

## Rare White Erigeron Identification Project

Wallowa Mountain Zone, Wallowa-Whitman NF  
Paula J. Brooks, January 13, 2009

### Introduction

Davis' fleabane (*Erigeron davisii*, formerly known as *Erigeron engelmannii* var. *davisii*) and Snake River daisy or white cushion fleabane (*Erigeron disparipilus*) are both on the Forest Service Region Six Sensitive plant list. Davis' fleabane is very similar to Snake River daisy. Both species are small, perennial daisies, which have solitary white-rayed flower heads. The main way to distinguish the two species is by the orientation and lengths of the hairs on the stem of the plants.



Both the Snake River daisy and Davis' fleabane are regional endemic species. The Snake River daisy is found in northeastern Oregon, southeastern Washington, and into southwestern Idaho. Davis' fleabane is also found in northeastern Oregon, and into southwestern Idaho. It has not been reported from Washington.

In 2004, Davis' fleabane was elevated from a variety of Engelmann's daisy, to its own unique species. The paper that described this new species also gave a better description of the species than was available previously (Nesom 2004).

Many populations of Davis' fleabane have been reported since the 1990s on the Wallowa-Whitman NF. Only a few populations of Snake River daisy were reported during this time. For most populations, the reports of both of these species have not been positively documented with voucher collections. The botanists working in the area have struggled with distinguishing these species ever since they were originally included on the Region Six sensitive plant list.



### 2008 Collection Project

In 2008, representative plants from 12 populations of one-flowered, white-headed daisies were collected on Wallowa Valley RD and from Hells Canyon NRA (see Figure 1 and Appendix 1 for location information). All but one of these collections was from Oregon; one was from the Idaho portion of the Hells Canyon NRA. Complete habitat and location information was recorded for these collections. Photos were taken at some sites.

These specimens were all sent to Dr. Kenton Chambers (professor emeritus at Oregon State University). He determined that four populations are pure Davis' fleabane; three populations are pure Snake River daisy, and five populations have both species present. Even Dr. Chambers had difficulty distinguishing the two species. In his note regarding his work on the specimens, he states:

**Dr. Chambers:**

I trained myself to recognize the difference between these species, which is entirely based on the nature of stem pubescence (otherwise, they are not separable, in my opinion).

*E. davisii* has strigose stem hairs, often mixed with more spreading hairs (called hirsute-villous in the keys). You have to look all along the stem, as sometimes these forward-pointing hairs are most evident on the lower stem, sometimes on the uppermost end. If strigose hairs cannot be found, and all the hairs are spreading (and of variable lengths), the plant will go as *E. disparipilus*.



I verified this by looking at numerous specimens borrowed from the New York Botanical Garden and identified by Arthur Cronquist himself. He is the author of both of these taxa. You may find, when using this pubescence criterion for making identifications yourself, that fairly high magnification is needed, and that you may feel that you are making arbitrary judgments at times--this was my own experience. My feeling is that these species are so closely related, that crossing between them may occur in mixed populations, and the genes that control stem hairs can cause an ambiguous condition in this single trait. I don't know how you would distinguish such hybrid plants, however. An experimental study involving making crosses between "typical" plants of the two species would be worth doing, to see what the hybrids look like (if the species really are compatible).

In some areas, the white headed Erigerons were growing intermixed with a small, yellow headed Erigeron. This yellow-headed Erigeron was determined to be dwarf yellow fleabane (*Erigeron chrysopsidis*). In some cases, there were plants with creamy colored ray flowers growing intermixed with distinctly white and very yellow ray flowered plants. Some of these apparent hybrids were collected also.

Another interesting finding from these collections is that it appears the dwarf yellow fleabane (*Erigeron chrysopsidis*) may also be hybridizing with the white *Erigerons*.



Dr. Chamber's comments on this fact are:

I believe that the yellow-rayed plants are best classified as *E. chrysopsidis* var. *chrysopsidis*....I can't advise you whether the creamy-rayed plants might be interspecies hybrids, but this is a possibility. I don't know what ray-color variation occurs in *E. chrysopsidis*, i.e. whether creamy rays are reported in that species. I am labeling the creamy-rayed ones as "possible hybrids," but I must say that the judgment I made as to which plants had creamy-rays when alive may be wrong. Maybe I mistook white rays for creamy ones. This is another case where an experimental crossing program between species would give helpful new information--crossing *E. davisii* with *E. chrysopsidis*.

## Future Study Opportunities

The fact that these two rare white-flowered, one-headed fleabanes are growing together leads one to question if they really are distinct species. Future studies could be done to try to confirm that these are indeed unique species. Investigations into hybridization with *Erigeron chrysopsidis* could also be initiated. These studies could be common garden studies (experimental crossing program between species), or perhaps some type of protein, or DNA analysis. Forest personnel could do any field collections, but it will take the help of a geneticist, graduate student, or professor to unravel the mystery of the rare white-flowered, one-headed fleabanes of northeastern Oregon.

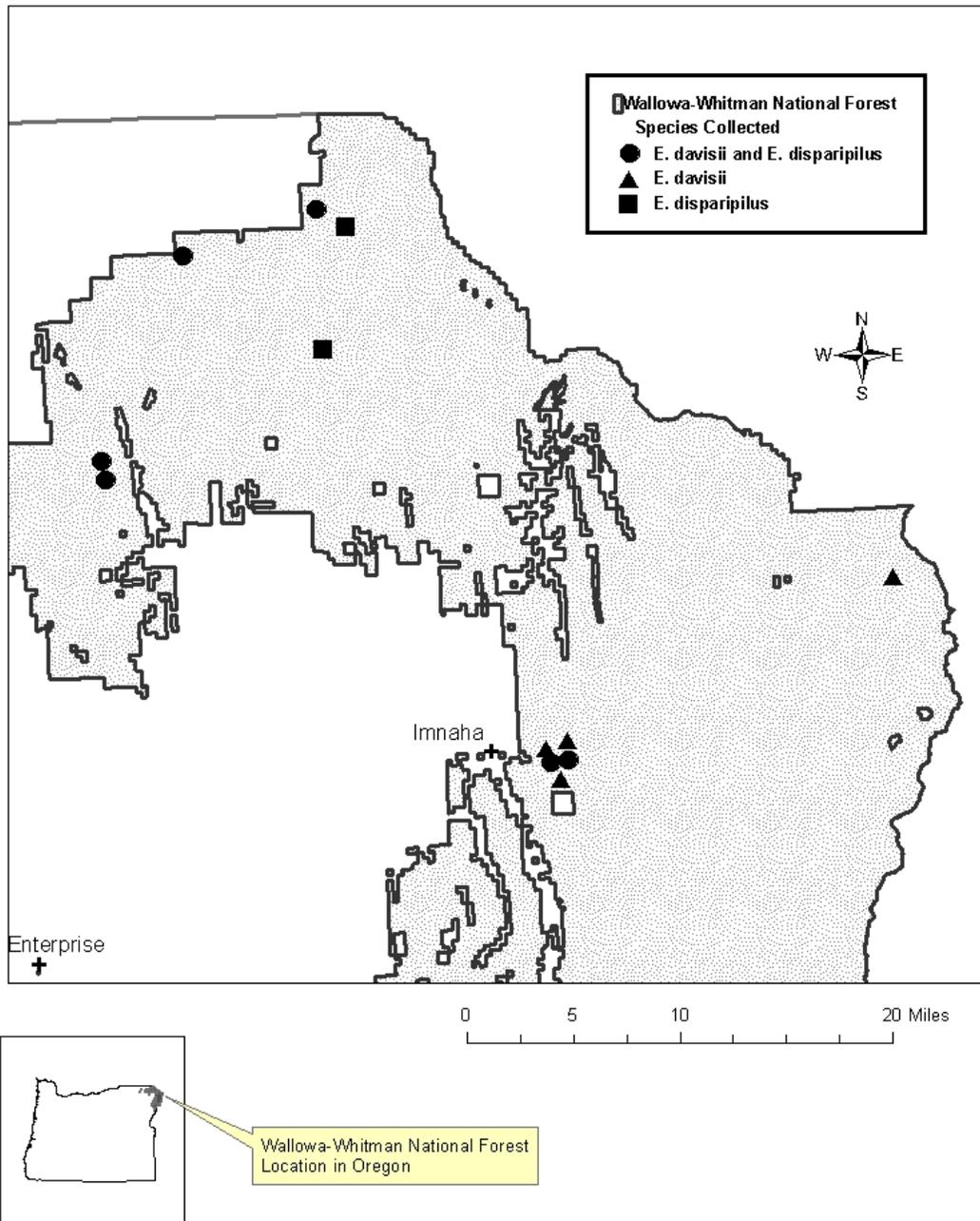
## References

Nesom, G.L. 2004. Taxonomic reevaluations in North American *Erigeron* (Asteraceae: Astereae). *Sida* 21:19–40.



All photos by Paula J. Brooks

Figure 1: White Erigeron Collections  
Wallowa-Whitman National Forest-2008



## Appendix 1:

### White Erigeron Collections-Wallowa-Whitman National Forest 2008

- Erigeron #1: Erigeron davisii and Erigeron disparipilus  
Cold Springs Ridge, 7 plants, two sheets; P. Brooks collector  
Location: Oregon, Wallowa County, Cold Springs Ridge, Elev. 5100 feet
- Erigeron #2: Erigeron davisii and Erigeron disparipilus  
Brooks Erigeron Site A, 11 plants, two sheets; P. Brooks collector  
Location: Oregon, Wallowa County, Baker Gulch area, elev. 4817 feet
- Erigeron #3: Erigeron davisii and Erigeron disparipilus  
Brooks Erigeron Site B, 16 plants, three sheets, P. Brooks collector  
Location: Oregon, Wallowa County, Miller Spring area, Elev. 4800 feet
- Erigeron #4: Erigeron disparipilus  
Brooks Erigeron Site C, 13 plants, one sheet, P. Brooks collector  
Location: Oregon, Wallowa County, Fairchild Point area, Elev. 5375 feet
- Erigeron #5: Erigeron davisii  
Pittsburg Saddle, 11 plants, six sheets; B. Smergut-Wall collector  
Location: Idaho, Idaho County, Pittsburg Saddle, Elev. 4900 feet
- Erigeron #6: Erigeron davisii and Erigeron disparipilus  
Hunting Camp ridge, 10 plants, six sheets; B. Smergut-Wall collector  
Location: Oregon, Wallowa County, Hunting Camp Ridge, Elev. 4500 feet
- Erigeron #7: Erigeron disparipilus  
Downy saddle; one plant only; P. Brooks collector  
Location: Oregon, Wallowa County, Downy Saddle, Elev. 4750 feet
- Erigeron #8: Erigeron davisii  
Turrentine Collection #5; 11 plants, three sheets; T. Turrentine collector  
Location: Oregon, Wallowa County, Cayuse Flat, Elev. 5490 feet
- Erigeron #9: Erigeron davisii  
Turrentine Collection #4; 12 plants, three sheets; T. Turrentine collector  
Location: Oregon, Wallowa County, Cayuse Flat, Elev. 5300 feet
- Erigeron #10: Erigeron davisii and Erigeron disparipilus  
Turrentine Collection #3; 10 plants, two sheets; T. Turrentine collector  
Location: Oregon, Wallowa County, Cayuse Flat, Elev. 5390 feet
- Erigeron #11: Erigeron davisii and Erigeron disparipilus  
Turrentine Collection #2; 10 plants, three sheets; T. Turrentine collector  
Location: Oregon, Wallowa County, Cayuse Flat, Elev. 5280 feet

Erigeron #12: *Erigeron davisii*

Turrentine Collection #1; 10 plants, two sheets; T. Turrentine collector.

Location: Oregon, Wallowa County, Bear Flat, Elev. 5340 feet