

## No longer half-cocked: rediscovery of *Stylidium* sp. Twin Falls (L.A. Craven 5870) in the Northern Territory and its description as *S. julietianum* (Stylidiaceae)

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### SHORT COMMUNICATION

The Arnhem Plateau in the Top End of the Northern Territory is home to 26 described species of triggerplants (*Stylidium* Sw. ex Willd.; Northern Territory Herbarium 2025). In 2023, a characteristically diminutive species was discovered in the spirit collection at the Australian National Herbarium (CANB), originally collected by Lyn Craven during surveys of Kakadu National Park in 1980, and not seen since. Diagnostic information was recently published under the name *S.* sp. Twin Falls (L.A. Craven 5870) to facilitate its rediscovery in the wild (Wege & Brennan 2024). In April 2025, additional material was acquired on a Bush Blitz (<https://bushblitz.org.au/>) survey in Jawoyn country to the east of Kakadu and Nitmiluk National Parks. With these new collections, comprising one dried and four spirit samples, and additional digital images, we are now suitably placed to formally name and describe this novel species as *S. julietianum* A.T.Webb & Brennan.

***Stylidium julietianum* A.T.Webb & Brennan, *sp. nov.***

*Type:* Jawoyn country, c. 59 km NE Manyallaluk, Northern Territory, 9 April 2025, K. Brennan 14004 & A.T. Webb (*holo:* DNA D0295623; *iso:* CANB, K, PERTH).

*Stylidium* sp. Twin Falls (L.A. Craven 5870), Northern Territory Herbarium, in Flora NT, <https://eflora.nt.gov.au/factsheet?id=1069042> [accessed 3 June 2025]; J.A. Wege & K.G. Brennan, *Nuytsia* 35: 202, 212 (2024).

Rosulate *annual herb* 2–6(–9.5) cm high. *Glandular hairs* c. 0.1 mm long, with a red, discoid or globose head. *Stem* contracted, 0.7–1 mm long. *Leaves* basal, narrowly oblanceolate to ± spatulate, 1.2–3.3 mm long, 0.5–1.8 mm wide, glabrous, apex obtuse, margins entire. *Scape* solitary, 2–6(–9.5) cm long including inflorescence, 0.3–0.7 mm wide, glabrous, with scattered sterile bracts 1–3(–4) mm long. *Inflorescence* a monochasial cyme, 1–16-flowered, flowers rotated 180°; branches glabrous; bracts 0.7–3 mm long, glabrous; pedicels ± indistinct. *Hypanthium* oblong to linear in outline, 3.5–10(–12) mm long, 0.4–0.6 mm wide, typically with sparse glandular hairs distally. *Calyx lobes* arranged in two groups, with 3 basally connate and 2 connate for c. half their length, 1–1.7 mm long, glabrous or with one or two glandular hairs on margins near base, apex obtuse to acute. *Corolla* pink suffused white near the base of lobes (or apparently all white), pale abaxially with a greenish tube; lobes paired vertically, glabrous except for sparse glandular hairs on anterior (upper) lobes (mostly on anterior margin); anterior lobes elliptic or obovate with an obtuse or emarginate apex, shorter than or c. equal to the posterior pair, 1–1.5 mm long, 0.7–1.2 mm wide; posterior (lower) lobes narrowly elliptic to ± cuneiform with an obtuse or emarginate apex, 1.1–1.8 mm long, 0.8–1.2 mm wide; tube 1.2–1.7 mm long, c. equal to or slightly exceeding the calyx lobes, sparsely glandular-hairy near anterior sinus. *Labellum* ± at base of anterior sinus, narrowly ovate, 0.3–0.5 mm long excluding a terminal appendage c. 0.1 mm long, glabrous. *Throat appendages* 6

(1 on each anterior corolla lobe, 2 on each posterior lobe), basally connate, golden yellow, 0.2–0.4 mm high, with obtuse or emarginate lobes. *Column* 4–6 mm long, straight when extended, slender above main bend with a second bend below the anthers, glabrous; anthers sessile, 0.3–0.4 mm long, corona absent; stigma sessile, pulvinate,  $\pm$  entire. *Capsules* linear in outline, 9–12 mm long excluding calyx lobes, without raised ribs, squarish in cross-section; halves detaching distally, slightly recurved. *Seeds* brown, ellipsoid, 0.15–0.2 mm long, smooth (areolate). (Figures 1, 2D)

*Diagnostic features.* A rosulate annual with the following key features: a diminutive stature, 2–6(–9.5) cm high, with spreading, narrowly oblanceolate to  $\pm$  spatulate leaves to 3.3 mm long; scape glabrous with scattered bracts 1–3(–4) mm long; hypanthium oblong to linear, 3.5–10(–12) mm long, with sparse glandular hairs distally; calyx lobes arranged in two groups, with 3 basally connate and 2 connate for *c.* half their length; corolla pink (or white), the lobes paired vertically with an obtuse or emarginate apex, *c.* equal in length or with the upper (anterior) lobes shorter than the lower (posterior) pair; throat appendages 6, golden yellow, basally connate 0.2–0.4 mm high; and column slender, 4–6 mm long.

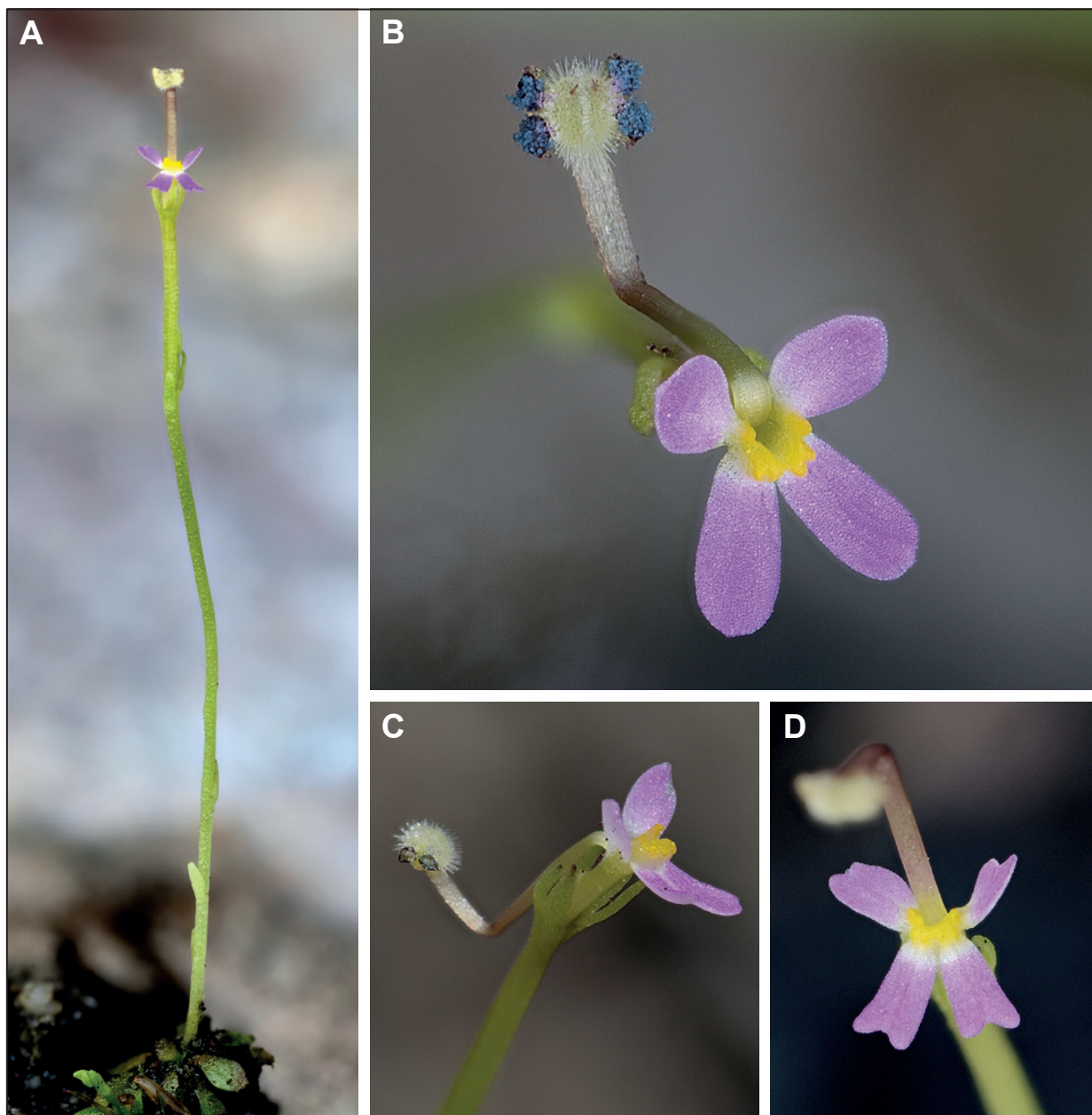


**Figure 1.** *Styliidium julietianum*. A – plant *in situ* showing the rosulate habit and scattered bracts on the scape; B – flower with poised column showing obtuse corolla lobes and yellow throat appendages; C – side view of flower showing the basally connate calyx lobes; D – flower with column resetting, showing emarginate corolla lobes. Photographs by Kym Brennan from *A.T. Webb* 584 & *K. Brennan* (A, D), *A.T. Webb* 473 & *K. Brennan* (B, C).

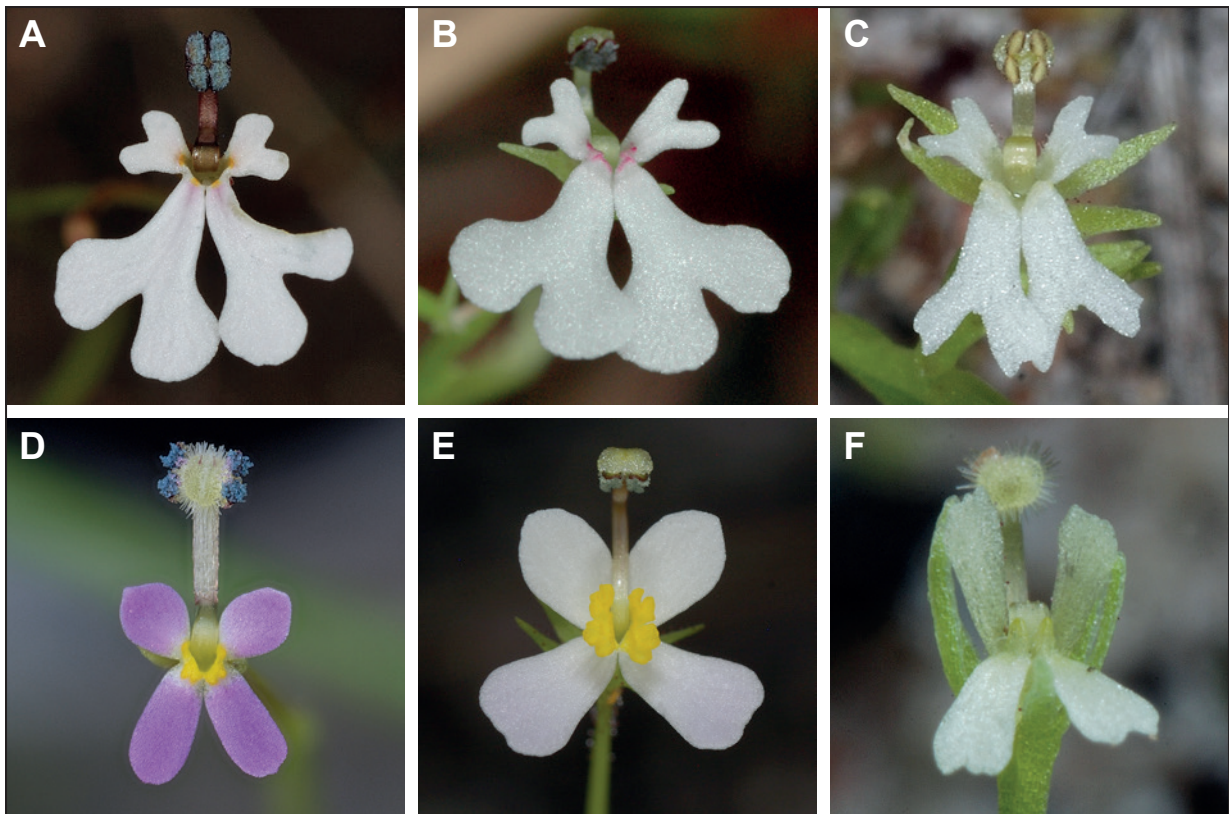


**Figure 2.** A – *Stylidium capillare* (K. Brennan 8626); B – *S. exiguum* (K. Brennan 6907); C – *S. tantillum* with bilobed corolla lobes (K. Brennan 7560); D – *S. julietianum* (A.T. Webb 473); E – *S. nominatum* (K. Brennan 7978); F – *S. tantillum* with emarginate corolla lobes (K. Brennan 12043). A–C have the upper corolla lobes less than half the length of the lower pair, which are prominently bifid; D–F have the upper corolla lobes more than half the length of the lower pair, which are entire or shallowly emarginate. Photographs by Kym Brennan.

*Other specimens examined.* NORTHERN TERRITORY: Arnhem Land Aboriginal Land Trust, c. 96 km NE Nitmiluk ranger station, 9 Apr. 2025, N.J. Cuff 1657 & I.D. Cowie (DNA D0295031, spirit only); Jawoyn country, upper Waterhouse River, c. 61 km NE Manyallaluk, 4 Apr. 2025, A.T. Webb 473 & K.G. Brennan (DNA D0295992, spirit only); Jawoyn country, c. 55 km NE Manyallaluk, 9 Apr. 2025, A.T. Webb 584 & K.G. Brennan (DNA D0296107, spirit only).

*Phenology.* Plants have been collected with flowers and mature seed capsules from early April to late May. Therefore, flowering likely commences much earlier and aligns with the onset of persistent monsoonal conditions, possibly from February onwards.

*Distribution and habitat.* *Stylidium julietianum* is known only from the southern Arnhem Plateau, at one site along upper Twin Falls Creek in Kakadu National Park (South Alligator River catchment), and 70–80 km to the southeast in the upper catchment of the Waterhouse River, on Jawoyn country (Figure 3). It is found on flat to gently sloping plateaus of predominantly coarse-grained quartzose sandstone, growing in nutrient-poor, shallow sandy soils on rock flats or in associated minor drainage depressions. These sand lenses support floristically diverse, open herb fields sustained by seepage downslope from adjacent microtopographic variation related to the underlying sandstone geologies. Associated species include a variety of similarly diminutive annual herbs and graminoids; *Centrolepis*, *Dimeria*, *Drosera*, *Eriachne*, *Eriocaulon*, *Fimbristylis*, *Mitrasacme*, *Pheidochloa gracilis*, *Portulaca*, *Rhynchospora*, *Scleria*, other *Stylidium* species, *Utricularia* and *Xyris*, amongst *Dapsilanthus spathaceus*, *Micraira* and *Triodia*. This habitat sits within a complex mosaic of shrubland and woodland broadly referable to the Arnhem Plateau Sandstone Shrubland Complex, a nationally listed Threatened Ecological Community (Commonwealth of Australia 2012). This vegetation complex is often dominated by *Eucalyptus phoenicea*, *Corymbia arnhemensis*, *Gardenia* spp. and *Terminalia carpentariae*, with a shrub layer often containing various *Boronia*, *Calytrix*, *Grevillea*, *Hibbertia* and *Lithomyrtus* species.

**Conservation status.** Data Deficient according to IUCN criteria. Much of the southern Arnhem Plateau is likely to contain suitable habitat for *S. julietianum* (Figure 3). However, only a single population was known prior to 2025 despite a history of significant botanical survey throughout Nitmiluk and Kakadu National Parks. This may be, in part, due to its diminutive stature and ephemeral nature, meaning it is readily overlooked and unlikely to be incidentally observed. It is likely that this species has a wider distribution than is currently documented, most probably outside of well-surveyed National Park boundaries. As many species from the Arnhem Plateau have small, discontinuous distributions, confirming the actual extent of the distribution of *S. julietianum* will require additional survey. The known populations of *S. julietianum* are unlikely to be severely impacted by key threats facing the Arnhem Plateau Sandstone Shrubland Complex; feral animals, weed incursion and changed fire regimes (Commonwealth of Australia 2012) as they are protected both within Kakadu National Park and by physical isolation. However, *S. julietianum* may ultimately qualify under a Threatened category due to its small extent of occurrence and area of occupancy, if additional populations are not located in subsequent targeted survey.

**Etymology.** This species epithet honours the contribution of Juliet Ann Wege (1971–) to our understanding of *Stylidium*, in particular her collaborative approach and dedication in meticulously reviewing and revisiting collections across tropical Australia, which has so far culminated in the recognition of 16 new species. Juliet discovered this novel species in the spirit collection at CANB, providing vital insight which resulted in its rediscovery and subsequent description.

**Vernacular name.** Juliet's Triggerplant.

**Affinities.** *Stylidium julietianum* is allied to *S. capillare* R.Br. (W.A., N.T., Qld), *S. exiguum* A.R.Bean (N.T.), *S. nominatum* Carlquist (N.T.), *S. tantillum* Wege & Brennan (N.T.), and *S. youwanjela* M.D.Barrett, R.L.Barrett & Wege (W.A.), all of which are delicate, rosulate annuals with a glabrous scape bearing scattered sterile bracts, a glabrous column that is slender above the main bend (i.e. without lateral lobes), and oblong to linear capsules with smooth seed.

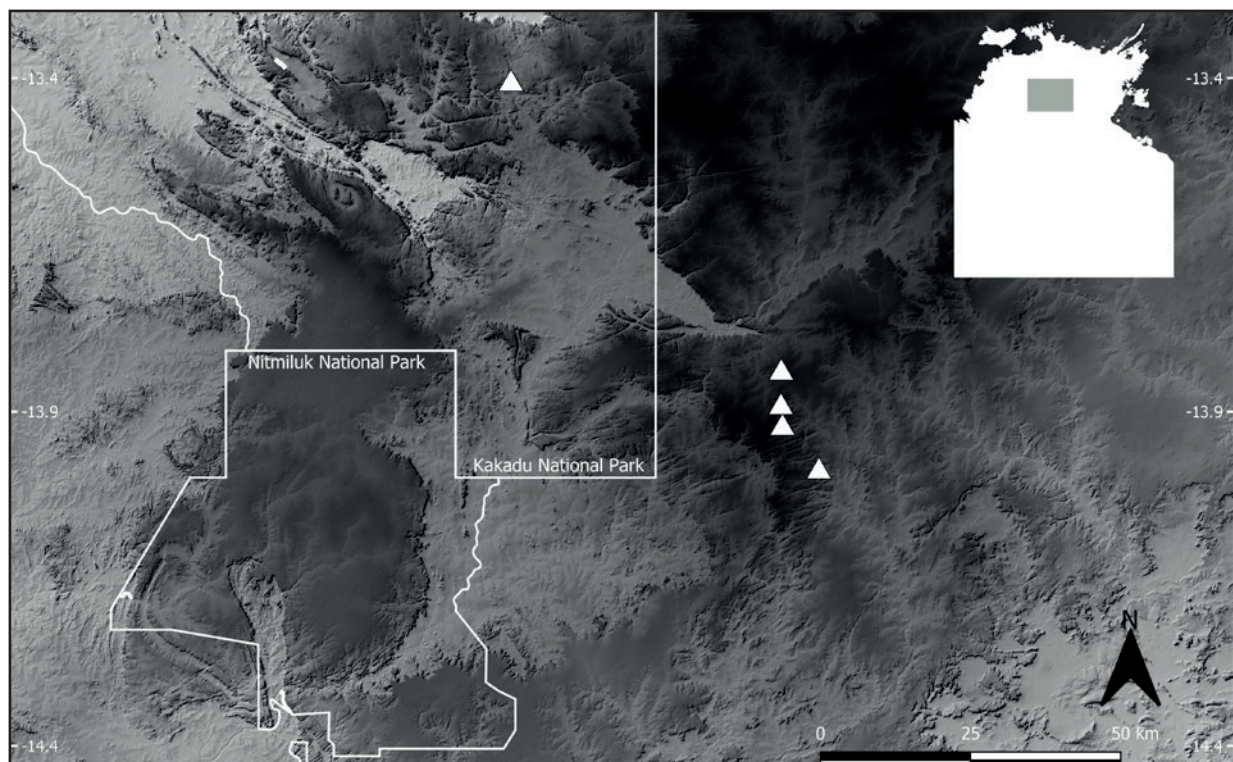


**Figure 3.** Distribution of *Stylidium julietianum* (triangles) on the southern Arnhem Plateau based on all available specimens in Australian herbaria. Darker portions of the map indicate sandstone plateaus and the extent of possible habitat for *S. julietianum*, particularly east of Kakadu and Nitmiluk National Parks. Map generated in QGIS 3.4.

Of the NT species in this group, *S. capillare* and *S. exiguum* each have upper corolla lobes that are less than half of the length of the lower lobes, and the lower lobes are usually conspicuously bifid (Figure 2A–B). By contrast, in *S. julietianum* and *S. nominatum* the upper pair of corolla lobes is more than half of the length of the lower pair and the lower lobes usually have an entire or shallowly emarginate apex (Figure 2D–E). However, *S. tantillum* may have corolla lobes with rounded, emarginate or shallowly bilobed apices, and the upper pair of corolla lobes may be more or less than half of the length of the lower pair (Figure 2C, F). The lower corolla lobes of *S. nominatum* (Figure 2E) are at least 2.5 mm long and have prominently raised bright yellow throat appendages (>1 mm high) whereas the lower corolla lobes of *S. julietianum* and *S. tantillum* are shorter, to 1.5 mm and 2 mm long respectively, and the throat appendages are much less prominent, to 0.4 mm and 0.5 mm high respectively. The erect habit and six, bright yellow throat appendages of *S. julietianum* readily distinguishes it from *S. tantillum* which typically has a more spreading habit and dull yellow throat appendages comprising just two lobes. The five calyx lobes of *S. tantillum* comprise 3 lobes free to the base and 2 partially connate, while those of *S. julietianum* have 3 partially connate at the base and 2 connate for c. half of their length.

*Stylidium youwanjela* (Wege *et al.* 2024: Figure 24) from the Kimberley region of Western Australia is very similar to *S. julietianum* but all four corolla lobes are conspicuously bilobed and it has 4, larger throat appendages 0.5–0.8 mm high (vs 6, 0.2–0.4 mm high in *S. julietianum*).

*Note.* The following two separate leads in the key to *Stylidium* in the Northern Territory (Wege & Brennan 2024) should be updated as follows:

33. Calyx lobes glabrous or with sparse glandular hairs near base (rarely with one or two on the margins); column slender above main bend.....34
- 36: Corolla lobes c. equal in length or with the upper pair a little shorter than the lower ones, the upper ones obtuse or emarginate at apex; throat appendages 6, basally connate (corolla lacking a sinus on posterior side); seed surface ± smooth (areolate).....**S. julietianum**

### Acknowledgements

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