

Rare Plant Status Review: *Sedum patens*
Proposed Addition to California Rare Plant Rank 1B.2, G2 / S2
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This species review is being expedited through a challenge cost share agreement between the California Native Plant Society and the USDA Forest Service, Pacific Southwest Region. 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 patens Zika is a perennial herb in the Crassulaceae endemic to California and known only from the South Fork of the Smith River in the Klamath Ranges bioregion of southern Del Norte County (Zika et al. 2018). It is not included in *The Jepson Manual* (Denton 1993), *Jepson eFlora* (Boyd and Denton 2012) or *Flora of North America* (Ohba 2009). In their recent paper on *Sedum* section *Gormaniana* of western North America, the members of the Carex Working Group examined populations belonging to section *Gormaniana* and redefined species limits (Zika et al. 2018). Several populations in the Smith River drainage, previously thought to be *Sedum laxum*, were described as a new species, *Sedum patens*.

In their work on *Sedum*, both Denton and the Carex Working Group emphasized visiting populations in the field and the study of living material (Denton 1982, Zika et al. 2018). The characters that separate *Sedum* species, such as corolla color, petal orientation, inflorescence orientation, and leaf color, shape, and orientation, are best seen in fresh material, and many herbarium collections are difficult to identify (Zika et al. 2018). *Sedum patens* can be separated from the other members of section *Gormaniana* by its combination of usually dense (to loosely arranged) rosettes with obovate leaves with cuneate bases, flat-topped inflorescences, and flowers with white, strongly spreading petals and yellow anthers (Zika et al. 2018). It is most similar to *S. laxum* subsp. *laxum*, with which it overlaps in distribution; *Sedum laxum* subsp. *laxum* differs in having flowers with erect, usually pink petals and dark red anthers (Zika et al. 2018).

Sedum patens was named for its widely spreading petals (Zika et al. 2018).

Ecology

This species grows in open lower montane coniferous forest (possibly north coast coniferous forest) on dry or damp, rocky ledges, slopes, cliffs, or talus (often steep) between 90 and 210 m in elevation (CWG 2016, Zika et al. 2018). Within that rocky habitat, plants are usually found in full sun, but some grow in sheltered crevices and in partial shade. The underlying soils and bedrock are ultramafic, but one colony was growing on wood in a knothole of a fallen tree (Zika et al. 2018). Plants have been observed in flower from May to July (CWG 2016, CCH2 2021, Zika et al. 2018). Associates include: *Pseudotsuga menziesii*, *Chamaecyparis lawsoniana*, *Rhododendron occidentale*, *Toxicodendron diversilobum*, *Frangula californica* subsp. *occidentalis*, *Holodiscus discolor*, *Whipplea modesta*, *Achillea millefolium*, *Cerastium arvense*, *Silene serpentinicola* (CRPR 1B.2), *Tauschia glauca* (CRPR 4.3), *Castilleja pruinosa*, *Erigeron foliosus*, *Eriophyllum lanatum*, *Montia parvifolia*, *Triteleia laxa*, *Iris thompsonii* (CRPR 4.3),

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Carex mendocinensis, *Poa piperi* (CRPR 4.3), *Elymus glaucus*, *Festuca* spp., *Adiantum aleuticum*, *Aspidotis densa*, and *Polystichum imbricans* (CWG 2016, Zika et al. 2018, CCH2 2021, CPNWH 2021). The northern-most populations are just south of and upslope from the coastal redwood association (north coast coniferous forest) dominated by *Sequoia sempervirens* in the canyon bottoms, and it is possible that populations will be found on the edges of this forest type as well (Zika et al. 2018).

Distribution and Abundance

We assembled location records for *Sedum patens* from three sources for this account: the Zika et al. (2018) paper; a spreadsheet of *Sedum* section *Gormaniana* species locations compiled by the Carex Working Group (CWG 2016); and online specimen data for specimens identified as *S. patens* and *S. laxum* subsp. *laxum* (CCH2 2021, CPNWH 2021). *Sedum patens* is currently known from six recent occurrence records that have been observed since 2014 in the South Fork of the Smith River drainage. Population sizes range from five plants to approximately 1000 individuals, with a majority of location records having between 50 and 100 plants (Zika et al. 2018; Zika 2021 pers. comm.). Three of the records are located on Six Rivers National Forest land, and three are located on lands of unknown ownership. Prior to the work of the Carex Working Group, very little was known about *S. patens*, which was first collected in 1950. A more complete assessment of its distribution awaits further field surveys in steep trail-less terrain (Zika et al. 2018). Photos of plants in the adjacent Mill Creek drainage to the west, on or near state park land, may be *S. patens*, but as of this writing, no specimens from that area have been seen by the Carex Working Group (Zika et al. 2018).

Status and Threats

The name *Sedum patens* does not have any conservation status in California or elsewhere (NatureServe 2021). Populations could be threatened by horticultural collectors (Zika et al. 2018) and increased fire frequency due to climate change; *Sedum* species likely do not respond well to fire, and the heat of the fire can kill entire populations (Kierstead 2021 pers. comm.).

Summary

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

Recommended Actions

CNPS: Add *Sedum patens* to CRPR 1B.2

CNDDDB: Add *Sedum patens* to G2 / S2

Draft CNPS Inventory Record

Sedum patens Zika

Smith River stonecrop

Crassulaceae

CRPR 1B.2

Del Norte

Cant Hook Mtn. (4112368), Hiouchi (4112471)

Lower montane coniferous forest / openings, rocky, talus, rock crevices, ultramafic; elevation 90-210 meters

Perennial herb. Blooms May to July

Possibly threatened by horticultural collecting and fire. Similar to *S. laxum* ssp. *laxum*; differs in having flowers with white, strongly spreading petals and yellow anthers vs. flowers with erect, usually pink petals and dark red anthers in *S. laxum*. See *Phytotaxa* 368: 1–61 (2018) for original description.

Literature Cited

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

[CCH2] Consortium of California Herbaria Portal 2. 2021. 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 2021].

[CPNWH] Consortium of Pacific Northwest Herbaria. 2020. Data provided by the participants of the Consortium of Pacific Northwest Herbaria. University of Washington Herbarium. Website <http://www.pnwherbaria.org/data/search.php> [accessed March 2021].

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Personal Communications

Kierstead, Julie. 2021. Forest Botanist, Shasta-Trinity National Forest (retired). Email correspondence regarding fire response of *Sedum*. Personal communication 5 March 2021.

Zika, Peter. 2021. Botanist and Associate of the Burke Museum, University of Washington. Email correspondence regarding population sizes of *Sedum patens*. Personal communication 18 March 2021.

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