

**Spermolepis echinata was deleted from 2B.3, S. infernensis was added to 1B.2, and S. lateriflora was added to 2A in the CNPS Inventory on January 21, 2016**

**Rare Plant Status Review: *Spermolepis echinata*, *S. infernensis*, and *S. lateriflora***

**Proposed Deletion of *S. echinata* from CRPR 2B.3, G5 / S1**

**Proposed Addition of *S. infernensis* to CRPR 1B.2, G1 / S1**

**Proposed Addition of *S. lateriflora* to CRPR ~~2A~~ ~~2B.2~~, G5 / ~~SH~~ ~~S4~~**

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Changes made to the original document are in blue text.

### **Background**

***Spermolepis echinata*** is an annual herb in the Apiaceae that has been included on California Rare Plant Rank (CRPR) 2B of the CNPS Inventory since the 6th Edition (RPSAC and Tibor 2001). It was known in California from just five occurrences in the Borrego Valley region of San Diego County, and was included in both *The Jepson Manual* (Constance 1993) and *The Jepson Manual, Second Edition* (Constance and Wetherwax 2012). In a recent taxonomic study of the genus, however, Nesom (2012) re-circumscribed *S. echinata* to a narrower-concept species that does not extend west of the Rocky Mountains. The plants from California that were referable to *S. echinata* are now treated as two newly-described taxa: *S. infernensis* and *S. lateriflora*. Author G. Nesom (pers. comm. 2015) plans to recognize both *S. infernensis* and *S. lateriflora* for California in his upcoming *Flora of North America* treatment. As *S. echinata* is no longer known from California, we are proposing to delete this plant from the CNPS Inventory. In its place, we are proposing to add both *S. infernensis* and *S. lateriflora*.

***Spermolepis infernensis*** is an annual herb in the Apiaceae that is restricted to the vicinity of Anza-Borrego Desert State Park. It was recently described by Nesom (2012), and was therefore not included in earlier publications, such as *The Jepson Manual* (Constance 1993) and *The Jepson Manual, Second Edition* (Constance and Wetherwax 2012); the *Spermolepis* treatment for the *Flora of North America* is not yet available, but author G. Nesom (pers. comm. 2015) will recognize it for California. Nesom (2012) described *S. infernensis* based on two duplicate sheets, which had a total of nine specimens that were morphologically consistent. The *S. infernensis* plants had previously been called *S. echinata*, which is no longer thought to occur in California. The sessile umbels of *S. infernensis* are a key feature that separates the plant from *S. echinata*, which has pedunculate umbels. Nesom (2012) noted the morphological similarity of *S. infernensis* to *S. lateriflora*, as both plants have sessile umbels. He hypothesized that the two could be sister species, or that *S. infernensis* could be a recent derivative of *S. lateriflora*. The two taxa occur within about 5-8 km of each other at Anza-Borrego Desert State Park, but *S. lateriflora* is a much more widespread plant. *Spermolepis infernensis* differs from *S. lateriflora* based on its “sparse fruit vestiture of apically straight, blunt-tipped hairs”, compared to the “densely echinate-bristly” fruits with “sharp-pointed, apically hooked hairs” in *S. lateriflora* (see fruit photos in Nesom 2012). At least one specimen of *S. infernensis* had previously been misidentified as

*Apiastrum angustifolium* (Oberbauer 157, CCH 2015). *Spermolepis infernensis* blooms between March and April.

*Spermolepis infernensis* grows in rocky and sandy sites in Sonoran desert scrub. It has been found on several different geographic features, including canyons, bajadas, and sandy flats (CCH 2015). *Spermolepis infernensis* grows between 230 and 670 meters in elevation.

There are only three known occurrences of *S. infernensis*, which are centered around the northwestern part of Anza-Borrego Desert State Park. Two of the occurrences are located in Anza-Borrego Desert State Park, while one occurrence is on adjacent private land. Only the occurrence on private land (*Hendrickson and Beltran 3637*, CCH 2015) is recently documented, and was noted as locally scarce. The other two occurrences are historical, and lack population-size information. One additional occurrence, previously identified as *S. echinata* (CNDDDB EO #5, based on Reiser 1994), lacks a specimen and therefore cannot be definitively identified to *S. infernensis* or *S. lateriflora*. The occurrence is located about 8km southwest of the nearest confirmed *S. infernensis* occurrence, and 5 km northeast of the nearest confirmed *S. lateriflora* occurrence (see Fig. 1). Nesom (2012) mentioned several additional, unvouchered occurrences of *S. echinata* in California that needed to be verified as either *S. infernensis* or *S. lateriflora*. However, further investigation shows that these were references to the CNPS Inventory, the CNDDDB, and a species checklist for Anza-Borrego Desert State Park, revealing that there is no new occurrence-level data in California (2015). Recent attempts to relocate populations have been mostly unsuccessful, presumably due to the recent drought (L. Hendrickson pers. comm. 2015). Discovery of additional populations in the area seems possible, as *S. infernensis* could go unnoticed due to its inconspicuous habit (Nesom 2012), its short flowering window, and potentially reduced population sizes in recent drought years (L. Hendrickson pers. comm. 2015).

Threats to *S. infernensis* are currently unknown; however, the presence of two of the three known occurrences on State Parks lands should afford it some protection.

Based on the available information, CNPS and CNDDDB recommend adding *Spermolepis infernensis* to CRPR 1B.2 of the CNPS Inventory. Although no threats are currently known, we suggest a threat rank of .2 based on its very limited number of occurrences, and the historical status of two of its three occurrences. If more information becomes available, we will re-evaluate its status at that time.

***Spermolepis lateriflora*** is an annual herb in the Apiaceae that is distributed in the southwestern United States and Mexico. It was recently described by Nesom (2012), and was therefore not included in earlier publications, such as *The Jepson Manual* (Constance 1993) and *The Jepson Manual, Second Edition* (Constance and Wetherwax 2012). Author G. Nesom (pers. comm. 2015) will recognize *S. lateriflora* for California in his upcoming *Flora of North America (FNA)* treatment. The *S. lateriflora* plants had previously been called *S. echinata*, which is now considered a narrower-concept species from eastern North America. *Spermolepis lateriflora* has sessile umbels, a key

feature that separates it from *S. echinata* (which has pedunculate umbels). See above section on *S. infernensis* for the distinction of *S. infernensis* from *S. lateriflora*. *Spermolepis lateriflora* flowers in California from March to April (CCH 2015).

In California, *Spermolepis lateriflora* grows in rocky and sandy sites in Sonoran desert scrub. It has been observed in canyons and in an open area at the foot of a rocky slope, but its affinity for specific habitats is poorly known. A single disjunct occurrence in Los Angeles County was found along “shady, moist banks” (CCH 2015). *Spermolepis lateriflora* grows between 335 and 670 meters in elevation.

There are four confirmed occurrences of *S. lateriflora* in California, in addition to two other possible occurrences that need confirmation. Of the four confirmed occurrences, three are in Anza-Borrego Desert State Park, and the fourth has an unknown landowner in Los Angeles County. All of the occurrences are historical, [with the most recent occurrence being documented from 1952](#), and [no occurrences](#) ~~none~~ include any population-size information. One additional unvouchered occurrence from “north of Plum Canyon” in Anza-Borrego Desert State Park (cited as *S. echinata* in Reiser 1994) could either be *S. lateriflora* or *S. infernensis*, as the occurrence has no voucher specimen (see Fig. 1). Another occurrence, from the Oakland Hills in Alameda County, is based on a specimen collected by an unknown person in May 1877 (Nesom 2012). A previous annotator suggested that the plant was probably collected by J.G. Lemmon, and that the locality was “extremely doubtful” (CCH 2015). Unfortunately, there were no other Lemmon specimens from May 1877 to cross-reference the specimen’s locality (CCH 2015). For the time being, we intend to not recognize the Oakland specimen as *S. lateriflora*. [All but one of the occurrences of \*S. lateriflora\* were previously included in the CNDDDB as \*S. echinata\*, and have therefore been known about yet still not relocated in the past 15 years since the inclusion of \*S. echinata\* in the CNPS Inventory and CNDDDB.](#) Recent attempts to relocate populations have been unsuccessful, presumably due to the recent drought (L. Hendrickson pers. comm. 2015). Discovery of additional populations in the area seems possible, as *S. lateriflora* could go unnoticed due to its inconspicuous habit (Nesom 2012), its short flowering window, and possibly reduced population sizes in recent drought years.

In both his draft *FNA* treatment and his 2012 study, Nesom suggested that *S. lateriflora* may have been introduced to California, due to its disjunction from the rest of the species’ range and the proximity of known occurrences to population centers. However, most California occurrences of the plant are in eastern San Diego County, in close proximity to *S. infernensis*. The Los Angeles County specimen was also collected early, in 1930, but fairly close to the population center of Sun Valley. Its habitat of “moist, shady banks” is unusual for the species in California, but not the species overall (Nesom 2012). The Oakland occurrence, as mentioned above, is likely in error. With the Oakland occurrence discounted and the San Diego County occurrences fairly distant from population centers, the primary argument for a recent introduction of *S. infernensis* is its disjunction from the nearest out-of-state occurrence, about 340 km. Many other species, however, exhibit far greater disjunctions in their distribution than this (e.g. *Plagiobothrys verrucosus*). Further investigation into the status and origin of

this plant in California should be undertaken, but its early collections and occurrence in parklands away from development suggest that it is likely native to California.

Outside of California, *S. lateriflora* is known from Arizona, New Mexico, Texas, and two Mexican States (Sonora and Chihuahua). We are not aware of any conservation status for this plant outside of California, but it appears to be rare in Chihuahua, Mexico, as it is currently known from just one occurrence there (Nesom 2012; SEINet 2015)

Threats to *S. lateriflora* are unknown, but the plant should receive some protection due to its occurrence in a State Park. The Los Angeles County occurrence could have been extirpated, as the canyon in which it occurs has undergone suburban development (Google Maps 2015).

Based on the available information, CNPS and CNDDDB recommend adding *S. lateriflora* to CRPR [2A](#) ~~2B.2~~ of the CNPS Inventory. If more information on this plant becomes available in the future, we will re-evaluate its status at that time.

### Recommended Actions

CNPS: Delete *Spermolepis echinata* from CRPR 2B.3

Add *Spermolepis infernensis* to CRPR 1B.2

Add *Spermolepis lateriflora* to CRPR [2A](#) ~~2B.2~~

CNDDDB: Delete *Spermolepis echinata* from G5 / S1

Add *Spermolepis infernensis* to G1 / S1

Add *Spermolepis lateriflora* to G5 / [SH](#) ~~S4~~

### Current CNPS Inventory Record

*Spermolepis echinata* (DC.) Heller

bristly scaleseed

Apiaceae

CRPR 2B.3

Alabama, Arkansas, Arizona, Florida, Georgia, Illinois, Kansas, Kentucky, Louisiana, Missouri, Massachusetts, North Carolina, New Mexico, New York, Oklahoma, South Carolina, Tennessee, Texas, Virginia

San Diego

Agua Caliente Springs (019A) 32116H3, Tubb Canyon (032B) 33116B4, Earthquake Valley (032C) 33116A4, Julian (033D) 33116A5

Sonoran desert scrub (rocky or sandy); elevation 60-1500 meters

Annual herb. Blooms March to April.

Known in CA only from Borrego Valley.

### Revised CNPS Inventory Record

*Spermolepis echinata* (DC.) Heller

Considered But Rejected: Previously CRPR 2B.3; does not occur in California. Plants previously identified as *S. echinata* in California are now two novel taxa, *S. infernensis* and *S. lateriflora*.

**Draft CNPS Inventory Record**

*Spermolepis infernensis* G.L. Nesom

hellhole scaleseed

Apiaceae

CRPR 1B.2

San Diego

Borrego Sink (032A) 3311623, Tubb Canyon (032B) 3311624, Borrego Palm Canyon (047C) 3311634

Sonoran desert scrub (rocky or sandy); elevation 230-670 meters

Annual herb. Blooms March to April.

Previously included within *S. echinata*; see this taxon in *TJM* (1993) and *TJM* 2. See *Phytoneuron* 2012-87 (2012) for original description and distinction from *S. lateriflora*.

**Draft CNPS Inventory Record**

*Spermolepis lateriflora* G.L. Nesom

western bristly scaleseed

Apiaceae

CRPR ~~2B.2~~ 2A

Arizona, New Mexico, Texas; Sonora, Mexico

Los Angeles(?), San Diego

Agua Caliente Springs (019A), 3211683, Earthquake Valley (032C) 3311614, Tubb Canyon (032B)? 3311624, Burbank (111A)(?) 3411823

Sonoran desert scrub (rocky or sandy); elevation 365-670 meters

Annual herb. Blooms March to April.

Last seen in CA in 1952 from the San Felipe Creek area in SDG Co. Suitable habitat exists, but recent field surveys unsuccessful. Previously included within *S. echinata*; see this taxon in *TJM* (1993) and *TJM* 2. See *Phytoneuron* 2012-87 (2012) for original description and distinction from *S. infernensis*.

**Literature Cited**

Calflora. 2015. Information on wild California plants for conservation, education, and appreciation. Website <http://www.calflora.org/> [accessed 21 September 2015].

Consortium of California Herbaria (CCH). 2015. Data provided by the participants of the Consortium of California Herbaria. Regents of the University of California, Berkeley.: Website <http://ucjeps.berkeley.edu/consortium/> [Accessed 21 September 2015].

Constance, L. 1993. *Spermolepis*. P. 165 in Hickman, J.C. (ed.), *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley.

Constance, L. and M. Wetherwax 2012. *Spermolepis*. P. 199 in Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.), *The Jepson Manual: Vascular Plants of California* (2nd ed.). University of California Press, Berkeley and Los Angeles.

Element Codes: PDAPI23020 (*S. echinata*), ? (*S. infernensis*), ? (*S. lateriflora*)

Google Maps. 2015. Sun Valley, CA. Website <http://maps.google.com> [Accessed 13 October 2015].

Nesom, G.L. 2012. Taxonomy of *Apiastrum*, *Ammoselinum*, and *Spermolepis* (Apiaceae). *Phytoneuron* 2012-87: 1-49. (original description of *S. infernensis* and *S. lateriflora*)

Rare Plant Scientific Advisory Committee (RPSAC) and D.P. Tibor (ed.). 2001. California Native Plant Society's Inventory of Rare and Endangered Plants of California. Special Publication No. 1 (Sixth Edition). California Native Plant Society, Sacramento. 387 pp.

Reiser, C.H. 2001. Rare Plants of San Diego County. Aquafir Press, Imperial Beach, CA. 243 pp.

Southwest Ecological Information Network, SEINet. 2015. Website <http://swbiodiversity.org/portal/index.php> [accessed 21 September 2015].

Sent to: ES/D, SW, G. Nesom on 12/10/2015



## Appendix I - Figures

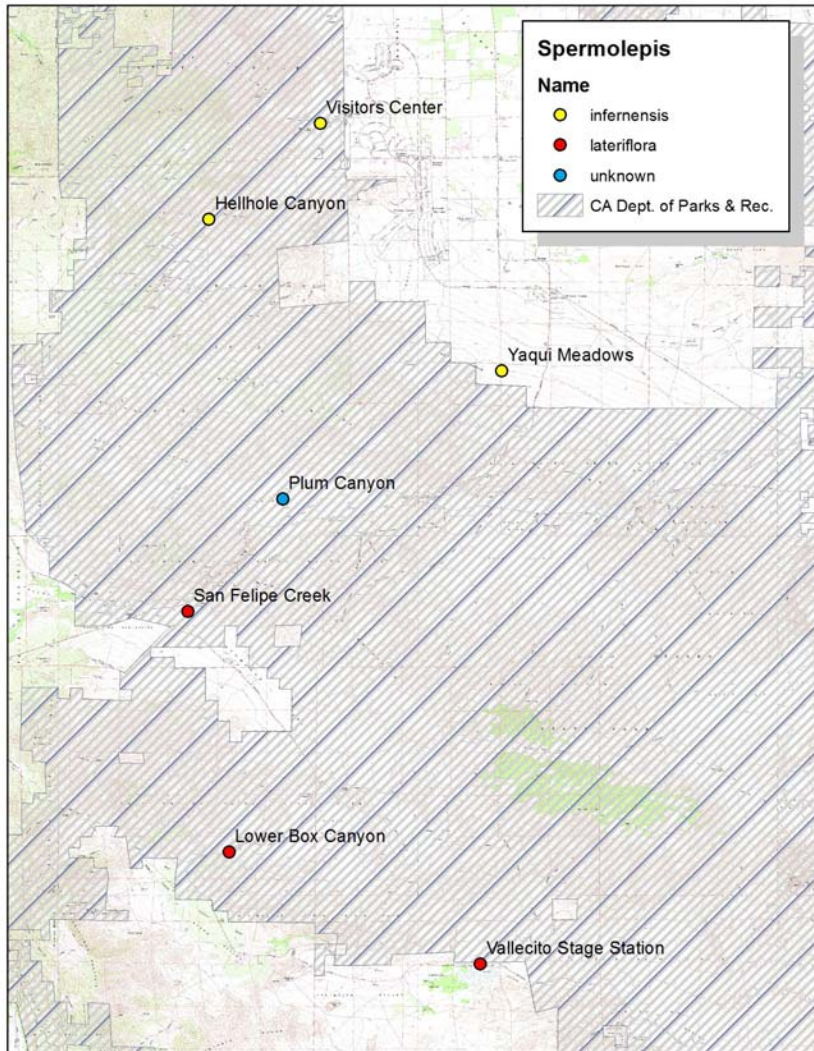


Fig. 1. Approximate distribution of *Spermolepis infernensis* and *S. lateriflora* occurrences in and around Anza-Borrego Desert State Park.