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A NEW SPECIES OF *STREPTANTHUS* (BRASSICACEAE) FROM TRINITY COUNTY, CALIFORNIA

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ABSTRACT

Streptanthus oblanceolatus T. W. Nelson and J. P. Nelson is here described and illustrated. It is endemic to steep metavolcanic bluffs along the gorge of the Trinity River above its confluence with the New River, where three voucher specimens have been obtained.

Key Words: Brassicaceae, California, metavolcanic, new species, *Streptanthus*, Trinity County.

This novelty was first collected, but not recognized as new, by Richard W. Spellenberg in 1965 on a steep, metavolcanic bluff in the gorge of the Trinity River at its confluence with the New River, Trinity County. We were alerted to it by a note in The Jepson Manual (Buck et al. 1993) appending the treatment of *Streptanthus tortuosus* Kellogg, that stated the existence of an undescribed species near Burnt Ranch in Trinity County. **Streptanthus oblanceolatus** is most closely related to the *S. tortuosus* complex based on its bracteate racemes and expanded receptacle (Al-Shehbaz, Missouri Botanical Garden, personal communication).

TAXONOMY

Streptanthus oblanceolatus T. W. Nelson and J. P. Nelson, sp. nov. (Fig. 1)—Type: USA, California, Trinity Co., steep bluff along State Route 299, 100 m E of Shasta-Trinity National Forest boundary, ca. 1.69 km (1 mile) W of Burnt Ranch, T 5N, R 6E, sec. 3, 418 m (1350 ft) elevation, 2 June 2004, *T. W. Nelson and J. P. Nelson 9217* (holotype, HSC; isotypes, MO, CAS).

Herba biennis, caulibus ligneis 50–100 cm longis, bracteis lanceolatus, petalis luteis, non nisi pari supero filamentorum arcte adhaerentis, seminibus 3/4 circumferentiae alatis, siliquis patentibus parum recurvatis, et substrates non serpentines.

Plant biennial; stems woody, erect, glabrous, glaucous, 50–100 cm long, arising from woody taproot system; inflorescence with many primary and secondary branches and many small lanceolate bracts; leaves oblanceolate, dark green adaxially, gray and glaucous abaxially, 4.5–7 cm long, 4–6 mm wide, reduced in size upward; calyx biradial; sepals yellow, inverse boat-shaped, recurved at tips, 8–9 mm long, enlarged at base, partially enclosing lower portions of limb of petals; petals yellow, bilaterally symmetrical, recurved at tips, long exerted, upper pair 13–16 mm long, lower pair 12–13 mm long; stamens: adaxial pair of filaments 13–16 mm long, exserted, nearly equaling petals in length, connate on lower 2/3rd, anthers sterile, lateral pair 7.5–9.0 mm long, abaxial 9–11 mm long, free; anthers fertile; pistil green, 6–7 mm long, stigma entire; siliques torulose, spreading, slightly curved; seeds oblong, ca. 2 mm long, ca. 1 mm wide, brown, rugose on one surface, ribbed on the other, winged 3/4 of circumference; seedling: stem 22–25 cm tall, leaves subequal, oblanceolate with 2 small teeth on each side in the upper half (Fig. 1).

Paratypes. USA. CALIFORNIA. **Trinity Co.:** along NW slope of New River from mouth to 1/4 mile upstream on steep, rocky banks, 17 June 1965, *R. Spellenberg 1153* (HSC); growing near Grays Falls campground, 70–100 ft. NE of swinging bridge beside foot trail, 3 April 1972, *D. Santana 699* (HSC).

DISTRIBUTION AND HABITAT

Streptanthus oblanceolatus is likely to be extremely rare as it is known only from the three collections cited herein, all collected within five miles of one another in Trinity County. It may be more widespread on cliffs on the opposite side of the Trinity River gorge and in the New River gorge where there are many steep, rocky bluffs. However, we were unable to search this roadless area as the old swinging bridge that once provided access across the Trinity River gorge has been removed, and attempts to gain access from an old trail above the New River gorge were unsuccessful.

Streptanthus oblanceolatus grows in fissures and soil pockets on an exposed, nearly vertical rock face above State highway 299 and in gravels below the highway, within an open *Quercus chrysolepis–Pseudotsuga menziesii* forest on east to north-facing aspects. Its few associates include *Selaginella wallacei, Eriogonum nudum, Keckiella corymbosa, Sedum spathulatum, Pentagramma triangularis* subsp. *triangularis*, and *Polystichum imbricans* subsp. *imbricans*. Overstory and under-

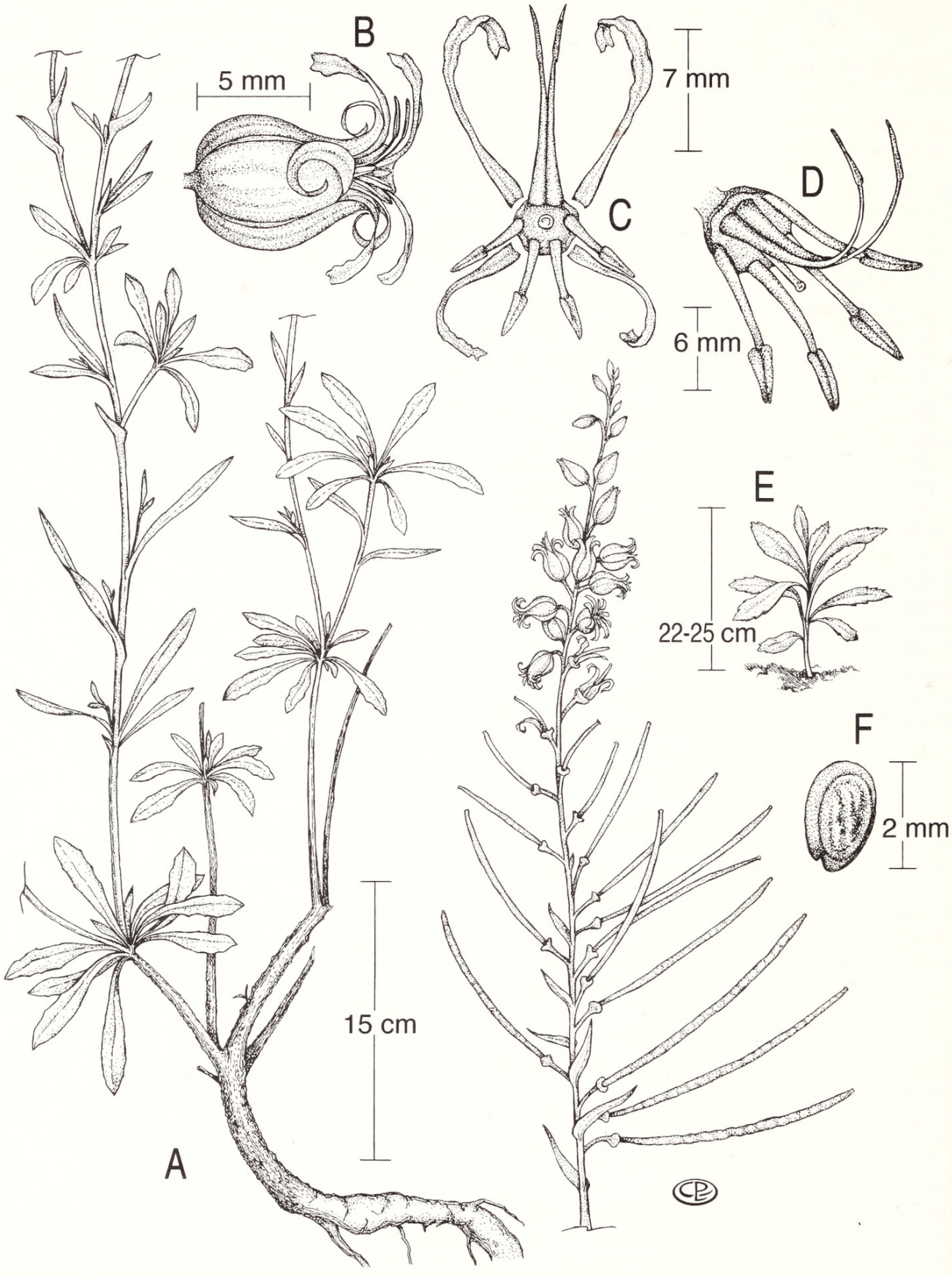

FIG. 1. Illustration of *Streptanthus oblanceolatus*. A. Mature plant at anthesis; B. Flower in lateral view; C. Front view with sepals removed; D. Top view with sepals removed; E. Seedling; F. Seed side view.

TABLE 1. MORPHOLOGICAL COMPARISON OF *STREPTANTHUS OBLANCEOLATUS* AND THE *S. TORTUOSUS* COMPLEX. Characteristics of *S. tortuosus* from Buck et al. 1993.

Character	*S. oblanceolatus*	*S. tortuosus*
Longevity	Biennial	Annual to perennial
Adaxial stamen pair	Connate below middle, with sterile anthers	Free to the base, with fertile anthers
Basal leaves	Oblanceolate	Oblong to widely ovate
Cauline leaves	Oblanceolate, reduced upward	Round to oblong, upper often larger
Inflorescence bracts	Numerous	Generally 1
Stigma	Entire	Weakly lobed
Sepals	Yellow	Purple (yellowish in var. *flavescens*)
Siliques	Spreading, straight to slightly curved	Generally reflexed, curved

story cover are lacking and shrub and herb cover are sparse (<2%). A few plants were found on a roadside mound of rockslide scrapings in association with *Bromus hordeaceous, Briza maxima* and *Avena fatua.*

RELATIONSHIPS

Streptanthus has traditionally been divided into three subgenera based primarily on filament fusion. Subgenus *Streptanthus* does not occur in California. The two generally Californian subgenera are *Pleiocardia*, in which filaments are free to the base, and *Euclisia*, in which filaments are partially to fully connate (Hoffman 1952). Under this model, *S. oblanceolatus* would belong in subgenus *Euclisia*. However, we are following the advice of Dr. Al-Shehbaz (personal communication) who, in the absence of molecular data, discourages recognition of infrageneric categories in medium-sized and larger genera of the Brassicaceae, due to considerable homoplasy in morphological features. Filament connation has also evolved in the closely related *Caulanthus* and *Thelypodium*. Molecular studies in conjunction with morphology will be necessary to determine relationships and character evolution within *Streptanthus* and related genera.

Streptanthus oblanceolatus was noted as undescribed in an annotation to the treatment for *S. tortuosus* in *The Jepson Manual* (Buck et al. 1993). *Streptanthus oblanceolatus* and *S. tortuosus* are both characterized by an expanded receptacle and racemes that are bracteate below or between the flowers. Based on these characters, *S. oblanceolatus* appears to be most closely related to the *S. tortuosus* complex (Al-Shehbaz personal communication). Table 1 compares morphological differences between the two taxa.

ACKNOWLEDGMENTS

Thomas W. Nelson passed away unexpectedly in October of 2006 as he was about to submit this manuscript to Madroño. The manuscript is his 12th species description and represents his final contribution to the botanical world and our understanding of the California flora.

It was through getting to know Dr. Doris Niles while in his 30s that Tom discovered his passion for plants. He changed his major from Physics to Botany, started exploring the local mountains, wrote the Flora of the Lassics mountain range for his Master's thesis, and worked for several years as herbarium curator at HSC. Tom spent many years searching different environments for new plants, although he had a special interest in serpentine plants. When he found something unfamiliar he left no stone unturned to determine whether it was an undescribed taxon. He was always happy to share his knowledge with others, and in turn was always seeking to learn from other botanical experts. I am very grateful for the many special years we spent together following his passion.

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