

Taxonomic assessment of *Cimicifuga elata* and its new variety *alpestris* in southern Oregon

Interim Report

October 29, 2007

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Funded by
Interagency Special Status/Sensitive Species Program (ISSSSP)

Introduction

Tall bugbane is a BLM Special Status Species (Bureau Sensitive). It occurs in forests west of the Cascades in Oregon, Washington and British Columbia. Recently (2004), a new variety of this species was described from southern Oregon by Lee and Park in the Journal Novon. The new variety, *C. elata* var. *alpestris*, was reported only from Grizzly Peak near Ashland in Jackson County, Oregon. However, several other populations of *C. elata* occur in that area, and their relationship to the new variety has not been determined. Moreover, the full geographic range of the new variety has not been evaluated sufficiently to delineate its range relative to the typical variety (*C. elata* var. *elata*). This information is necessary for determining the conservation status of both varieties and to update the existing multi-district and multi-agency Conservation Strategy for the species.

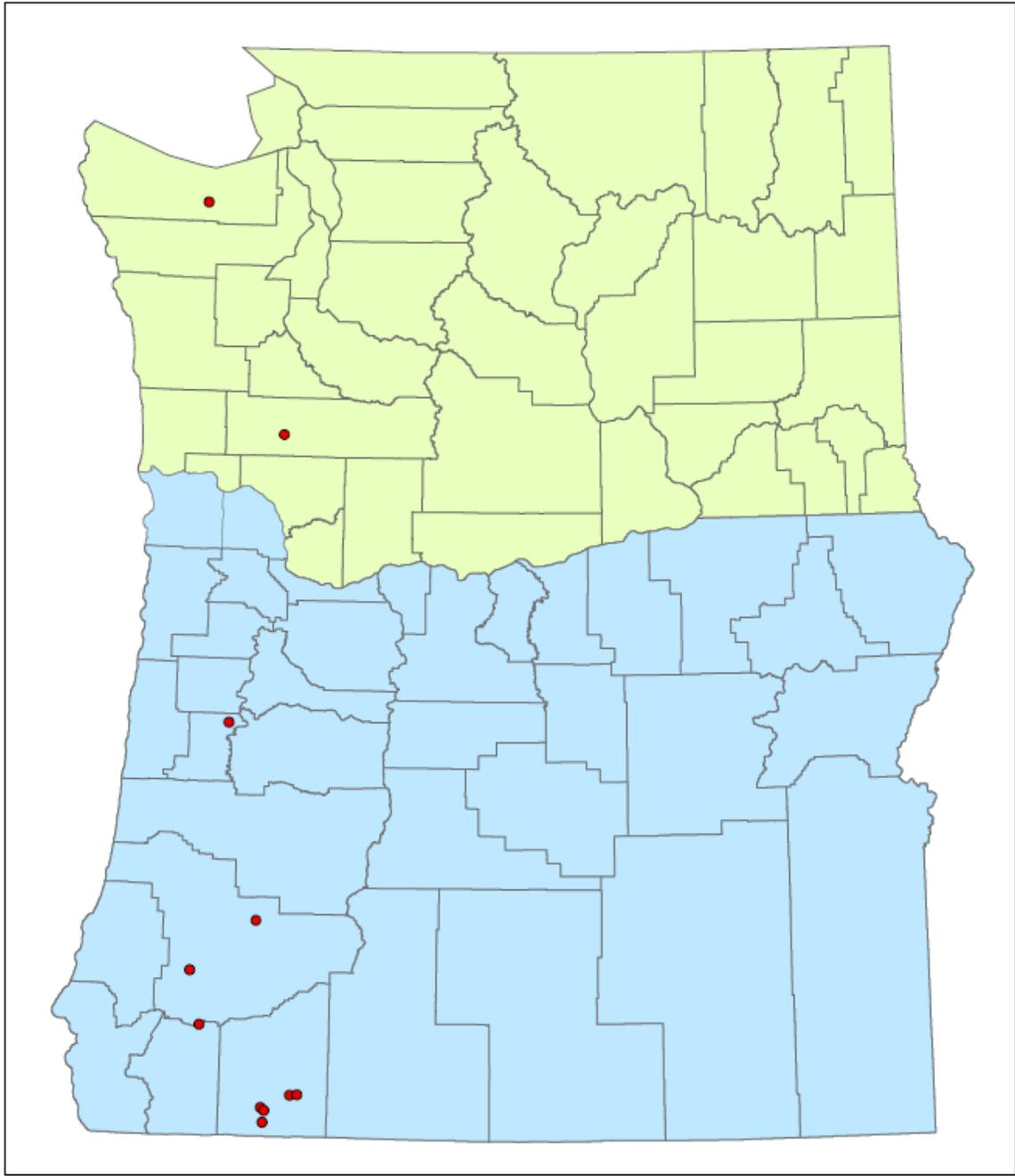
Objectives -- The purpose of this project is to evaluate the taxonomic boundaries between to a new variety of tall bugbane (*Cimicifuga elata*) and the typical variety, as needed to support the Conservation Strategy for this species.

Methods

Study sites/sample areas -- A total of 23 sample areas are included in this project to date, including four sub areas in the Chrome Ridge area. Table 1 lists all of the sites, which are also mapped in Figure 1. Site selection involved extensive coordination with agency botanists and local ecologists (e.g., Richard Brock) with specific knowledge of the species complex and pertinent locations.

Table 1. Sample site locations for *Cimicifuga elata* populations included in the study. Pressed specimens were collected at each site in 2007.

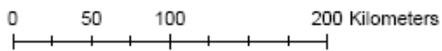
Sample	Variety	Collection	Site_Name	Management/Ownership
0	alpestris	1633	Anderson Creek Road	BLM Medford District
1	alpestris	1632	Bald Mountain	BLM Medford District
2	alpestris	1634	Grizzly Peak	BLM Medford District
3	alpestris	1635	Shale City Road	BLM Medford District
4	alpestris	1637	Seven Mile Ridge	USFS Siskiyou NF
5	elata?	1647	Farmer Gulch	BLM Medford District
6	elata?	1651	Tenmile	BLM Roseburg District
7	elata?	1661	Rock Creek Road	BLM Roseburg District
8	elata	1649	Cronemiller Lake	OSU McDonald Forest
9	elata	1650	Lewis and Clark State Park	State of Washington
10	elata	--	Lake Mills	Olympic National Park



Cimicifuga elata Sample Locations

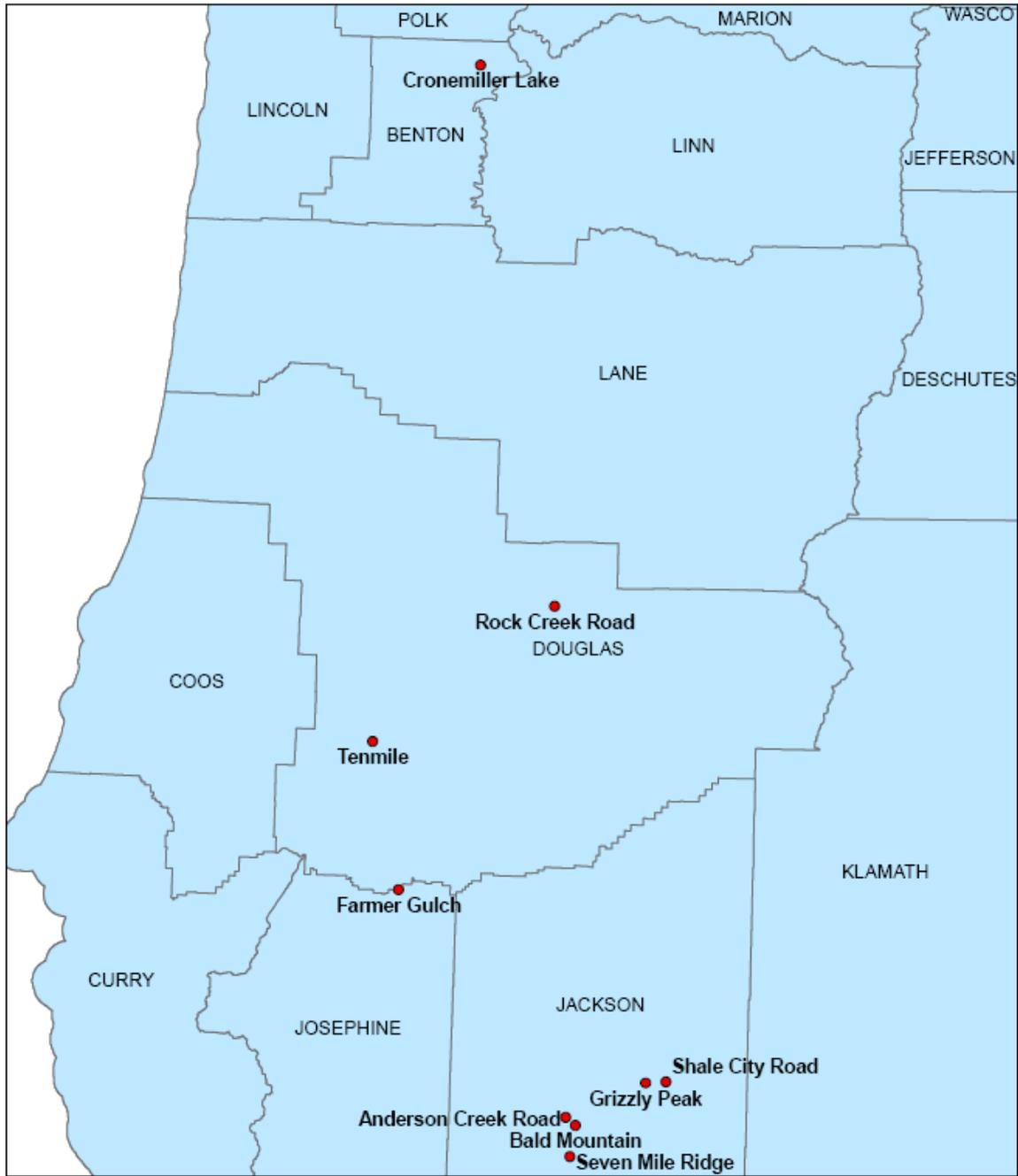
- WA Counties
- OR Counties

Cimicifuga elata

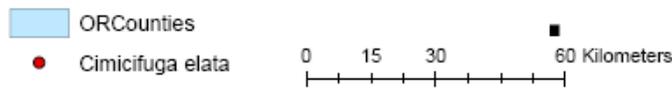


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Figure 1. Sample locations for *Cimicifuga elata* populations in Oregon and Washington (all sites visited in 2007).



Cimicifuga elata Oregon Sample Locations



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Figure 2. Sample locations for *Cimicifuga* populations in Oregon. See Table 1 for additional details of each site.



Cimicifuga elata Washington Sample Locations



Figure 3. Sample locations for *Cimicifuga elata* populations in Washington. See Table 1 for additional details of each site.

Field analysis – Lee and Park (2004) described three major morphological characters for distinguishing their new variety from the rest of the species as follows:

“*Cimicifuga elata* var. *alpestris* differs from variety *elata* as well as the other members of *Cimicifuga* in having sheathing scales surrounding the lower stem node. In addition, upper surfaces of the major leaf veins are pubescent with multicellular uniseriate trichomes in variety *alpestris*, and the new variety often has more pistils (one to five) as compared to variety *elata* (one or two).”

The sheathing scales and numerous pistils are illustrated in their line drawing of the new variety (Figure 4).

We visited eleven field sites including five in southern Oregon in the vicinity of the new variety. One of these, Grizzly Peak, is the type locality and another, Shale City Road, is the location of the paratype. We attempted to confirm the characteristics of var. *alpestris* at the type locations by examining the sheathing scales, pistil numbers, and leaf vein pubescence, and contrast these with plants from other sites. Inconsistencies with each of these characteristics were encountered, however.

Sheathing scales: Plants in southern Oregon had the sheathing scales described by Lee and Park for var. *alpestris*, but so did plants elsewhere in Oregon and Washington. Figure 5 shows that this characteristic was present at Grizzly Peak (the type locality) and Bald Mountain (west of Ashland, Oregon), but also near Corvallis, Oregon in McDonald Forest. We found this character to be ubiquitous at all populations we visited.

Pistil number: Pistil number appeared to vary from plant to plant (and even on the same plant), but high numbers (3-5) of pistils per flower were more frequent in southern Oregon populations than elsewhere in Oregon or in Washington. Even so, greater than two pistils was uncommon even on southern Oregon plants. Plants from the type locality and Bald Mountain frequently had two pistils, while those at McDonald Forest typically had only one (Figure 6).

Leaf vein pubescence: We failed to find any pubescence on the upper surfaces of the leaves on plants from the type locality, elsewhere in southern Oregon, or any other site. The major leaf veins were completely glabrous on all specimens we examined (see Figure 7 for examples). It is possible that Lee and Park intended to describe the pubescence on the major veins on the *undersides* of the leaves. Veins on the lower leaf surfaces did have copious pubescence, especially at the base of the leaf, and this pubescence appeared to be more dense plants in southern Oregon than on those from further north (Figure 8). Even so, some lower leaf-vein pubescence was present on nearly all plants we examined.

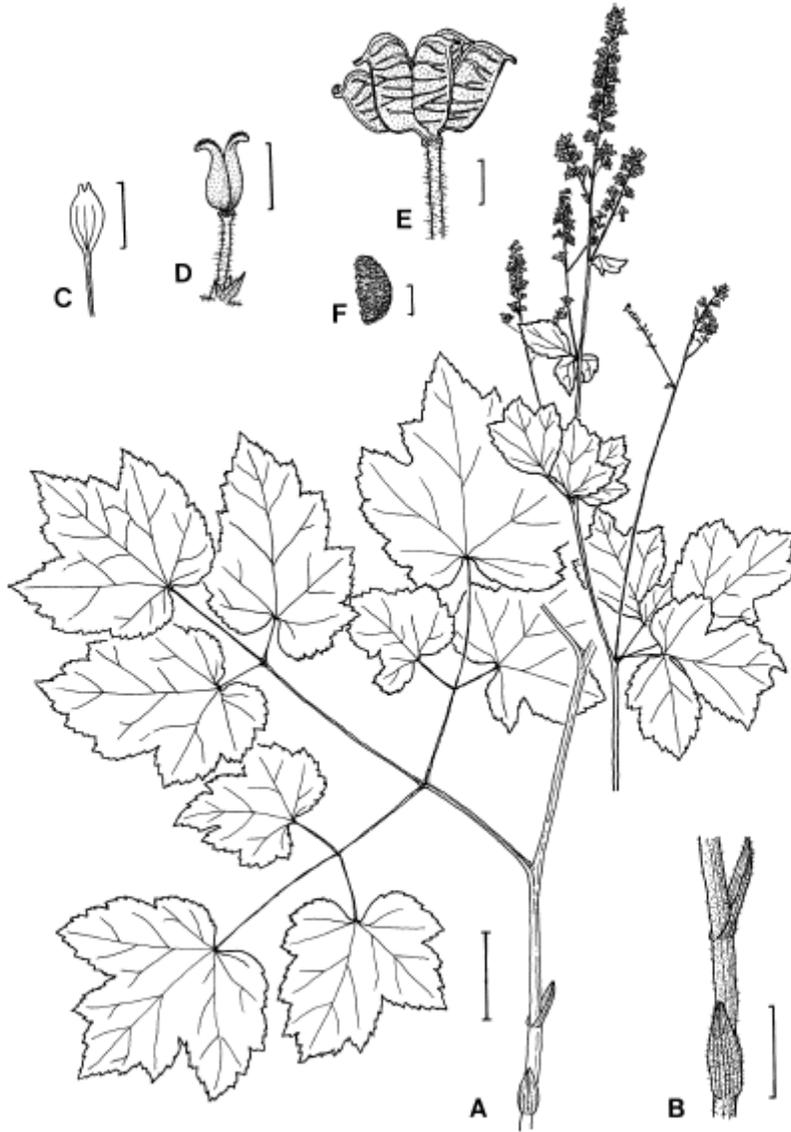


Figure 2. *Cimicifuga elata* var. *alpestris* H.-W. Lee & C.-W. Park. —A. Habit. —B. Stem with sheathing scales. —C. Petal. —D. Pistils and a pedicel with bracteoles. —E. Follicles. —F. Seed. Scale bars 10 cm (A), 5 cm (B), 5 mm (E), 2 mm (D), 1 mm (C, F). A, B, E, F drawn from the holotype (*Lee 1516*, SNU), and C, D from an isotype, by H.-W. Lee.

Figure 4. Line drawing of *Cimicifuga elata* var. *alpestris* from Lee and Park (2004).



Grizzly Peak
(type locality of
var. alpestris)

Bald Mountain
(west of
Ashland)

McDonald
Forest (near
Corvallis)

Figure 5. Sheathing scales surrounding the lower stem nodes on *Cimicifuga elata* from the type locality of *var. alpestris* (Grizzly Peak, Oregon), a nearby population west of Ashland (Bald Mountain, Oregon), and a population near Corvallis, Oregon (McDonald Forest). This characteristic was not unique to *var. alpestris*.



Grizzly Peak
(type locality of
var. *alpestris*)

Bald Mountain
(west of
Ashland)

McDonald
Forest (near
Corvallis)

Figure 6. Pistils in the inflorescences of *Cimicifuga elata* from the type locality of var. *alpestris* (Grizzly Peak, Oregon), a nearby population west of Ashland (Bald Mountain, Oregon), and a population near Corvallis, Oregon (McDonald Forest). Pistil number was found to be variable from plant to plant. High pistil numbers (3-5) were uncommon but more frequent at sites in southern Oregon.



Grizzly Peak
(type locality of
var. alpestris)

Bald Mountain
(west of
Ashland)

McDonald
Forest (near
Corvallis)

Figure 7. Major leaf veins on the upper leaf surfaces of *Cimicifuga elata* from the type locality of *var. alpestris* (Grizzly Peak, Oregon), a nearby population west of Ashland (Bald Mountain, Oregon), and a population near Corvallis, Oregon (McDonald Forest). Scale is in centimeters. No pubescence was found on these leaf veins at any population.



Grizzly Peak
(type locality of
var. alpestris)

Bald Mountain
(west of
Ashland)

McDonald
Forest (near
Corvallis)

Figure 8. Major leaf veins on the undersides of the leaves of *Cimicifuga elata* from the type locality of *var. alpestris* (Grizzly Peak, Oregon), a nearby population west of Ashland (Bald Mountain, Oregon), and a population near Corvallis, Oregon (McDonald Forest). Scale is in centimeters. Pubescence was found on the leaf veins on the undersides of the leaves at nearly all populations, but appeared to be more dense on plants in southern Oregon.

Project status

This project is on-going and the final report is anticipated in 2008. Additional specimens will be included in the final analysis. This interim report summarizes our initial findings only.

Literature cited

Lee, H.-W. and C.-W. Park. 2004. New taxa of *Cimicifuga* (Ranunculaceae) from Korea and the United States. *Novon* 14:180-184.