

***Chlorogalum pomeridianum* (D.C.) Kunth ssp. *austrooreganum* Callahan (Asparagaceae),
A new subspecies from Jackson County, Oregon, and adjacent Siskiyou County, California**

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ABSTRACT

A new subspecies of *Chlorogalum pomeridianum* (D.C.) Kunth is described as *C. pomeridianum* (de Candolle) Kunth ssp. *austrooreganum* Callahan. A suggested common name, "southern Oregon amole," is proposed. Plants are known from throughout Jackson County, Oregon, with fringe populations extending into Siskiyou County, just south of the Oregon/California border. Published on-line www.phytologia.org *Phytologia* 97(4):271- 274 (Oct 1, 2015). ISSN 030319430.

KEY WORDS: *Chlorogalum*, Amole, Asparagaceae

Three other *Chlorogalum* taxa are known to occur within the range of *C. pomeridianum* ssp. *austrooreganum*. *Chlorogalum grandiflorum* has been found at only two locations in Jackson County near Gold Hill; these populations are widely disjunct from its range in the foothills of the Sierra Nevada, California. The other two, *C. angustifolium* and *C. pomeridianum* var. *minus* occur only on ultramafic (serpentine-influenced) soils in southwestern Oregon. The other two *C. pomeridianum* taxa in Jackson County grow in sites separated by elevation. *Chlorogalum pomeridianum* var. *pomeridianum* is found at lower elevations, rarely reaching 600 m (~2000 ft). In contrast, ssp. *austrooreganum* is found at elevations exceeding 1220 m (~4000 ft). Although their elevational ranges overlap (both are found down to 290 m (1000 ft)), there is only one known site where the two taxa grow in close proximity: near the Jackson/Josephine County line along Savage Creek Road off Hwy 99 east of Grants Pass. At this site, Judith Jernstedt, John Erwin and I conducted extensive surveys and found no morphological indication of hybridization between the two taxa. I also attempted to hybridize these two taxa in the nursery without success. For this reason I have chosen to use the rank of subspecies in describing this taxon, rather than variety.

Chlorogalum pomeridianum* var. *pomeridianum

Bulbs 10(20) cm in diameter, bulb coats brown, not membranous, covered with many coarse fibers. Leaves ca. 20-70 long x 3 cm wide margins usually wavy to strongly undulate. Inflorescences: panicles robust, erect, many branched to 2 m height (maximum 3 m), branching pattern symmetrical. Flowers: open in the evening, (vespertine) perianth parts white with purple midvein, spreading to recurved at anthesis, to 35 mm in length, anthers to 2 mm long, style to 15 mm and not exceeding the perianth, perianth and pedicel of equal length. Capsules, short-stipitate, to 7 mm long containing 1-2 seeds/locule. Seeds: rough. Chromosome numbers $2n=30, 36$.

***Chlorogalum pomeridianum* (D.C.) Kunth ssp. *austrooreganum* Callahan, ssp. nov. Fig. 1.**

Type: USA, Oregon: Jackson County, Hidden Valley Ranch, south of Blackwell Hill. N42° 24' 9.6" W123° 0' 23.8", 1700 ft., on ridge east of Harris Gulch, 20 May 2007, *Callahan CPA-HG-2007* (HOLOTYPE: OSC 243400).

The taxon differs from var. *pomeridianum* in that the panicle is not robust, but fragile and narrower in stature, few-branched and rarely to 1 m in height. Leaves ca. 20-40 cm long x 1.5 cm wide, wavy or not. Bulb coats are strictly membranous, white to cream-colored. Seeds are shiny and black. Plants growing in quartzite talus w/*Erythronium multiscapideum* and *E. hendersonii* with an overstory of *Quercus*

garryana, *Q. kelloggii* and *Arctostaphylos viscida*. The seeds are glossy black, bulb coats white membranous, stems fragile, plants not as tall or robust as typical *C. pomeridianum*. $2n = 30$.

It is somewhat surprising that *Chlorogalum pomeridianum* ssp. *austrooreganum* was neither recognized nor collected by any of the early botanists, because it is widely distributed in Jackson County, Oregon, and populations are quite common in the northern-most parts of Siskiyou County, California. *Chlorogalum pomeridianum* var. *pomeridianum* is widespread in California (Jernstedt 2012) and much of southwestern Oregon, as far north as Douglas County. The southernmost range is in northwestern Baja California Norte, Mexico. However, it is strangely absent from most of Jackson County and all of Siskiyou County where it is largely replaced by *Chlorogalum pomeridianum* ssp. *astrooreganum*. In Siskiyou County, California, ssp. *astrooreganum* is found as far south as the Shasta River at the Interstate 5 overpass junction. It is also quite abundant throughout Jackson County in talus and open habitats with heavy clay soils; it has not been found on serpentine soils.

***Chlorogalum pomeridianum* (de Candolle) Kunth var. *minus* Hoover**

Differs from ssp. *austrooreganum* in bulbs with reddish brown membranous bulb coats with few coarse fibers. Leaves: 20-35 cm long x 1.5 cm wide, margins conspicuously wavy. Panicles much shorter, nearly as wide as tall, branching pattern asymmetrical. Seeds: rough. Chromosome number $2n=30$.

The two other species of *Chlorogalum* that have their northernmost range in southwestern Oregon are described below for comparison with the above taxa.

***Chlorogalum angustifolium* Kellogg**

Bulbs to 5 cm diam., tunics reddish-brown, membranous, with few delicate fibers. Leaves to 1 cm wide x 20 cm long, margins generally flat. Inflorescence: to 70 cm, branches upright, pedicels to 3 mm, slender. Flowers: vespertine, perianth parts spreading, not recurving, to 12 mm, oblong, white midvein lime-colored; stamens to 12 mm long, anthers to 3 mm long, yellow, style 4-8 mm long. Fruits: to 3 mm long, chromosome number $n=17$.

This species is distinguished from all other Oregon species by its narrow leaves, small stature, and small flowers.

***Chlorogalum grandiflorum* Hoover**

Bulbs to 7 cm, tunics reddish to brown, membranous with few delicate fibers. Leaves to 12 mm wide x 40 cm long, undulate margins. Inflorescence: to 100 cm, branches upright, pedicels 2-5 mm long. Flowers: vespertine, perianth parts recurved, to 3 cm long, linear, white with purple midvein, anthers, yellow, style to 28 mm long. Fruits: to 8 mm long. The short pedicels, to 5 mm long, easily separate this species from the *C. pomeridianum*, varieties and subspecies with pedicels to 35 mm long. Grows on mafic-ultramafic derived soils in Oregon.

Hybridization: As noted above, no suspected hybrids between var. *pomeridianum* and ssp. *austrooreganum* have been found. In contrast, hybrids are quite common where the ranges of var. *pomeridianum* and var. *minus* overlap in western Tehama County, California. The bulbs of the intermediate plants exhibit the coarse bulb hairs and an intermediate height panicle. This observation suggests that var. *pomeridianum* and var. *minus* share a closer genetic relationship with each other than with either with ssp. *austrooreganum*.

Additional specimens examined. USA Oregon: Jackson Co.: Rocky Creek, Applegate, 1700 ft., open hillside, Abundance: moderately sparse. Soil type: rocky, dry, clay. Assoc. species *Arctostaphylos*, *Rhus*. 21 June 1959, R. Lamb SOC17310. Jackson Cr., W. Jacksonville, 1700 ft. Habitat, open hillside. Abundance spotty. Soil type, rocky, semi-dry. Assoc. species chaparral, foxtail. Remarks: like a camas. 24 June 1961 Walt Humphrey SOC17309, SOC17308. All above specimens designated as Paratypes.

Because European settlement in southwestern Oregon in the 1850s, livestock grazing, agriculture, and expanding urbanization have presumably reduced the abundance of ssp. *austrooreganum*. First the pear industry and now the wine industry are major factors in population decline, primarily due to herbicides and cultivation. In many areas of Jackson County ssp. *austrooreganum* can only be found between the fence line and the highway right of ways, having been grazed out of the open grasslands that are reduced to Mediterranean forbs and annual non-native grasses. According to a local rancher, Gene Hansen (1921-1999), most of the foothill grasslands were dominated by “tall fescue” *Festuca californica* in the early part of this century (Hanson, pers. comm., 1990). Overgrazing of these grasslands resulted in the complete removal of the fescue and replacement by exotic annual grasses. *Festuca californica* is a common associate of ssp. *austrooreganum* and the abundance of both taxa has been severely reduced with the introduction of domestic livestock, in addition to herbivory by native fauna. Amole is highly palatable to black-tailed deer, which forage on all above ground parts. Additionally, pocket gophers and ground squirrels dig and consume the bulbs. The reason this taxon does so well in talus and rock outcrops is because pocket gophers and ground squirrels are unable to dig out the bulbs.

Strangely, horses do not eat this plant, as I observed in a horse pasture in which ssp. *austrooreganum* was abundant even with heavy use of other species. Cattle find the leaves and panicle highly palatable; it takes only about three years of grazing to kill the bulb. I have observed that ssp. *austrooreganum* is absent in areas grazed by cattle, whereas it is abundant where the animals are excluded. Presently, *Centaurea solstitialis* dominates most of the grasslands that were formerly habitat for ssp. *austrooreganum*, which have lost their value for grazing due to this unpalatable exotic. There is a very obvious elevation zone that was once prime habitat for this taxon as one climbs into the foothills from Ashland, either on the Dead Indian Memorial Road or Highway 66. These two areas are now dominated with *C. solstitialis* and non-native annual grasses. Fortunately, some large populations of ssp. *austrooreganum* currently exist on Sprignett Butte in northwestern Jackson County. The plants are mostly confined to talus slopes and are found all the way to the summit of the peak at over 1219 m.

After conducting surveys of this taxon throughout its range, it seems very likely that over 95% of its distribution is in Jackson County, Oregon, hence the name *austrooreganum*, referring to southern Oregon.

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Figure 1. Holotype of *C. pomeridianum* (D.C.) Kunth ssp. *austrooreganum* Callahan.