Rare Plant Status Review: *Sedum paradisum* subsp. *subroseum*
Proposed Addition to California Rare Plant Rank 1B.2, G3G4T2 / S2
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28 March 2024
Changes to the original text are in blue font

This status review is being expedited through an agreement between the California Native Plant Society and the Center for Plant Conservation (CPC), with contributions from the state of California, CPC, and the California Plant Rescue initiative. Aside from being advanced as part of this agreement, the process, content, and information provided herein is not altered, modified, or developed differently in any way or form compared to other status reviews developed by CNPS.

Background and Taxonomy
Sedum paradisum (Denton) Denton ex. B. L. Wilson subsp. *subroseum* B. L. Wilson & Zika is a perennial herb in the Crassulaceae endemic to California where it is known from Plumas and Sierra counties (Zika et al. 2022, CCH2 2024, iNaturalist 2024). It is not included in *The Jepson Manual* (Denton 1993) or *Flora of North America* (Ohba 2009). It is included in the *Jepson eFlora* (Zika et al. 2022). In their 2018 paper on *Sedum* section *Gormania* of western North America, the members of the Carex Working Group examined populations belonging to section *Gormania* and redefined species limits (Zika et al. 2018). Plants previously thought to be *S. obtusatum* subsp. *boreale* on slopes north of the Middle Yuba River were reassigned to *S. paradisum* subsp. *subroseum*, a taxon with corollas white fading to pink (rather than pale to deep yellow in *S. obtusatum*) (Zika et al. 2018, Zika et al. 2022). *Sedum paradisum* subsp. *subroseum* is named for the reddish colors found in the fresh and aged petals as well as the rusty red anthers (Zika et al. 2018).

Ecology
This species grows on steep, rocky slopes and cliffs, in full sun to partial shade, within lower and upper montane coniferous forest at elevations of (914) 1308–2164 m. [Note that the elevation of 914 m may be an error taken from *Ahart s.n.* (CAS:BOT:932358) which is from La Porte; La Porte is at 1525 m, not 914. This error is likely responsible for the low elevation of 900 m given in the *Jepson eFlora* (Zika et al. 2022)]. The substrate where this species grows includes granite, andesite, serpentinite, peridotite, volcanics, schist, and shale (CWG 2016, Zika et al. 2018, Zika et al. 2022, CCH2 2024). Plants have been observed in flower from June to August (and very early September) (Zika et al. 2022, CCH2 2024). Associates include *Pinus* spp., *Pseudotsuga menziesii*, *Abies magnifica*, *A. concolor*, *Calocedrus decurrens*, *Quercus vacciniifolia*, *Arctostaphylos* spp., *Eriogonum* spp., *Phlox diffusa*, *Penstemon newberryi*, *Spiraea splendens*, *Streptanthus tortuosus*, *Poa secunda*, and *Cheilanthes gracillima* (Zika et al. 2018, CCH2 2024).

Distribution and Abundance
We investigated location records for *Sedum paradisum* subsp. *subroseum* from the following sources: two taxonomic papers (Denton 1982, Zika et al. 2018); a spreadsheet of *Sedum* section *Gormania* species locations compiled by the Carex Working Group (CWG 2016); and online specimen and observation data (Calflora 2024, CalPhotos 2024, CCH2 2024, iNaturalist 2024). Based on those sources, *Sedum paradisum* subsp. *subroseum* is currently known from 38

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occurrence records in Plumas and Sierra counties; sources that state that this taxon is in Butte County are based on a label-making error that was carried into the Zika et al. 2018 publication and some online sources (Zika et al. 2018, CCH2 2024, Wilson 2024 pers. comm.). Of the 38 locations, only nine are historical (last observed over 20 years ago), and the other 29 are recent. Almost no data on population sizes are available, with one observation of 100 to 1000 individuals recorded for the much-visited location south of Onion Valley, Plumas County (Record 28). In addition to that location, specimen label data state that the plants are common at eight locations, locally abundant at one, scattered at two, and uncommon at two. The majority of the occurrences are on National Forest lands: 25 on the Plumas NF, eight on the Tahoe NF, two within Plumas-Eureka State Park, one on lands owned by the Sierra Land Trust, and two on lands of unknown ownership. Three of the locations in the Plumas National Forest are within the Bucks Lake Wilderness. At the bottom of the location table are nine rows highlighted in pink that are not included in this distribution and occurrence analysis. Six records are excluded because the locations are out of range; the other three have their locations obscured. Add in attempts to get more info about obscured locations and info about shasta county locations.

Plumas NF sent information on number of plants known on the forest = 2973 plants and two shape files. The shape files document six occurrences. Three are the same as records 28, 29, and 33. Three appear to be new for the location table at approximately 39.889, -120.961, 39.886, -120.927, 39.813, -120.864.

Status and Threats

Sedum paradisum subsp. *subroseum* is ranked as T2 (imperiled) by NatureServe (NatureServe 2024) and considered of conservation concern by Zika et al. (2018). Like all *Sedum* species, populations ~~could be~~ are threatened by horticultural collectors (Zika et al. 2018). It is also ~~possibly~~ threatened by fire, fire suppression activities, road maintenance, and off highway vehicles (Belsher 2023 pers. comm., Kierstead 2023 pers. comm.). This species was observed crown-sprouting after the 2020 North Complex Fire (CCH2 2024 [*Janeway 13911*]), but it could be impacted by hot fires that affect underground stems and roots (Kierstead 2023, pers. comm.).

Summary

Based on the available information, CNPS and CNDDB recommend adding *Sedum paradisum* subsp. *subroseum* to California Rare Plant Rank 1B.2 of the CNPS Inventory. If knowledge on the distribution, threats, and rarity status of *Sedum paradisum* subsp. *subroseum* changes in the future, we will re-evaluate its status at that time.

Recommended Actions

CNPS: Add *Sedum paradisum* subsp. *subroseum* to CRPR 1B.2
CNDDB: Add *Sedum paradisum* subsp. *subroseum* to G3G4T2 / S2

Draft CNPS Inventory Record

Sedum paradisum (Denton) Denton ex. B. L. Wilson ssp. *subroseum* B. L. Wilson & Zika
Common name: Plumas stonecrop
Family: Crassulaceae
CRPR 1B.2

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Counties: Plumas, Sierra
States: California
Quad names: Blue Nose Mtn. (3912077), Bucks Lake (3912182), Clio (3912065), Gold Lake (3912066), Haskins Valley (3912172), Johnsville (3912076), La Porte (3912068), Mt. Fillmore (3912067), Onion Valley (3912078), Quincy (3912088), Sierra City (3912056)
General Habitat: Lower montane coniferous forest, upper montane coniferous forest
Microhabitat: Openings, rocky, serpentine, granitic, volcanic
Microhabitat details: Grows on cliffs and steep rocky slopes, in full sun to partial shade, within lower and upper montane coniferous forest.
Elevation: 1305–2165 meters
Life form: Perennial herb
Blooms: June through August (very early September)
Notes: References to this taxon growing in Butte County in Zika et al. 2018 are an error. Reports of this species growing near 900 m in elevation may be based on a label error for *Ahart s.n.* (CAS:BOT:932358) which is from La Porte with a stated elevation of 914 m; La Porte is at 1525 m, not 914. This error is likely responsible for the low elevation of 900 m given in the *Jepson eFlora*.
Threats: ~~Possibly t~~Threatened by fire, fire suppression activities, road maintenance, vehicles, and horticultural collecting.
Taxonomy: Resembles *Sedum obtusatum* from which it differs by having petals that are white fading to pink (versus pale to deep yellow). Plants previously referred to *S. obtusatum* ssp. *boreale* in Plumas and Sierra counties now determined to be *S. paradisum* ssp. *subroseum*. *Sedum paradisum* ssp. *subroseum* is geographically separated from *S. obtusatum* by the Middle Fork of the Yuba River in Sierra County.
Selected references:
- CNPS Status Review: Proposed Addition to CRPR 1B.2 (2024)
- Original description: *Phytotaxa* 368: 1–61 (2018)
- Taxonomic treatment: *Phytotaxa* 368: 1–61 (2018)

Literature Cited

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CalPhotos. 2024. CalPhotos: Plants. Regents of the University of California, Berkeley. Website http://calphotos.berkeley.edu/flora/ [accessed March 2024].

[CWG] Carex Working Group. 2016. Excel spreadsheet of *Sedum* section *Gormania* population locations created by the Carex Working Group (V18 Dec 2016 – final determinations). Carex Working Group, Corvallis, Oregon.

[CNPS] California Native Plant Society, Rare Plant Program. 2024. Inventory of Rare and Endangered Plants of California (online edition, v-9.5). Website https://www.rareplants.cnps.org [accessed March 2024].

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[CCH2] Consortium of California Herbaria Portal 2. 2024. Data provided by the participants of the Consortium of California Herbaria and the California Phenology Thematic Collections Network (CAP-TCN). Regents of the University of California, Berkeley and Cal Poly, San Luis Obispo. Website http//:www.cch2.org/portal/index.php [accessed March 2024].

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Denton, M. F. 1993. *Sedum.* In: The Jepson Manual, Higher Plants of California, University of California Press, Berkeley, CA.

iNaturalist. 2024. Available at: https://inaturalist.org [accessed March 2024].

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Zika, P. F., R. E. Brainerd, J. Kierstead, B. L. Wilson, N. Otting, and S. Darington. 2022. *Sedum* (Crassulaceae). In: Jepson Flora Project (eds.), *Jepson eFlora*. Website: https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=10882 [accessed March 2024].

Personal Communications

Belsher, Jim. 2023. Botanist, USDA Forest Service. Email correspondence to nominate *Sedum paradisum* subsp. *subroseum* and information on threats. Personal communication 24 January 2023.

Bovee, Kirsten. 2024. Botanist, USDA Forest Service. Email correspondence regarding location, population size, and coordinates for CalPhotos observation/photos. Personal communication 8 April 2024. Add in that asked for pop info even if doesn't reply

Janeway – add in that asked about population info even if doesn't reply

Kierstead, Julie. 2023. Forest Botanist, Shasta-Trinity National Forest (retired). Email correspondence regarding threats to *Sedum paradisum* subsp. *subroseum*. Personal communication 23 January 2023.

Wilson, B. L. 2024. Botanist, Carex Working Group and Associate, Herbarium Oregon State University. Email correspondence regarding citation of Butte County in Zika et al. 2018 paper and other specimen questions. Personal communication 26 March 2024. Add info about iNat

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observation and CWG111 from Nevada County and other Nevada County observation 5 April 2024

Zika, Peter. 2021. Botanist and Associate of the Burke Museum, University of Washington. Email correspondence regarding locations of *Sedum* species and sharing of 2016 CWG location spreadsheet. Personal communication 18 March 2021. Add in that contacted about pop info whether or not replies