Added to California Rare Plant Rank 1B.1 of the CNPS Inventory on 3 September 2020

Rare Plant Status Review: *Sphenopholis interrupta* subsp. *californica*
Proposed Addition to California Rare Plant Rank 1B.1, G1 / S1

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Background and Taxonomy

Sphenopholis interrupta (Buckley) Scribn. subsp. *californica* (Vasey) Scribn. is a cespitose, annual herb in the Poaceae that was presumed to be an extinct endemic of Baja California, Mexico. It was recently discovered for the first time in southern California, from a single occurrence in Carlsbad, San Diego County, by Margie Mulligan and Jessie Vinje in mid-April of this year. This remarkable discovery was made more than 130 years since the plant was last documented in Baja California, Mexico in 1886. Since considered to be endemic to Baja up until this time, it is not included in the *Jepson eFlora* or *Flora of North America North of Mexico*.

Sphenopholis interrupta subsp. *californica* was originally described as *Trisetum californicum* by Vasey in 1892 and was subsequently transferred to the genus *Sphenopholis* and given its name that is currently applied here by Scribner in 1906. It was then transferred back to *Trisetum* as *T. interruptum* var. *californicum* by Louis-Marie in 1929. The species is possibly infrageneric between *Trisetum* and *Sphenopholis*, and the clade *Trisetum* was recently shown to be polyphyletic using isolation, amplification, and phylogenetic analysis of three plastid regions previously shown to be highly variable in studies on chloridoid grasses (Barberá, 2019). As such, this rediscovered taxon has been determined to the genus *Sphenopholis*, currently. Further taxonomic work may determine that this group should be elevated to species level, or moved to another genus, such as *Trisetum* (M. Mulligan pers. comm. 2020).

Sphenopholis interrupta subsp. *californica* could potentially be misidentified as various species in *Festuca* or *Bromus*. However, due to the presence of pubescence throughout the plant, including glumes, and the homogenous bent awns found within the spikelets, it can readily be differentiated from other co-occurring taxa (Mulligan pers. comm. 2020). Etymology of the name at the genus/species level refers to the interrupted wedge shape of the glume, with “sphen” from Greek meaning “wedge”, “pholis” from Greek meaning “scale”.

Ecology

The California collections occurred on dense coastal chaparral characterized by friable clay lenses. All recorded observations and collections occurred within the month of April. Extrapolating from this limited data, in California, plants likely flower between March and May. Central Carlsbad sits at an elevation of 44 feet, and *S. interrupta* subsp. *californica* likely occurs between 10 and 30 meters in elevation. In Carlsbad, species associates include: *Quercus dumosa*, *Rhus integrifolia*, *Comarostaphylis diversifolia* subsp. *diversifolia*, *Lonicera subspicata* var. *denudata*, *Diplacus puniceus*, *Adolphia californica,* and *Stipa lepida*. Clay lens associated species include *Acanthomintha ilicifolia* (CRPR 1B.1), *Festuca microstachys*, *F. octoflora*, *Deinandra fasciculata*, *Sisyrinchium bellum*, *Apiastrum angustifolium*, *Hesperevax sparsiflora* var. *sparsiflora*, and *Convolvulus simulans* (M. Mulligan pers. comm. 2020).

Distribution and Abundance

There are two collections made in central Carlsbad, California, which constitute a single occurrence. The exact location of this occurrence has not been released currently due to land ownership and privacy concerns. This single occurrence constitutes the sole known specimen collected in California, and North America north of Mexico, to date. This is also the only non-historical record for this taxon. Prior to the discovery of this species there were only two representative specimens of it from Baja, both from 1886. The original description of *S. interrupta* subsp. *californica* was based on a collection by Orcutt from 19 April, 1886 in San Ramon, Baja California, Mexico, and it was subsequently collected that same year from a second location "in Northern Baja California near the USA boundary". This plant has been searched for at the type location in the San Ramon area at least three different times by Jon Rebman (pers. comm. 2020), but it has eluded him there and he reported that most of the natural habitat in that area is completely gone due to agriculture and urban development.

This plant is extremely rare. In Carlsbad, California, the single occurrence is comprised of two populations, one of 40 individuals and the second of only several individual plants. Notes pertaining to the Orcutt collection in Baja state plants were abundant at the time of collection. Due to limited collection history, surveying should not be limited to areas or habitats known to support populations of *S. interrupta* subsp. *californica.* However, areas known to contain soils comprised of friable clay soils should be surveyed with priority. With over 130 years of not being seen, and attempts to rediscover it in Baja, it seems unlikely that a significant number of additional occurrences of *S. interrupta* subsp. *californica* will turn up.

Status and Threats
As a recently re-discovered taxon, *Sphenopholis interrupta* subsp. *californica* is not listed at the State or Federal level. Threats are primarily competition for available habitat from invasive plants such as *Brachypodium distachyon* and *Centaurea melitensis*, and the development of available habitat due to urbanization (M. Mulligan pers. comm. 2020).

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

Recommended Actions
CNPS: Add *Sphenopholis interrupta* subsp. *californica* to CRPR 1B.1
CNDDB: Add *Sphenopholis interrupta* subsp. *californica* to G1 / S1

Draft CNPS Inventory Record
Sphenopholis interrupta (Buckley) Scribn. ssp. *californica* (Vasey) Scribn.
prairie false oat
Poaceae
CRPR 1B.1
San Diego; Baja CA
San Luis Rey (036A) 3311723
Chaparral (coastal) / friable clay lenses; elevation 15 meters.
Annual herb. Blooms in April.

Discovered in CA in 2020 by M. Mulligan and J. Vinje; formerly thought to be a presumed extinct endemic to Baja CA, Mexico, where last seen in 1886. Threatened by non-native plants, development, and urbanization. See *USDA Division of Botany, Bulletin* 13(1): 46 (1892) for original description, and *Rhodora* 8(92):146 (1906) for revised nomenclature.

Literature Cited

Barberá, P., R., Soreng, and P., Peterson. 2019. Molecular phylogenetic analysis resolves *Trisetum* (Poaceae: Pooideae: Koeleriinae) polyphyletic: Evidence for a new genus, *Sibirotrisetum* and resurrection of *Acrospelion*. *Journal of Systematics and Evolution* 00(00): 1-10; doi:10.1111/jse.12523.

Robinson, B. L. 1906. The genus *Sphenopholis*. *Rhodora* 8(92): 146. Available at: https://www.biodiversitylibrary.org/page/563016#page/175/mode/1up

Soreng, R. J. 2000. Catalogue of New World Grasses, (Poaceae): IV subfamily Pooideae. Department of Botany, National Museum of Natural History.

Personal Communications

Rebman, Jon. 2020. Email inquiry about surveying for *S. interrupta* ssp. *californica* in Baja California. July 14, 2020.

Mulligan, Margie. 2020. Email correspondence about the collection of *S. interrupta* ssp. *californica* made in Carlsbad, CA. July 9, 2020.