Background and Taxonomy

*Nemacladus bellus* Morin & T. J. Ayers is an annual herb in the Campanulaceae that was recently published by Morin and Ayers (2020). It is not included in *The Jepson Manual* (Morin and Milburn 1993) or the *Jepson eFlora* (Morin 2012). The *Flora of North America* Campanulaceae treatment has not yet been published (FNA 1993+). Plants now placed in *N. bellus* were most recently identified as atypical *N. secundiflorus* var. *secundiflorus*, a CRPR 4.3 taxon (Robbins 1958, Morin 2012, Morin and Ayers 2020, CNPS 2023). Recircumscription of *N. secundiflorus* var. *secundiflorus* does not affect its conservation status.

“*Nemacladus bellus* differs from other species of *Nemacladus* in having the combination of basal leaves broadly elliptic to ovate-deltate, margins shallowly toothed or wavy, not irregularly lobed; inflorescence zigzagged, internodes 2–5 mm long, flowers not (or very rarely) secund… corolla with cylindrical tube 2–2.5 mm long, lobes 2–2.5 mm long; filaments and anthers white or pale lavender, the anthers about 0.4 mm long, transparent cells on filaments narrow, attenuate; capsule about ¼ inferior, round, [and] sepals erect in fruit” (Morin and Ayers 2020). “The specific epithet, ‘bellus,’ refers to the beautiful appearance of the plants when they are covered with delicate flowers” (Morin and Ayers 2020).

Ecology

*Nemacladus bellus* occurs on granitic gravel or sandy flats in cismontane woodland, pinyon juniper woodland, and Joshua tree woodland at elevations ranging from 800 to 1800 meters (Morin and Ayers 2020, Calflora 2023, CCH2 2023, iNaturalist 2023). Associated species include *Anisocoma acaulis*, *Argemone munita*, *Artemisia tridentata*, *Calochortus* spp., *Centrostegia thurberi*, *Cercocarpus* spp., *Elymus elymoides*, *Eriophyllum pringlei*, *E. wallacei*, *Erythranthe barbata*, *Gilia* spp., *Greeneocharis circumscissa*, *Linanthus parryae*, *Mentzelia* spp., *Nama demissa*, *Nemacladus sigmoideus*, *Pinus monophylla*, *P. sabiniana*, *Quercus chrysolepis*, *Q. kelloggii*, *Q. wislizeni*, and *Yucca brevifolia* (Morin and Ayers 2020, CCH2 2023). *Nemacladus bellus* has been observed blooming from May to July, with one record from 30 April (Morin and Ayers 2020, Calflora 2023, CCH2 2023, iNaturalist 2023). Note from Nancy Morin on the Forum Review: “A general note about conservation--Nemacladus does not do well with competition. I never see it growing close to other plants (although it can be pretty close to other Nemacladus, same or different species).”

Distribution and Abundance

*Nemacladus bellus* is known from 13 occurrences in the Greenhorn Mountains and Kern Plateau of Kern and Tulare counties, California (Morin and Ayers 2020, Calflora 2023, CCH2 2023, iNaturalist 2023).
Nemacladus bellus

Element Code: ?
Added to CRPR 1B.3 on 2023-08-02

All 13 records are on public lands managed by either Sequoia NF (6) or BLM (7). Six of the records are recent (observed within the last 20 years) and seven are historical. One record includes an estimate of 50+ plants in scattered colonies, and three records qualitatively describe plants as either common, locally common, or uncommon/rare (CCH2 2023). The remaining records have no information on population size. Comment from Nancy Morin during Forum Review: “# 1 and 5, over Greenhorn Mountain, is a locality I searched every year from the late 90s until 2018 without success. Someone found N. bellus there in the past couple of years, I'm hunting for that message. But it comes up very rarely. I have searched the other localities (2, 3, 4, 6, 7), again yearly for years without finding it. The one place I have seen it consistently is at the crossing of Salmon Creek and Mountain Hwy 99. I also found it one year at the Kernville Picnic Area.”

Four collections or observations were excluded from this analysis. Three herbarium specimens (CCH2 2023) determined as Nemacladus secundiflorus from Kern or Tulare counties are within the range of Nemacladus bellus but were not examined by Morin and Ayers (2020). One observation of Nemacladus bellus from Cyrus Canyon in Kern County (Calflora 2023) could be correct but the observer was uncertain of the identification as the plants were not yet in bloom was redetermined on the Forum Review as N. ramosissimus. Nancy Morin examined the Wheeler s.n. record from Chimney Creek during Forum Review and says it is a mixed collection of N. bellus and N. sigmoideus and may be the same location as the Keir Morse Calflora observation. [Note, Morin also attached a photo from Chimney Peak]. These four records are highlighted in pink at the end of the location spreadsheet.

Status and Threats
This species currently has no conservation status (NatureServe 2023). Threats to Nemacladus bellus may include competition with non-native plants, road and trail maintenance, ORV activity, trampling by grazing animals, and development (Bell 2023 pers comm.).

Summary
Based on the available information, CNPS and CNDDB recommend adding Nemacladus bellus to California Rare Plant Rank 1B.3 of the CNPS Inventory. If knowledge on the distribution, threats, and rarity status of Nemacladus bellus changes in the future, we will re-evaluate its status at that time.

Recommended Actions
CNPS: Add Nemacladus bellus to CRPR 1B.3
CNDDB: Add Nemacladus bellus to G2 / S2

Draft CNPS Inventory Record
Nemacladus bellus Morin & T.J.Ayers
beautiful threadplant
Campanulaceae
USDA Plants Symbol: None
Synonym(s)/Other Name(s): None
CRPR 1B.3
Counties: Kern, Tulare
States: California
Quad name (code): Alta Sierra (3511865), Fairview (3511884), Kernville (3511874), Lake Isabella North (3511864), Lamont Peak (3511871), Walker Pass (3511861)
General Habitat: Cismontane woodland, Joshua tree woodland
Microhabitat Details: Occurs on granitic gravel or sandy flats
Microhabitat: Granitic, sandy, gravelly
Elevation: 800–1800 meters
Life form: Annual herb
Blooms (April) May to July
Threats: Possibly threatened by non-native plants, road and trail construction/maintenance, ORV activity, trampling, and development.
Taxonomy: Similar to N. secundiflorus var. secundiflorus and N. s. var. robbinsii; both differ from N. bellus in having narrowly lanceolate to spatulate leaves with deeply toothed margins, and secund (one-sided) inflorescences.
Selected References:
- CNPS Status Review: Proposed addition to CRPR 1B.3, G2 / S2 (2023)
- Original Description: Madroño 67(1): 35–60 (2020)

Literature Cited


**Personal Communications**

Bell, Duncan S, Field Botanist, California Botanic Garden. 2023. Email communication regarding records of *Nemacladus bellus*. Personal communication 12 June 2023

Morin, Nancy R., Botanist, Northern Arizona University. 2023. Email communication regarding records of *Nemacladus bellus*. Personal communication 9 June 2023