

The Mount Evans Project

By Mo Ewing, CoNPS Conservation Committee Chairperson

From his collecting visits in the 1950s, to an article he wrote in *Aquilegia* in August 1991, to the present day, Bill Weber has been a champion for Summit Lake on Mount Evans. In 1965 Bill nominated Summit Lake for designation as a National Natural Landmark because it was considered to be one of the finest examples of alpine tundra in the lower 48 states.

For the last couple of years, Bill has urged CoNPS to take over his role as the champion of Mount Evans, expressing a particular concern regarding the presence of non-native mountain goats which the Colorado Department of Wildlife introduced to the area in the 1960s. Last January a group of volunteers met with Bill and Ron Wittmann to consider taking on Mount Evans as a long-term conservation project for our Society.

Very quickly we realized that Ron and Bill were the only two people locally who knew much about Mount Evans and Summit Lake. Over the years Bill had brought many internationally renowned botanists to the lake to view its wonders, but otherwise very few people from our area were familiar with the plants and plant communities there.

In 1924 the City and County of Denver purchased 160 acres around the lake creating Summit Lake Park and adding it to its Mountain Parks system. So in March some CoNPS volunteers met with Bob Finch, the Director of Natural Resources for Denver Parks and Recreation to discuss how we could work together to preserve Summit Lake. Bob asked us to map the rare plants and plant communities found there. Interestingly, in spite of the fact that botanists had collected plants from the lake since 1939, the plant communities at the lake had never been described or mapped. Also the rare plants had never been mapped using GPS technology.

One of our first goals was to get CoNPS volunteers up to the lake to begin to understand what was there. Some of our research indicated that many of Summit Lake's plants had not been documented nor collected since the 1950s and 1960s. What had changed since then?

We first set up a database of plants made up of lists that Bill Weber had created for an article he wrote for *Aquilegia* in 1991, and a more recent list he made in 2004. We then added to that list by researching collections from nine herbaria across the U.S. from the University of Colorado to the New York Botanic Gardens.

Our research produced a list of 142 species of flowering plants that had been documented or collected at Summit Lake since 1939. Bill indicated that the truly unique aspect of Summit Lake flora was its extensive collection of mosses. A review of moss species at the University of Colorado herbarium in Boulder produced a list of 85 species of mosses found at Summit Lake

Armed with our species lists, Loraine Yeatts, Janet Wingate, Megan Bowes, Fran Enright, Linnea Gilman and Mo Ewing spent a total of 25 person-days over the summer identifying, collecting and mapping the plant communities and rare plants at the lake.

Summit Lake Park is located in a glacial cirque with a huge, gently sloping terminal glacial moraine that fans out to the northeast toward Denver. If you stand just below the Mount Evans Road which traverses the park, the glacial moraine is so flat that it seems to slope up to a ridge below the park. Because of the flatness of the moraine and because that area is underlain by permafrost, there are extensive peat wetlands around, and



Peat Fen on Terminal Glacial Moraine Photo by M. Ewing

especially below, the lake.

The lake itself is at 12,840' elevation and, at 33 acres, is by far the largest lake in Colorado over 12,500 feet. Since the CoNPS volunteer corps were concentrating on Summit Lake Park, we did not get into the extensive lower wetlands; but looking at Mount Evans from Google Earth, those wetlands could easily be as large as 150 acres; all this at almost 13,000'!

Because of the extensive wetlands and because the park is located in a cirque, the park has many different aspects, slopes and hydrological regimes. This diversity results in a large number of very distinct plant communities. We identified and mapped 15 different plant communities, each with its own special suite of plants.



Draba grayana (G2 S2) Photo by M. Ewing

We saw and documented 119 species of flowering plants, eight of them considered rare: *Chionophila jamesii* (G3 S4), *Draba crassa* (G3 S3), *Draba exunguiculata* (G2 S2), *Draba grayana* (G2 S2), *Kobresia simpliciuscula* (G5 S2), *Phippsia algida* (G5 S2), *Muscaria monticola* (G5T5 S1), and *Spatularia foliolosa* (G4 S1).

The Colorado Natural Heritage Program has given *Draba crassa* a conservation ranking of “vulnerable” in Colorado, but Loraine Yeatts says it is common in the alpine.

Bill Weber had told us that every time he has gone to the lake he has found new, undocumented species there. Last summer was no exception. We identified ten new species of flowering plants including: *Campanula parryi*, *Draba crassa*, *Festuca thurberi*, *Hierochloa hirta* ssp. *arctica*, *Juncus albescens*, *Ligularia holmii*, *Phlox condensata*, *Poa reflexa*, *Saxifraga hyperborea*, and *Taraxicum scopulorum*.

We also documented *Selaginella densa*, a clubmoss, which had never been collected before. It seems rather strange that this plant had never been collected at Mount Evans, since it is common in the alpine.

Bill Weber



Ligularia holmii Photo by M. Ewing

We did not find 43 species of previously documented Summit Lake flowering plants. Among these were five rare species including *Delwiesia pattersonii* (G3G4S3), *Draba fladnizensis* var. *pattersonii* (G4 S2S3), *Mertensia alpina* (G4S1), *Alsinanthe stricta*, (G5S1) and *Alsinanthe macrantha*, (G3?S3?).

Draba fladnizensis var. *pattersonii* has not actually been collected at Summit Lake, but has been collected from the saddle between Mount Evans and Mount Epaulet, another biologically rich area on Mount Evans which we plan to study next summer. Additionally the *Mertensia alpina* specimen at Rocky Mountain Herbarium in Wyoming was collected by a graduate student in 2004. It is one of 250,000 specimens at the herbarium which have never been verified or assigned an



Mertensia lanceolata Photo by M. Ewing

herbarium accession number! Since *M. alpina* is endemic on Pikes Peak, it is probably an incorrect identification. *Mertensia lanceolata*, which is found at Summit Lake, grows in a dwarf form in exposed areas that looks just like *M. alpina* except that its filaments are attached near the top of the corolla tube rather than well inside.

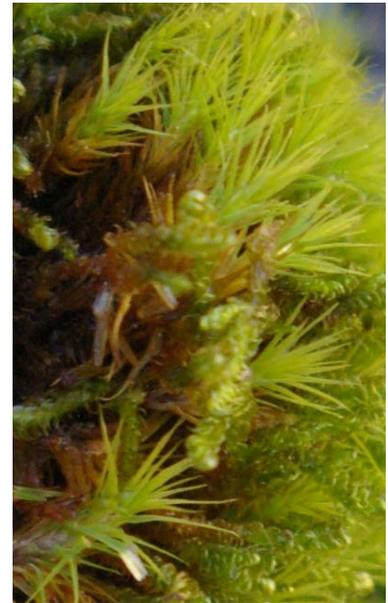
We had no CoNPS volunteer who was knowledgeable enough to identify mosses, so Mo Ewing collected mosses at the lake and brought them down to Bill Weber in Boulder to identify. Of the 85 species of mosses previously documented at the lake, 30 species were found, including six considered to be rare in Colorado. In addition, six new, previously undocumented, species were collected and identified.

Linnea Gillman, a volunteer from the Denver Botanic Gardens is now the first person to ever collect mushrooms at Summit Lake. She collected seven species, four of which have been identified including the species *Arrhenia lobata*, pictured below.



Arrhenia lobata Photo by L. Gillman

So, in spite of the fact that the summer of 2012 was very hot and dry, and the bloom on Mount Evans was quite constrained, we made excellent progress in beginning to understand Summit Lake; however, lots of questions remain. The plant community map is just the first sketch and needs to be refined, and its communities verified. We would love to find the 43 species of flowering plants, and 55 species of mosses which we did not find last summer. The portion of Summit Lake Park that extends into the Chicago Lakes Cirque, adjacent to the Summit Lake Cirque has never been inventoried. The same is true of the extensive glacial moraine and fen below (east) of the Park. In addition, we would like to have a full hydrological



Bartramias subulata (GU S1S3)
Photo by M. Ewing

study conducted in this fen, as it is probably the largest in the Southern Rocky Mountains found over 12,500 feet. And finally we would like to begin to explore the biologically rich saddle between Mount Evans and Mount Epaulet.

“The Alpine Flora of Summit Lake, Mount Evans Colorado”, William Weber, *Aquilegia*, Volume 15, No 4, July – August 1991, pp 3-10.

“The Alpine Flora of Summit Lake, Mount Evans Colorado”, William A. Weber, Recopied from *Aquilegia* 15:3-7. 1991, with additions and modifications], 4/24/2011, unpublished