy metals – zinc, nickel, cadmium, cobalt, etc.– without succumbing to toxic effects. Hyperaccumulators have been shown to withstand heavy metal concentrations hundreds to thousands of times higher than those found in most plants. This unique ability has raised interest in how pennycress and other hyperaccumulators could be used in the reclamation of mine sites. Using a process called phytoextraction, contaminants in the soil can be reduced by seeding or planting hyperaccumulator species such as *Noccaea*, followed by harvesting and disposing of plant material in accordance with hazardous waste guidelines.

Pseudo-flowers on alpine pennycress created by the *Puccinia* rust. Photo from A. Schneider

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