Botanical values of Morris Meadows and Emerald Lake Parcels, Trinity Alps

The Upper Stuart Fork watershed of the Trinity Alps, including Morris Meadows and Emerald Lake, is embedded in heart of the Klamath Ranges, an area recognized as a global hotspot of botanical diversity and endemism. It is one of the World Wildlife Fund’s “Global 200” Most Outstanding and Representative Areas of Biodiversity (<https://www.worldwildlife.org/ecoregions/na0516>.) Botanical richness in the Klamath Range includes both flowering herbs and woody plants and also conifers. The Stuart Fork area is the southernmost outpost of Brewer spruce (Picea breweriana), an ancient species restricted to higher elevations in the Klamath Ranges of southwest Oregon and northwestern California. In addition to known botanical diversity, new plant species continue to be discovered in this region at a rate of several per decade, most recently Sawyer’s pussytoes (*Antennaria sawyeri*, published in 2015), a species endemic to a small area just three miles southeast of Morris Meadows.

The reasons for this remarkable botanical diversity in the Trinity Alps are the convergence of several factors. The region escaped extensive glaciation during recent ice ages, and because of its remarkable range of geology, soils, elevation and topography, it served as a relatively stable refugium for plants over a long period of climatic fluctuation. The area provided favorable ecological niches for many species and the opportunity to adapt and radiate, often evolving into new species, as in the genus *Sedum* section *Gormania*, which finds its center of diversity and radiation in the Trinity Alps, with several new species recently described (Zika et al 2018). Because of its geographic location, the Klamath Ranges are a meeting place for the floras of the Coast Ranges of Oregon and California, the southern Cascade Range, the Great Basin, the Sierra Nevada, and even the Central Valley of California. Species from all of these floristic areas meet and mingle currently in the Trinity Alps and adjacent Klamath Ranges.

The upper Stuart Fork watershed is known to be home to a large number of globally rare plants, many of them restricted to the Klamath Ranges, or reaching their geographic range limits here. The area, including the Morris Meadows and Emerald Lake parcels, is relatively unexplored botanically because of its remoteness from any university and the difficulties of plant collection in the wilderness, which is still the basic methodology for research into plant evolution and taxonomy.

In addition to the rich array of plants that find homes in the upper Stuart Fork watershed, the large wetland complex of Morris Meadows is enormously important ecologically, as habitat for wildlife and a variety of wetland obligate plants—sedges, grasses, herbaceous wildflowers and flowering shrubs. Some of the meadow complexes in the Klamath Ranges that have been studied are known to include rare wetland types such as fens. Morris Meadows has not been comprehensively studied in this way.