

Siskiyou Ecological Research Project
Siskiyou Crest White Paper Series

Applegate stonecrop (*Sedum oblancheolatum*):
A central Siskiyou Crest endemic found in the mountains of the
Applegate River watershed and adjacent portions of the Klamath
River watershed.



Applegate stonecrop (Sedum oblancheolatum) blooming on metavolcanic outcrops near Anderson Butte in the Little Applegate River watershed. Credit for all photos: Luke Ruediger



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Sedum is a genus of flowering plants in the Crassulaceae family with drought adapted, water storing succulent leaves and stems. Often known by the common name stonecrop, plants in the genus Sedum are often found growing on rock outcrops throughout the Northern Hemisphere and portions of the Southern Hemisphere in Africa and South America. In 2016, Sedum was divided into two subgenera, Sedum and Gormania. In general, the subgenera Gormania is found in Europe and North America and contains 110 species. In the western United States Sedum section Gormania is found only in Oregon, Nevada and California, with California being the hotspot for biodiversity. Recent research has surmised that the Klamath-Siskiyou Mountains are a possible species “*refugium, or zone of ancestral origin*” for Sedum section Gormania, and it is presumed that, “*various taxa or groups diverged and dispersed*” from this area and spread to surrounding regions (Zika. 2018).

In the Klamath-Siskiyou Mountains, Sedum are found abundantly on rock outcrops or rocky soils in forest openings. These habitats and subsequent Sedum populations are often slightly to strongly isolated from each other, and seeds of this species lack adaptations such as wings or adhesive qualities that aid in long distance seed dispersal. Researchers found that, “*Seed dispersers and pollinators surely moved genes from outcrop to outcrop along a ridgetop, but getting genes to the next ridge was probably a rare event. Thus populations tended to diverge genetically over both long and short distances.*” (Zika. 2018).

Such genetic divergence has created widespread speciation and variation within species. Currently 17 species in all six groups of the Gormania subgenera are found in the Klamath-Siskiyou Mountains (Zika. 2018). This includes 9 of the 10 species of Sedum endemic to the area, including: *S. citirinum*, *S. eastwoodiae*, *S. flavidum*, *S. laxum ssp. heckneri*, *S. marmoreense*, *S. oblancheolatum*, *S. moranii*, *S. paradisum spp. paradisum*, and *S. patens*. Each of these species tends to be found in a specific geographic area, subrange or niche habitat and is isolated from the others by heavily forested and less hospitable habitats.



Sedum oblancheolatum blooming on Elliott Creek.

One particularly interesting species is *Sedum oblancheolatum*, also known as Applegate stonecrop. This beautiful little Sedum is a relatively narrow endemic found only in the central Siskiyou Crest region. The vast majority of the world’s population is located in the Applegate River watershed, with one small population found in adjacent portions of the Klamath River watershed near Cook and Green Pass. Found on rock outcrops or on rocky soils in southern Jackson County and the eastern edge of Josephine County, Oregon, as well as the northern

edge of Siskiyou County, California, the species colonizes a wide variety of substrates, including phyllite-schist, schist, metavolcanics, and metasedimentary rock outcrops in the Applegate

Valley foothills and predominantly on the northern slopes of the Siskiyou Crest. In total, the range of the species extends across approximately 150,000 acres.

Quite showy and distinctive, Applegate stonecrop is uniquely glaucous with a white, waxy coating covering the young foliage, stems and inflorescences. The granular, waxy coating wears off over time and leaves a white residue on your fingers when handling. The leaves are strap-shaped or oblanceolate, strongly flattened, notched at the tip, and grow in dense rosettes. At times they form dense colonies on rock outcrops or well drained soils. When blooming, the flowers are cream colored, with white to greenish filaments, and yellow anthers.



The glaucous foliage of Sedum oblanceolatum on Mt. Isabelle at the headwaters of Forest Creek.



The pale-yellow flowers and bright yellow anthers of Sedum oblanceolatum blooming on Elliott Creek in the Upper Applegate River watershed.

Applegate stonecrop is considered a relictual species that has grown in isolation for long periods of time in a limited geographical area. It also appears that the relatively low elevation habitat of the species has contributed to its isolation and speciation. Unlike more widespread and newly evolved species such as Cream stonecrop (*Sedum oregonense*) and Sierra stonecrop (*Sedum obtusatum*), Applegate stonecrop does not generally create vast clonal colonies. Instead, Applegate stonecrop utilizes more sexual reproduction and seedling establishment for regeneration, rather than the vegetative reproduction that characterizes many related taxa (Denton. 1979).

Additionally, self-compatibility or self-fertility is more common in relictual species like Applegate stonecrop, while the phenology or flowering periods are staggered between Applegate stonecrop and other species, reducing the potential for hybridization. (Denton. 1979a). Yet, hybridization is occurring between the more common *Sedum oregonense* and *Sedum oblanceolatum*, creating distinctive and unique hybrids in disjunct populations near Cook and Green Pass and Copper Butte (Zika. 2018). Being at the higher elevation portion of the Applegate stonecrop's limited range, it appears these species grow together, share bloom periods and have begun the process of hybridization in this highly diverse portion of the Siskiyou Crest.

Particularly robust populations of Applegate stonecrop are found on both Elliott Creek and Teel Creek, growing from layered outcrops of Condrey Mountain schist, a metasedimentary rock type found in a small portion of the Siskiyou Crest in the Upper Applegate and in portions of the Klamath River watershed. It also grows abundantly in the Little Applegate River drainage on the ridges between Anderson Butte and Bald Mountain. These populations grow from isolated metavolcanic outcrops adjacent to sweeping grasslands, disjunct groves of western juniper, chaparral and mixed conifer stands. Large populations can also be found growing from rock outcrops in the mountains and mixed conifer forests between Carberry Creek, the Upper Applegate Valley and Thompson Creek. Additional populations can also be found north of the Applegate River on Long Gulch and in the headwaters of Humbug Creek, yet are absent from the western portion of the Applegate Valley including Williams Creek and downstream to the Rogue River.



A native yellow faced bumblebee (Bombus vosnesenskii) foraging on Applegate stonecrop flowers.

First described as a species in 1950 by RH Whittaker, to this day very little is documented regarding the plant's pollination biology, however, Sedum species are known to produce copious nectar and foraging bumblebees are routinely seen utilizing the pale-yellow to cream colored flowers of Applegate stonecrop. Sedum is also used by various species of butterfly as a larval host plant, including the moss elfin, Rocky Mountain parnassian, and others. It is likely, but currently unknown if local butterflies are utilizing Applegate stonecrop as a larval host plant.

Applegate stonecrop is a beautiful and iconic species, endemic to the Siskiyou Crest region and emblematic of the area's unique botanical diversity. Although obscure, geographically limited, and little known by the broader public, the species represents the botanical complexity of the Siskiyou Crest region and the treasures you might find while exploring the region.

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Zika, Peter., Wilson, Barbara., Brainerd, Richard., Otting, Nick., Darington, Steve., Knaus, Brian, Kierstead Nelson, Julie. 2018. A review of *Sedum* section *Gormaniana* (Crassulaceae) in western North America. *Phytotaxa* 368 (1): 001-061. September 10, 2018. <https://doi.org/10.11646/phytotaxa.368.1.1>

Plants perennial, glabrous; stolons 1.4–5 mm in diameter when dried.

Stems erect, branched from base, bearing dense rosettes with hidden internodes.

Leaves rosette leaves narrowly oblanceolate, 9–55 × 5–10 mm, 2.5–8 × as long as wide, with thick layer of granular white wax.

Flowering shoots 10–22 cm; stem leaves ascending to somewhat spreading, alternate, narrowly oblanceolate, 15–30 × 3–10 mm, 2.2–5 × as long as wide, broadest above middle, bases not auriculate, surfaces strongly glaucous.

Inflorescences panicle-like cymes, 2.5–8.5 cm, with thick layer of granular white wax, 3–5-branched.

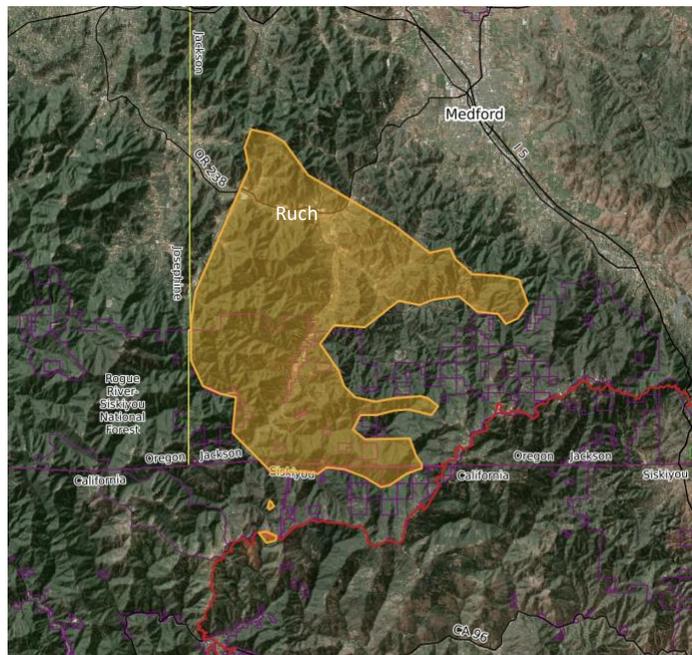
Flowers calyx lobes 4–8 mm, (30)40(80)% as long as petals, with thick layer of granular white wax, tips acute; petals ascending, 9–14 mm, white, sometimes apparently yellow due to color of anthers, tips acute to attenuate; anthers yellow.

Fruits erect, fused to slightly above base.

Rock outcrops, rocky slopes. Flowering May–Jul. 400–1800 m. Sisk. CA. Native.

Sedum oblanceolatum can be recognized by its narrow rosette and stem leaves. The dense, almost granular, waxy coating on the young leaves, panicle branches, and sepals imparts a waxy residue when handled. The distinctive glaucous coating wears off gradually as the season progresses. It also melts off in a plant press or microwave.

Meyers, S.C., T. Jaster, K.E. Mitchell, T. Harvey & L.K. Hardison, eds. 2020. *Flora of Oregon. Volume 2: Dicots A-F*. Botanical Research Institute of Texas, Fort Worth, TX. 880 pp.



The orange polygons show the documented range of *Sedum oblanceolatum* using personal knowledge, *Calflora*, *Oregon Flora*, and *iNaturalist* observation maps.