






Stylidium miscellany IV: novel species, recircumscriptions and range extensions for northern Australia

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Abstract

Wege, J.A., Brennan, K.G., Bean, A.R., Barrett, R.L., Dillon, S.J. & Barrett, M.D. *Stylidium* miscellany IV: novel species, recircumscriptions and range extensions for northern Australia. *Nuytsia* 35: 141–198 (2024). This paper advances knowledge of triggerplant diversity in monsoonal and arid Australia. The following 14 species are newly described: *Stylidium aliforme* Wege & Brennan (N.T.), *S. anomalum* Wege (W.A.), *S. brachyotis* Wege & Brennan (N.T.), *S. brennanianum* Wege, M.D.Barrett & A.R.Bean (W.A., N.T., Qld), *S. contrarium* Wege (N.T.), *S. eludens* Wege & A.R.Bean (Qld), *S. incognitum* Wege (W.A., N.T.), *S. modicum* M.D.Barrett, R.L.Barrett & Wege (W.A.), *S. pezidium* Wege, Brennan & S.J.Dillon (W.A., N.T., Qld), *S. synaptum* Wege, Brennan & A.R.Bean (W.A., N.T., Qld), *S. tantillum* Wege & Brennan (N.T.), *S. torquatum* Wege & Brennan (N.T.), *S. tremendum* Wege, M.D.Barrett & R.L.Barrett (W.A.) and *S. youwanjela* M.D.Barrett, R.L.Barrett & Wege (W.A.). *Stylidium tenerrimum* F.Muell. (W.A., N.T.) is recircumscribed and *S. evolutum* Carlquist (N.T.) reinstated to its original circumscription. Narrower circumscriptions of *S. fissilobum* F.Muell. (W.A., N.T.) and *S. multiscapum* O.Schwarz (W.A., N.T.) are presented and a lectotype designated for the latter. *Stylidium tenerum* Spreng. (N.T., Qld, P.N.G.) is placed into synonymy under *S. uliginosum* Sw. ex Willd. (south-east Asia), and *S. symonii* Carlquist (N.T.) synonymised under *S. floodii* F.Muell. (N.T., Qld). *Stylidium elachophyllum* A.R.Bean & M.T.Mathieson (Qld) and *S. irriguum* W.Fitzg. (W.A.) are recorded for the Northern Territory, while *S. aquaticum* A.R.Bean (N.T.) and *S. capillare* R.Br. (N.T., Qld) are recorded for Western Australia. A record of *S. longibracteatum* (W.A.) from Kata Tjuta in the Northern Territory is highlighted as having potentially unreliable locality information. Lectotypes are selected for *S. claytonioides* W.Fitzg., *S. cordifolium* W.Fitzg., *S. irriguum* W.Fitzg., *S. rubriscapum* W.Fitzg. and *S. trichopodium* F.Muell. Both *S. pseudotenellum* O.Schwartz and *S. mitrasacmoides* F.Muell. are treated as names of uncertain application. The existence of appropriated type fragments in Herbarium Lowricanum, recently bequeathed to the Western Australian Herbarium, is noted.

Introduction

Our understanding of *Stylidium* Sw. ex Willd. (Stylidiaceae) diversity across northern Australia has increased substantially over the past 30 years, with the description of 36 novel species and one new

combination (Kenneally & Lowrie 1994; Lowrie & Kenneally 1996, 1997, 1998, 1999; Bean 1999a, 1999b, 2000, 2010; Bean & Mathieson 2012; Barrett *et al.* 2015); however, despite this collective effort, gaps in our taxonomic knowledge remain. Triggerplants from this region, which are for the most part annual herbs, are among the most difficult to study when pressed and dried, with accurate interpretation of taxonomically informative floral features (most notably the morphology of the corolla, throat appendages, column and seed coat) challenging for even the most experienced botanist. Taxonomic research is greatly aided by field observations, photographic records and the study of flowers preserved in spirit; however, field work is hampered by the remote and rugged terrain and narrow collection windows. Furthermore, while some species are geographically restricted or poorly known, others span jurisdictional boundaries, with associated herbarium collections held across institutions, impeding comparative research.

Documenting *Stylidium* diversity in the Kimberley region remains a particular challenge. Wheeler (1992) provided the first meaningful review of species from this region but, without access to type material and with relatively few specimens at her disposal, was unable to adequately circumscribe a number of species, noting that many variants required further taxonomic assessment. There has since been a significant collection effort; however, a substantial number of these specimens remain in the backlog at the Western Australian Herbarium (PERTH) and as such are unavailable for study. Furthermore, many associated spirit collections contain few flowers or are otherwise poorly preserved, dissolving on dissection. It has become increasingly apparent that, in order to prevent unacceptable publication delays, an account of *Stylidium* for *Flora of Australia* will need to be presented without a complete assessment of existing collections from the Kimberley region, and without resolution of some putative new taxa in widespread and variable species complexes.

Despite the inherent difficulties in documenting *Stylidium* across northern Australia, substantial taxonomic progress has recently been made, aided by several extended research visits to the Northern Territory Herbarium (DNA), Queensland Herbarium (BRI) and Australian National Herbarium (CANB) by one of us [JW], and an influx of recent collections, including associated photographs and spirit material. These new insights are presented herein and include novel species, recircumscriptions, significant range extensions, and resolution or discussion of nomenclatural and typification issues.

Methods

This study is based primarily on examination of specimens and associated spirit materials at BRI, CANB, DNA and PERTH, with select material also examined at additional cited herbaria. Photographic records were also examined where available, and a subset of taxa targeted for field observations and additional collections. Seeds were sampled from herbarium specimens, gold-coated, and imaged using a JCM-5000 NeoScope following standard protocols.

Revised descriptions of previously named species that have undergone a changed circumscription will be published in the *Flora of Australia* in due course; however, key diagnostic features and photographs are provided herein to aid their identification and to enable ready comparison with the newly recognised species. These diagnostic statements are based on data extracted from specimens and associated photographs by the first author. The term ‘throat appendages’ refers to the protuberances or ridge of tissue that can be present at the base of the corolla lobes while the term ‘callosity’ refers to the hardened yellow, orange or red tissue that may be present in the corolla lobe sinuses; these terms are equivalent to the ‘paracorolla’ and ‘paracorolla gland’ of Bean (1999b, 2000, 2010), Bean and Mathieson (2012) and Barrett *et al.* (2015). An interactive key to Australia’s triggerplant flora is undergoing development and will be the most effective identification tool for end-users of the taxonomy. In the interim, a dichotomous key to the species in the Northern Territory has been made available (Wege & Brennan 2024) in light of the number of taxonomic changes proposed for this jurisdiction.

Taxonomy

Stylidium aliforme Wege & Brennan, *sp. nov.*

Type: Bullo River Station *c.* 16 km from homestead and 1 km W of Bullo River, Northern Territory, 12 May 2008, *D. Lewis* 815 (*holo:* DNA D0191671!; *iso:* MEL 2330600 *n.v.*).

Rosulate annual herb 7.5–24 cm high. *Glandular hairs* 0.1–0.2 mm long, with a pale red or red-black (or sometimes translucent), globose or discoid head. *Stem* contracted. *Leaves* basal, narrowly oblanceolate, narrowly spatulate or \pm linear, 2.5–14 mm long including the slender petiole, 0.4–1.8 mm wide, glabrous, apex obtuse or rounded; margins entire. *Scapes* 1–3 per plant, 7.5–24 cm long including inflorescence, 0.2–0.5 mm wide, glandular-hairy including inflorescence, usually with a few scattered bracts 0.5–0.9 mm long. *Inflorescence* determinate, monochasially cymose, 2–27-flowered, flowers rotated 180°; branches glandular-hairy; bracts 0.4–1.5 mm long, glandular-hairy; pedicels 0.5–1 mm long or indistinct. *Hypanthium* linear in outline, 3.5–11 mm long, 0.4–0.5 mm wide, glandular-hairy. *Calyx lobes* with 3 free and 2 connate for most of their length, 1.7–2.7 mm long, glandular-hairy including inner surface, apex obtuse to rounded. *Corolla* mauve-pink (or pink?) with white towards base of lobes and in throat, pale abaxially; lobes paired vertically, glandular-hairy abaxially and on margins; anterior (upper) lobes \pm obovate with a bilobed apex (the outer segment broader than the inner one), smaller than the posterior pair, 1–1.7 mm long, 1.4–1.7 mm wide; posterior (lower) lobes basally connate for 1–1.8 mm, strongly bilobed forming a 4-lobed lower lip (segments divergent, with the outer ones spreading and smaller than the inner ones), 3–5 mm long, *c.* 2.5–4 mm wide; tube 1.7–2 mm long, just shorter than the calyx lobes, glandular-hairy externally and internally below the throat appendages. *Labellum* on tube just below sinus, elliptic or narrowly ovate, sparsely glandular-hairy including the tip, *c.* 0.5 mm long with a terminal appendage 0.1–0.2 mm long. *Throat appendages* basally connate and somewhat irregularly lobed, mauve pink with an orange to red (or yellow?) callosity near sinus of each upper and lower corolla lobe, 0.2–0.5 mm high, glabrous; anterior (upper) appendage with a truncate or broadly emarginate apex; lower (posterior) appendages asymmetric, more prominently lobed near callosity. *Column* 6.8–8 mm long, straight when extended, glabrous, \pm slender above main bend, scarcely dilated below the anthers above a strong distal hinge (lacking an apiculus or a hyaline appendage above the anthers); anther locules 0.6–0.7 mm long, corona absent; stigma sessile, entire. *Capsules* linear in outline, 8–14 mm long excluding calyx lobes, longitudinally ribbed; halves detaching distally, recurved, often twisting on drying. *Seeds* brown, \pm ellipsoid to ovoid, *c.* 0.15–0.2 mm long, \pm smooth (areolate), with concave depressions. (Figure 1A)

Diagnostic features. A rosulate annual herb with the following key features: narrow (less than 2 mm wide) and spreading basal leaves; glandular hairs on the scape, inflorescence and corolla, including the margins of the corolla lobes and inside the throat of the flower below the appendages; a \pm linear hypanthium; 3 free and 2 part-connate calyx lobes; a predominantly mauve-pink (or pink?) corolla with unequal lobes, the upper (anterior) pair much smaller than the lower ones and bilobed with unequal segments (the outer segment broader than the inner one), the lower pair bilobed and basally connate forming a 4-lobed lip (the outer segments spreading); mauve-pink, basally connate throat appendages and a prominent orange or red (or yellow?) callosity in the sinus of each upper and lower corolla lobe; a 6.8–8 mm column that is dilated below the anthers above a strong distal hinge and lacks an apiculus or a hyaline appendage above the anthers; and \pm smooth (areolate) seeds.

Specimens examined. NORTHERN TERRITORY: Macadam Range, 13 June 2007, *K. Brennan* 7268 (DNA); Bullo River Station *c.* 20 km along access track from homestead, 16 June 2006, *D. Lewis* 556 (DNA); Bradshaw Field Training Area, Fitzmaurice River, 14 May 2017, *B. Wirf* 1458 (DNA).

Spirit material examined. *K. Brennan* 7268 (DNA). Flower reconstituted from *D. Lewis* 815 (DNA) to confirm presence of glandular hairs in the throat.

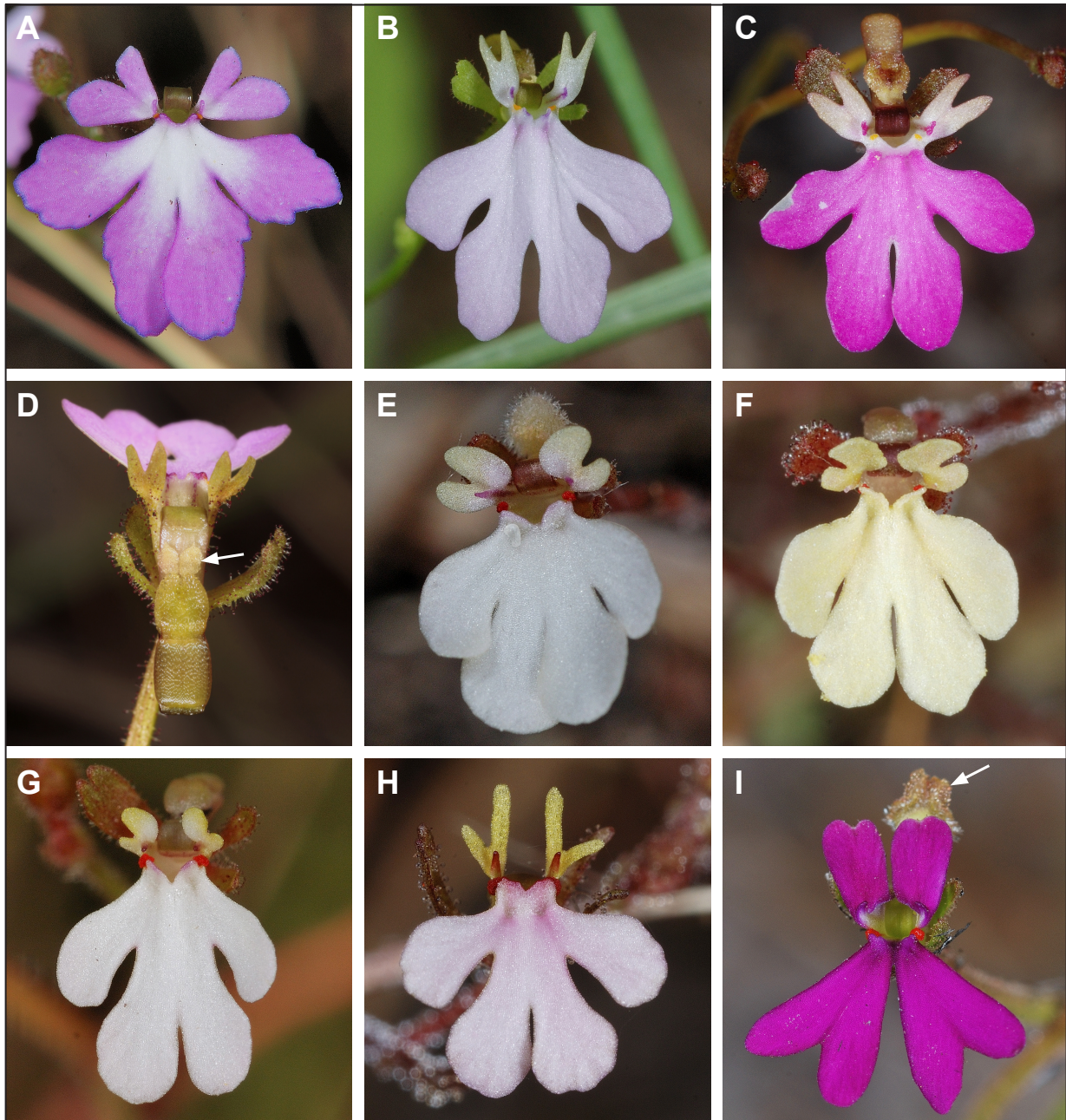


Figure 1. A – *Stylidium aliforme* flower with bilobed corolla lobes, the upper pair with unequal segments (the outer segment broader than the inner one), the lower pair 4-lipped with divergent segments; B, C – *S. pachyrrhizum* flowers with bilobed corolla lobes, the upper pair with \pm equal segments, the lower pair 4-lipped; D – *S. pachyrrhizum* flower with poised column, showing the pair of hyaline appendages at the tip (arrow); E–H – *S. schizanthum* flowers with bilobed corolla lobes, the upper pair unequal (the inner segment broader than the outer one), the lower pair 4-lipped (the outer segment incurved); I – *S. lobuliflorum* flower with emarginate upper corolla lobes that are held close together, bilobed lower lobes that are scarcely connate basally, and column tissue that extends above the anthers and stigma (arrow). Photographs by K. Brennan (A–C & E–I) and R.L. Barrett (D) from K. Brennan 7268 (A), K. Brennan 7617 (B), K. Brennan 7858 (C), R.L. Barrett RLB 5683 (D), K. Brennan 7336 (E), K. Brennan 7344 (F), K. Brennan 7543 (G), K. Brennan 7764 (H), and K. Brennan 7760 (I).

Flowering period. April–June.

Distribution and habitat. Known from the Victoria Bonaparte bioregion in the Northern Territory at sites on Bullo Station, in the Macadam Range, and near the Fitzmaurice River to the west of Bradshaw. Grows amongst dense grass on seasonally flooded plains, in open woodland with *Corymbia polycarpa* and *Melaleuca viridiflora*, or *Eucalyptus bigalerita*, *Pandanus spiralis* and *Planchonia careya*.

Conservation status. Data Deficient according to IUCN criteria (IUCN 2012) based on insufficient survey (N. Cuff pers. comm.). An apparently localised distribution.

Etymology. From the Latin *aliformis* (wing-shaped), a reference to the corolla lobes, which fancifully resemble fairy wings.

Vernacular name. Hairy-fairy Triggerplant.

Affinities. Akin to the widespread, morphologically variable *S. schizanthum* F.Muell. and *S. pachyrrhizum* F.Muell., differing from both species in having a corolla with glandular hairs on the margins of the lobes as well as in the throat below the throat appendages. All three species have divided corolla lobes, with the degree of division and shape of the lobes, as well as the degree to which the lower pair are joined at the base, being highly variable in *S. schizanthum* *s. lat.* and to a lesser extent *S. pachyrrhizum*. Nonetheless, *S. aliforme* appears to have a distinct corolla shape, particularly the outer segments of the upper (anterior) lobes, which are broader than the inner segment (the segments are *c.* equal in *S. pachyrrhizum* and the outer segment is usually narrower than the inner one in *S. schizanthum* or the lobe otherwise emarginate) (Figure 1A–H). Unlike *S. schizanthum*, the lower corolla lobes of *S. aliforme* have divergent segments, with the outer ones widely spreading (*cf.* somewhat incurved in *S. schizanthum*). *Stylidium pachyrrhizum* also differs from *S. aliforme* (and indeed *S. schizanthum*; see Wege & Brennan 2024) in possessing hyaline appendages above the anthers (Figure 1D). There appears to be a small apiculus above each anther locule in *S. schizanthum* (absent in *S. aliforme*), although this feature is difficult to observe on pressed material, so it is unknown whether it is consistently found in *S. schizanthum*.

Stylidium aliforme has previously been confused with *S. lobuliflorum* F.Muell., a species with a dense scape and inflorescence indumentum of sticky and pale-headed glandular hairs, broader leaves (2–11 mm wide), and a column that is slender rather than dilated below the anthers and has tissue that extends above the anthers (Figure 1I). *Stylidium lobuliflorum* also has a distinct corolla shape: the upper lobes are emarginate and usually abut one another, while the lower pair are bilobed and free to the top of the tube or basally connate.

Stylidium anomalum* Wege, *sp. nov.

Type: Yampi Training area, Western Australia [precise locality withheld for conservation reasons], 22 July 2018, R. Jensen RJ 4010 & J.E. Kemp (*holo:* PERTH 09136592!; *iso:* BRI!).

Weak-stemmed *annual herb* *c.* 9–20 cm high. *Glandular hairs* to *c.* 0.1 mm long, with a red or reddish black, globose or discoid head. *Stem* decumbent to erect, *c.* 19–40 cm long including inflorescence, 0.3–1 mm wide, straw-brown or pale green, sometimes pale reddish or flecked red, much-branched, glabrous. *Leaves* scattered on stem, narrowly to broadly ovate, 1.5–8 mm long, 1.5–6.5 mm wide, glabrous, apex subacute to acute or acuminate with a blunt tip; base rounded or \pm truncate (rarely cordate); margins entire. *Scape* absent. *Inflorescence* determinate, monochasially cymose, 3–19-flowered, flowers rotated *c.* 90°; bracts opposite, ovate, linear-lanceolate or subulate, 1.5–5 mm long, glabrous; branches mostly glabrous, sometimes sparsely glandular-hairy; pedicels 0.5–3 mm long, sparsely glandular-hairy or glabrous. *Hypanthium* oblong to linear in outline, 3.5–10 mm long, 0.3–0.7 mm wide, sparsely glandular-hairy. *Calyx lobes* with 3 free and 2 connate for more than half their length, 1.5–3.6 mm long, sparsely glandular hairy (mostly on margins in lower half), apex \pm acute (blunt). *Corolla* white or pale pink with a prominent

dark pink or purplish colour band on the lobes and a golden yellow throat; lobes paired laterally with each pair connate for more than half their length, sparsely glandular-hairy abaxially, unequal, with the upper pair smaller than the lower pair (sometimes markedly so); upper lobes \pm ovate with a subacute to obtuse apex, 1.5–2.5 mm long, 0.7–1.5 mm wide; lower lobes \pm elliptic to oblong with a subacute to obtuse apex, 2.2–5.5 mm long, 1–2.3 mm wide; tube 0.7–1.1 mm long, shorter than the calyx lobes, sometimes with a few glandular hairs distally, sinus \pm absent. *Labellum* \pm at top of corolla tube, glabrous or with the odd glandular hair, ovate or elliptic, 0.3–0.5 mm long with a terminal appendage 0.05–0.1 mm long. *Throat appendages* absent. *Column* with a slight lateral curve when extended, 3.5–5 mm long, glabrous; anther locules 0.4–0.6 mm long, corona absent; stigma sessile, entire. *Capsules* \pm oblong-linear in outline, 6–12 mm long excluding calyx lobes, without ribs, halves coherent distally. *Seeds* brown with a pale nipple, ellipsoid, 0.2–0.3 mm long, papillose with sinuate ridges. (Figure 2A; also see <https://inaturalist.ala.org.au/observations/208878488> [accessed 13 August 2024; from *J. Teuber* BES 01735])

Diagnostic features. A weak-stemmed, annual herb with the following key features: a decumbent to erect and often much-branched stem 0.3–1 mm wide; scattered, ovate leaves 1.5–6.5 mm wide, with a rounded or \pm truncate (rarely cordate) base; opposite bracts (leaf-like or narrower); short pedicels (0.5–3 mm long); a sparsely glandular-hairy hypanthium; a white or pale pink corolla with a prominent dark pink or purplish colour band on each lobe and a yellow throat, the lobes paired laterally with each pair joined for more than half their length and the upper pair smaller than the lower ones; \pm oblong-linear capsules with distally coherent halves; and papillose seeds 0.2–0.3 mm long.

Specimens examined. WESTERN AUSTRALIA [localities withheld for conservation reasons]: May 1967, *Y. Power s.n.* (PERTH); 9 Aug. 2023, *Z. Sims* 4297 (specimen seen prior to submission to PERTH); 23 Apr. 2024, *J. Teuber* BES 01735 (PERTH).

Spirit material examined. *K.F. Kenneally s.n.* (PERTH 07983395, spirit only: single flower dissolved on dissection). Flower reconstituted from *R. Jensen* RJ 4010 & *J.E. Kemp* (PERTH).

Flowering period. May–August.

Distribution and habitat. Currently confirmed from five sites in Western Australia, extending from west of the Robinson River in the Northern Kimberley bioregion to near Kundat Djaru in the Tanami bioregion, including Charnley River – Artesian Range Wildlife Sanctuary. Recorded from mound springs, perched damplands and flats where it grows in dark humus, sandy clay or clay. Associated vegetation is open woodland with assorted dominant species including *Eucalyptus brevifolia*, *Atalaya hemiglauca* and *Lysiphyllum cunninghamii*, *Melaleuca nervosa*, or *Banksia dentata*. Grows amongst tussock grasses and sedges or *Triodia* hummocks, sometimes with *Utricularia*.

Conservation status. To be listed as Priority Three under Conservation Codes for Western Australian Flora (T. Llorens pers. comm.). Noted as common at the type locality but with the substrate damaged by cattle.

Etymology. From the Greek *anomalos* (uneven, irregular, unusual), a reference to the corolla lobes.

Vernacular name. Anomalous Triggerplant.

Affinities. *Stylidium anomalum* belongs to *S.* sect. *Alsinoidea* (*sensu* Bean 2000), a small group of leafy-stemmed annuals with laterally paired corolla lobes, distally coherent capsules and papillose seeds with a pale nipple. Its flowers are most similar to *S. evolutum* Carlquist, a species endemic to the Darwin Coastal bioregion with markedly unequal corolla lobes (see information provided below under that species). *Stylidium anomalum* can be differentiated by its 1.5–6.5 mm wide, ovate (rarely cordate) leaves (*cf.* 0.5–1 mm wide in *S. evolutum* and mostly linear-subulate or linear-lanceolate, although sometimes \pm elliptic or narrowly ovate towards the base) and smaller seeds (0.2–0.3 mm long *cf.* 0.4–0.5 mm).

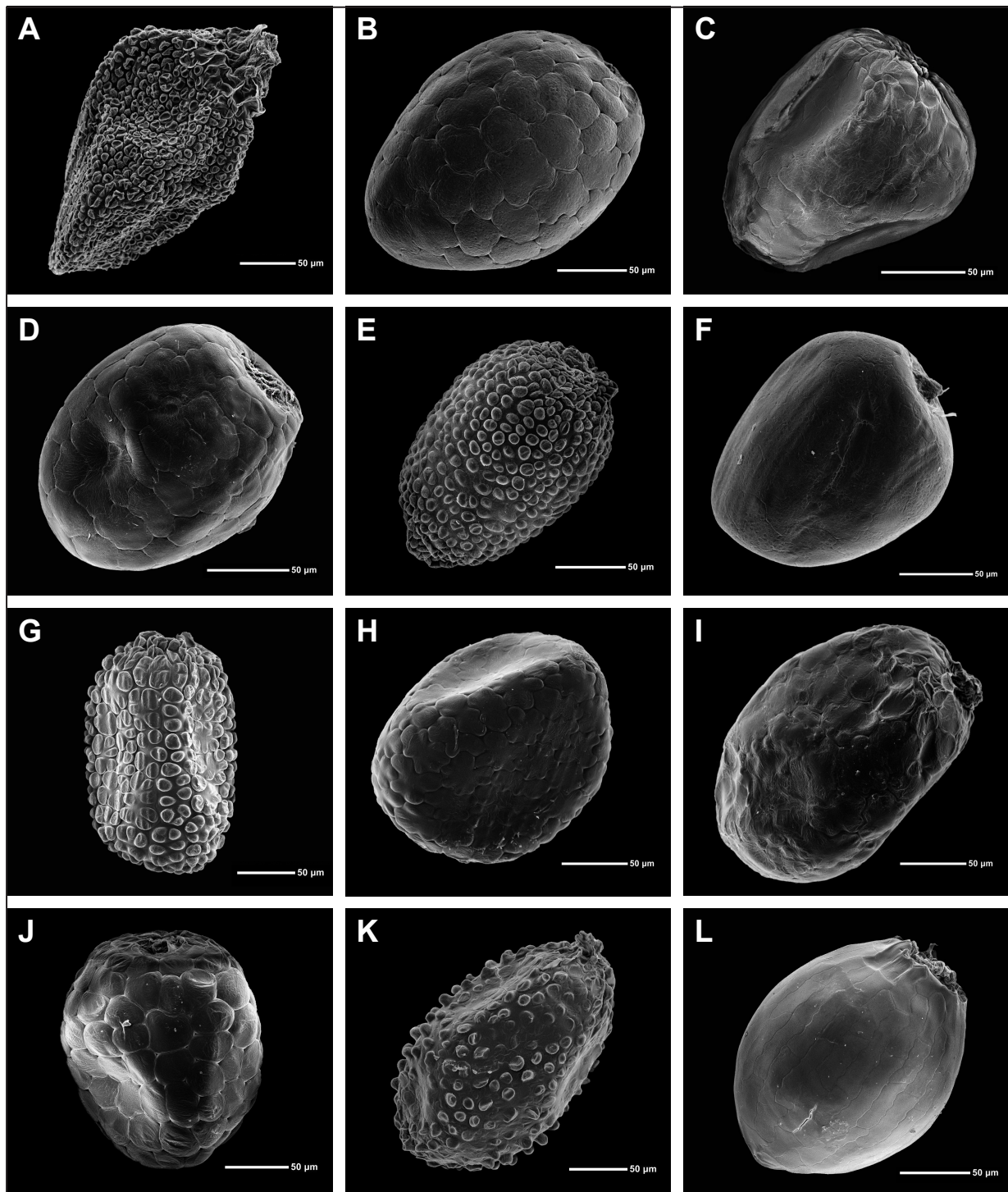


Figure 2. Seeds of select annual triggerplants from northern Australia. A – *Stylidium anomalum* (R. Jensen RJ 4010 & J.E. Kemp: PERTH); B – *S. aquaticum* (K.F. Kenneally 4031: PERTH); C – *S. simulans* (S. Carlquist 15435: PERTH); D – *S. lobuliflorum* (D.J. Edinger 2585: PERTH); E – *S. divergens* (K. Brennan 7557: DNA); F – *S. schizanthum* (A.A. Mitchell 3671: PERTH); G – *S. diffusum* (A.R. Bean 30826 & D. Halford: BRI); H – *S. oviflorum* (R.J. Cumming RJC188689: BRI); I – *S. confertum* (P.I. Forster PIF22800 et al.: BRI); J – *S. capillare* (M.T. Mathieson MTM 811: BRI); K – *S. elachophyllum* (K.R. McDonald KRM 2044 & J.A. Covacevich: BRI); L – *S. eludens* (K.R. McDonald KRM9783B: BRI). Photographs by S.J. Dillon.

Stylidium anomalum has previously been confused with the widespread *S. cordifolium* W.Fitzg., which has mostly cordate (but sometimes ovate) leaves. Unlike *S. anomalum*, *S. cordifolium* has a dark red, medial stripe on the undersurface of the corolla lobes (visible in pressed material including the lectotype), and each lateral corolla lobe pair is connate for less than (or rarely up to) half their length and roughly equal in length (*cf.* connate for more than half their length and with the upper pair smaller than the lower ones in *S. anomalum*). It also has larger seeds (0.4–0.5 mm long *cf.* 0.2–0.3 mm in *S. anomalum*).

Stylidium fluminense F.L.Erickson & J.H.Willis could also cause confusion but has a mostly longer column (5–7.5 mm long *cf.* 3.5–5 mm in *S. anomalum*) with larger anther locules (0.7–1 mm *cf.* 0.4–0.6 mm), and its leaves are usually narrowly lanceolate to lanceolate (sometimes tending oblanceolate) with an attenuate to cuneate base (rarely with elliptic or ovate leaves towards the base of the plant; *cf.* ovate in *S. anomalum* with a rounded or truncate (rarely cordate) base). The corolla lobes of *S. fluminense* are usually \pm equal in length or with the upper pair a fraction shorter than the lower ones and its pedicels indistinct or rarely to 1 mm long (*cf.* 0.5–3 mm in *S. anomalum*).

Notes. Material from Doongan Station (*R.L. Barrett* RLB 7111, RLB 7410 and RLB 7444: PERTH) with ovate leaves remains unplaced; it does not appear to match *S. anomalum* on account of its indistinct pedicels and corolla morphology (the latter more akin to *S. fluminense*), although it has seeds of comparable size. There are also unplaced specimens from northern Queensland (*A.R. Bean* 16599: BRI, DNA; *R.W. Jobson* 1261: NSW; *S.L. Thompson & M.R. Newton* 2369A: BRI) that may match the material from Doongan Station. Material from Papua New Guinea currently assigned to *S. javanicum* Slooten (*R. Pullen* 6631: BRI, CANB) is also very similar. Further research is required.

Stylidium aquaticum A.R.Bean, *Austrobaileya* 5(4): 622–623 (2000). *Type:* Headwaters Cui-Eci Creek, Northern Territory, 12 May 1994, *I.D. Cowie* 4906 & *D. Albrecht* (*holo:* DNA D0120670!).

Diagnostic features (typical form). A weak-stemmed annual herb with the following key features: a somewhat fleshy stem base with densely arranged, filiform leaves 0.1–0.5 mm wide; a \pm linear hypanthium with glandular hairs restricted to the distal end; 3 free and 2 part-connate calyx lobes with glandular-hairy margins; white or pale mauve-pink, vertically paired corolla lobes with a strongly bilobed apex, the lower (posterior) pair much larger than the upper ones and with spreading, unequal to subequal segments; a prominent orange-yellow callosity near the sinus of each upper and lower corolla lobe, and an inconspicuous throat appendage on each lower lobe with a faint ridge-like extension into the corolla tube; a 4.5–6 mm long column with small, lateral lobes above the main bend and hairs around the anthers (i.e. a corona); and \pm smooth (areolate) seeds. (Figures 2B, 3A)

Specimens examined. WESTERN AUSTRALIA [localities withheld for conservation reasons]: 7 May 2011, *M.D. Barrett* MDB 3550 (PERTH); 16 June 1987, *G.J. Keighery & J.J. Alford* 1679 (PERTH); 7 Aug. 1975, *K.F. Kenneally* 4031 (PERTH); 12 June 1976, *K.F. Kenneally* 4754 (PERTH); 23 June 1993, *A. Lowrie* 749 (PERTH); 9 May 1995, *A.A. Mitchell* 3943 (PERTH); 25 May 1991, *T. Willing & R. Shivas* 414 (PERTH, spirit only).

Conservation status. To be listed as Priority Three under Conservation Codes for Western Australian Flora (T. Llorens pers. comm.). Data Deficient in the Northern Territory according to IUCN criteria (Northern Territory Herbarium 2013) although likely to be reclassified as Least Concern under the Common Assessment Method (CAM) in light of the Western Australian records (N. Cuff pers. comm.).

Notes. *Stylidium aquaticum* was described from a single locality in the north-west portion of the Northern Territory. Several specimens from Western Australia's Kimberley region have recently been matched to the type population. The following collections from the Northern Territory are currently assigned to *S. aquaticum* but may represent a distinct taxon; they have a column with thickened margins above the main bend (rather than the small but distinct lateral lobes characteristic of *S. aquaticum* s. str.) and there are red-tipped throat appendages either side of the orange callosities (Figure 3B): Nitmiluk, Marrewel Plateau, 14 Apr. 2005, *K. Brennan* 6523 (DNA); Nitmiluk National Park, headwaters of Fergusson River, 28 Mar. 2002, *I.D. Cowie* 11443 & *A. Gibbons* (DNA, spirit only); Nitmiluk National Park, 20 Apr. 2001,



Figure 3. *Stylidium aquaticum*. A – flower from a population in the Northern Kimberley region that appears to match the type population from the N.T.; B – flowers from the atypical Nitmiluk population. Photographs by M.D. Barrett from *M.D. Barrett* 3550 (A) and K. Brennan from *K. Brennan* 6523 (B).

C.R. Michell 3150 (DNA); Nitmiluk National Park, Marrawal Plateau, 16 Apr. 2002, *C.R. Michell* 3835 (DNA); Nitmiluk National Park, Site 557, 20 Apr. 2001, *J.A. Risler* 1645 & *M. Waetke* (DNA). Additional collections (including photographs and spirit material) from across the range of this species are required to support additional taxonomic research.

Stylidium brachyotis Wege & Brennan, *sp. nov.*

Type: Maguk (Barramundie) falls, Northern Territory, 8 July 2007, *K. Brennan* 7370 (*holo:* DNA D0182620; *iso:* BRI, CANB, PERTH, MEL).

Rosulate annual herb (8–)12–32 cm high. *Glandular hairs* sticky, 0.1–0.2 mm long, with a translucent to yellowish or pale red, discoid or globose head. *Stem* usually contracted or 0.5–3 cm long, 0.5–0.8 mm wide, straw-brown with a reddish tinge, simple or branched, glabrous. *Leaves* usually basal, sometimes terminal and scattered on stem below, with an elliptic, ovate, lanceolate or orbicular lamina, 4–30 mm long including petiole, 2–10 mm wide, glabrous, apex obtuse or rounded; margins entire, sometimes finely hyaline. *Scapes* 1–3(–c. 10) per plant, (8–)12–32 cm long including inflorescence, 0.2–0.8 mm wide, glandular-hairy throughout, sometimes with scattered sterile bracts 0.8–4 mm long. *Inflorescence* determinate, monochasially or dichasially cymose, (1–)5–c. 75-flowered, flowers rotated 180°; branches glandular-hairy; bracts 0.5–2.3 mm long, glandular-hairy; pedicels indistinct or more often c. 0.5–1.5 mm long, glandular-hairy. *Hypanthium* linear in outline, 4–13 mm long, 0.3–0.6 mm wide, glandular-hairy. *Calyx lobes* with 3 free and 2 connate for more than half their length, 1.5–2.8 mm long, glandular-hairy, apex subacute or obtuse. *Corolla* mauve-pink or pale mauve with white near base of lobes (rarely all white?) and a greenish yellow throat, pale yellow abaxially; lobes paired vertically, sparsely glandular-hairy towards base; anterior (upper) lobes narrowly obovate to obovate with a bilobed or emarginate apex, shorter but more than 1/2 the length of the posterior pair, 1–2.4 mm long, 0.8–1.4 mm wide; posterior (lower) lobes basally connate for 1–2 mm, ± obovate with a deeply bilobed apex (forming a 4-lobed lip with ± evenly spaced and equal segments), 2.2–4.4 mm long, 2–3 mm wide; tube 1.8–2.2 mm long, a little shorter to a little longer than the calyx lobes, sparsely glandular-hairy (mostly near anterior sinus). *Labellum* on outside of corolla tube, narrowly ovate to elliptic, c. 0.4 mm long with a terminal appendage to c. 0.1 mm long, glabrous. *Throat appendages* 8 (2 on each corolla lobe), whitish, glabrous, partially or completely decurrent with corolla and forming ridges in the throat, the free portion (when present) c. 0.1–0.3 mm high and ± obtuse. *Column* 4–5.2 mm long, straight when extended, slender above main bend but slightly dilated below the anthers and above a strong second bend, glabrous; anther locules 0.3–0.5 mm long, corona absent; stigma sessile, emarginate. *Capsules* linear in outline, 7–15 mm long excluding calyx lobes, without ribs; halves detaching distally, often recurved. *Seeds* brown, ellipsoid, c. 0.2 mm long, colliculate, usually with concave depressions. (Figure 4)

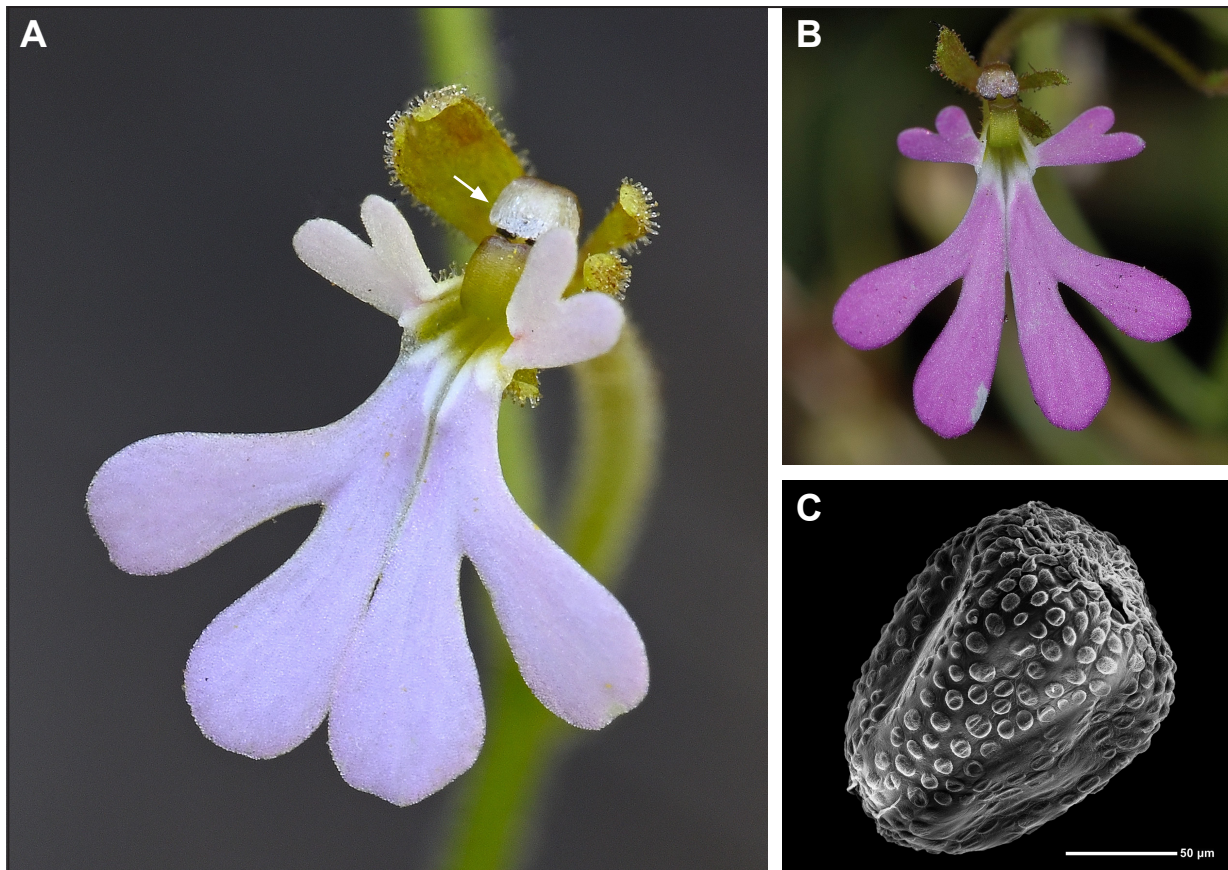


Figure 4. *Styloidium brachyotis*. A – flower showing the unequal, pale mauve corolla lobes, the lower pair much larger than the upper ones and forming a 4-lobed lip with \pm even segments. The throat appendages extend ridge-like into the throat and there are no hairs around the anthers (arrow); B – flower with mauve-pink corolla lobes; C – colliculate seed. Photographs by K. Brennan (A, B) and S.J. Dillon (C) from *K. Brennan 7370* (A) and *K. Brennan 7759* (B; C: DNA).

Diagnostic features. A rosulate annual herb with the following key features: pale-headed, sticky glandular hairs on the scape, inflorescence branches and calyces; a \pm linear hypanthium; 3 free and 2 part-connate calyx lobes; a mauve-pink or pale mauve corolla with a white throat and very unequal lobes, the smaller, upper (anterior) pair emarginate, the lower pair 2.2–4.4 mm long, strongly bilobed and basally connate (forming a 4-lobed lower lip with \pm even segments); a short (4–5.2 mm long) column that is slightly broadened just below the anthers above a strong second bend; and colliculate seeds.

Specimens examined. NORTHERN TERRITORY: Stag Creek, above falls, 14 Aug. 1990, *K. Brennan 717* (DNA); Deaf Adder Gorge, Djuwarr, 17 July 2008, *K. Brennan 7759* (DNA); Jim Jim Creek, 3.5 km ESE of Jim Jim Falls, 23 May 1980, *L.A. Craven 5831* (CANB); 12 km SW of Twin Falls, 25 May 1980, *L. Craven 5911* (CANB, DNA); Tributary of Barramundie Creek, 33 km WSW Twin Falls, 5 June 1980, *L. Craven 6419* (CANB, DNA); Kakadu National Park, 22 Apr. 1990, *C.R. Dunlop 8628 & P.F. Munns* (DNA); above UDP falls, July 1973, *C.H. Gittins 2637* (BRI, CANB, NSW); 10 km N of Twin Falls, 28 May 1980, *M. Lazarides 9045* (CANB, DNA); 23.5 km WSW of Twin Falls, 31 May 1980, *M. Lazarides 9117* (CANB, DNA); Katherine River catchment, 14 Sep. 2000, *K.R. McDonald KRM627* (BRI); Waterfall Creek about 100 km NE of Pine Creek, 13 May 2012, *D.E. Murfet 7493 & A. Lowrie* (AD, DNA); above UDP falls, 8 July 1977, *K. Paijmans LAC 4666* (CANB); Kakadu National Park, Upper Koolpin Creek, 8 June 1988, *J. Russell-Smith 5482 & D. Lucas* (DNA); Deaf Adder Basin, 11 June 1972, *R. Schodde 97* (BRI, CANB, DNA, NT); El Sharana – Pine Creek road, Crocodile Dreaming, 2 June 1983, *H.S. Thompson 484* (CANB).

Spirit material examined. *K. Brennan 7370* (DNA); *K. Brennan 7759* (DNA); Upper Koolpin Creek, 2 Aug. 2008, *K. Brennan 7767* (DNA, spirit only).

Flowering period. May–August.

Distribution and habitat. Endemic to the Northern Territory, where it has been recorded in Kakadu National Park between Gunlom Falls and Deaf Adder Gorge. Favours damp sand in rocky seepage and washout areas near perennial creeks on sandstone escarpments, often growing in proximity to waterfalls. Grows amongst herbs, grasses and sedges, in tall shrubland of *Asteromyrtus arnhemica* and *Pandanus* or *Grevillea* and *Verticordia* with fringing *Allosyncarpia ternata* forest, or in shrubby, low *Eucalyptus* woodland.

Conservation status. Data Deficient according to IUCN criteria based on incomplete population data but unlikely to be classified under a Threatened category due to an absence of threat (N. Cuff pers. comm.).

Etymology. From the Greek *brachys* (short) and *otos* (an ear), a reference to the short upper corolla lobes (relative to the lower pair).

Vernacular name. Short-eared Triggerplant.

Affinities. Specimens of *S. brachyotis* have been variously misidentified as *S. simulans* Carlquist, *S. accedens* A.R.Bean, *S. lobuliflorum*, *S. divergens* A.R.Bean and *S. schizanthum*, all of which occur in Kakadu National Park. It is most similar to *S. simulans*, differing in its markedly unequal corolla lobes: the upper pair are less than half the length of the lower pair (Figure 4A, B) whereas they are more than half the length in *S. simulans* (see Carlquist 1979: Figures 30–34; Wege & Brennan 2024: Figure 5I). It also has colliculate rather than \pm smooth (areolate) seeds (compare Figure 2C with Figure 4C) and lacks hairs around the anthers (*cf.* hairs present near the apex of the column in *S. simulans*). *Stylidium brachyotis* also tends to have a taller stature (8–30 cm high *cf.* 5–13 cm in *S. simulans*) and larger leaves (4–30 mm long *cf.* 1.8–10 mm), although these differences are not discrete. *Stylidium simulans* is represented by few collections from Kakadu National Park where it appears to favour shallow, white sand pockets on sandstone pavements.

Pressed material of *S. brachyotis* is readily confused with *S. lobuliflorum*, although the latter has a longer column (6.5–10 mm long *cf.* 4–5.2 mm in *S. brachyotis*) that is slightly broadened and concave above the main bend (rather than broadened immediately below the anthers) and has tissue that extends above the anthers (Figure 1I). *Stylidium lobuliflorum* also has lower (posterior) corolla lobes that are free to the top of the tube or shortly connate (rather than forming a fairly evenly 4-lobed lip), an orange or orange-red callosity in the sinus of each upper and lower corolla lobe, and \pm smooth (areolate) seeds (Figures 1I, 2D). Pressed material of *S. accedens* may similarly cause confusion although this species has a shorter column (2.5–3 mm long) and white corolla lobes (*cf.* mauve-pink or mauve with a white base) that are smaller and have a distinct shape (see Wege & Brennan 2024: Figure 5K). Specifically, the lower (largest) pair of corolla lobes are 0.7–1.5 mm long (*cf.* 2.2–4.4 mm in *S. brachyotis*) and free to the top of the tube or scarcely connate basally. *Stylidium accedens* also tends to have a shorter hypanthium (2–5 mm long *cf.* 4–13 mm long in *S. brachyotis*).

Stylidium divergens, which has colliculate seeds like *S. brachyotis* (Figure 2E), can be separated by its darker and sparser glandular indumentum (including a scape that is glabrous rather than glandular-hairy towards the base), longer column (5.5–8 mm) that is slender immediately below the anthers and has hairs around the anthers (i.e. a corona), longitudinally-ribbed capsules, and more prominent throat appendages. *Stylidium schizanthum* similarly has glandular hairs with darker heads than those of *S. brachyotis*, differing further by its morphologically distinct throat appendages (including an orange or red callosity near the sinus of each upper and lower corolla lobe) and bilobed lower corolla lobes with unequal rather than \pm equal segments (Figure 1E–H); the typical form of *S. schizanthum* also has \pm smooth (areolate) rather than colliculate seeds (Figure 2F).

Stylidium brennanianum Wege, M.D.Barrett & A.R.Bean, *sp. nov.*

Type: c. 62 km from Lajamanu on track to Tanami Road, Northern Territory, 16 April 2021, *K. Brennan* 12100 (*holo:* DNA D0287261; *iso:* NT D0287261 [ex DNA], PERTH 09636552).

Weak-stemmed *annual herb* 7–38 cm high. *Glandular hairs* 0.1–0.15 mm long, with a red or red-black, discoid or globose head. *Stem* scapiform, sometimes a little fleshy towards base, 7–38 cm long including inflorescence, 0.5–2 mm wide, green or pale reddish brown, glabrous. *Leaves* bract-like, ± evenly scattered, adpressed or porrect, narrowly ovate to linear-lanceolate, 1–4(–8) mm long, 0.3–0.6 mm wide, glabrous, apex obtuse to somewhat truncate; margins entire. *Scape* absent. *Inflorescence* determinate, monochasially or dichasially cymose, (1–)5–*c.* 120-flowered, flowers rotated 180°; branches mostly glabrous, sometimes with a few glandular hairs near bract insertion; bracts 1.5–3 mm long, sparsely glandular-hairy or glabrous; pedicels ± indistinct. *Hypanthium* ± linear in outline, 6–18 mm long, 0.3–0.9 mm wide, sparsely glandular-hairy in upper half or throughout but especially distally. *Calyx lobes* with 3 free and 2 connate for more than half their length, 1.5–2.5 mm long, glandular-hairy on margins and towards base (but sometimes elsewhere on surface), apex subacute to obtuse. *Corolla* white, yellowish cream abaxially; lobes paired vertically, sparsely glandular-hairy abaxially on anterior lobes; anterior (upper) lobes ± obovate with a strongly bilobed apex (segments more than half the length of the lobe and divergent), smaller than the posterior pair, 1–2.8 mm long, 1–1.5 mm wide; posterior (lower) lobes basally connate for 0.3–1.5 mm, ± obovate with a flared and bilobed apex (segments ± equal and somewhat divergent), 2–5 mm long, 2.4–4.2 mm wide; tube 1.5–2.2 mm long, *c.* equal to or a little longer than the calyx lobes, sparsely glandular-hairy near anterior sinus. *Labellum* on outside of corolla tube, elliptic or narrowly ovate, 0.4–0.8 mm long with a terminal appendage 0.1–0.4 mm long, sparsely glandular-hairy or more rarely glabrous. *Throat appendages* *c.* 8 (2 on each corolla lobe), sometimes with additional minor lobing, basally connate or in 2 basally connate groups, golden yellow, orange or dull red, 0.2–0.5 mm high, glabrous. *Column* 4.8–7 mm long, straight when extended, slender above main bend or with raised margins, with a second bend well below the anthers, glabrous; anther locules 0.5–0.9 mm long, corona present; stigma sessile, ± entire. *Capsules* ± linear in outline, *c.* 9–20 mm long excluding calyx lobes, halves coherent distally. *Seeds* brown, ± globose, ellipsoid or ovoid, 0.15–0.2 mm long, colliculate, usually with concave depressions. (Figure 5A–D)

Diagnostic features. A weak-stemmed annual herb with the following key features: bract-like leaves 1–3 mm long, ± evenly scattered along a scape-like stem; a ± linear hypanthium with glandular hairs in upper half or throughout; 3 free and 2 part-connate calyx lobes with glandular-hairy margins; white, vertically paired corolla lobes with a strongly bilobed apex, the upper pair dissected for more than half their length) the lower (posterior) pair much larger than the upper ones and apically flared; 8 golden yellow, orange or dull red throat appendages with an obtuse to rounded tip (sometimes with additional minor lobes); a 4.8–7 mm long column that is slender or with raised margins above the main bend and has hairs around the anthers (i.e. a corona); and colliculate seeds.

Specimens examined. WESTERN AUSTRALIA [localities withheld for conservation reasons]: 8 Apr. 2018, *M.D. Barrett* MDB 5469 (BRI, CANB, DNA, NT, PERTH); 4 July 1995, *K. Coate* 366 (DNA, PERTH); 4 July 1995, *K. Coate* 370 B (BRI, PERTH); 3 May 1969, *F. Lullfitz s.n.* (PERTH); 9 Aug. 2023, *Z. Sims* 4323 (specimen seen prior to submission to PERTH).

NORTHERN TERRITORY: Along track from Lajamanu to Tanami Rd, 5 Aug. 2023, *K. Brennan* 13232 (BRI, DNA, PERTH); Access track to Pungalina, off Savannah Way, 19 Aug. 2024, *K. Brennan* 13621 (DNA).

QUEENSLAND: Abingdon Downs station, 7 km SW of Rosie Lagoon, 20 km NE of the homestead, 91 km NNW of Georgetown, 3 Aug. 2006, *C. Appelman & G. Wilson* R295 (BRI); One Hundred Mile Swamp, Undara Resort, E of Mt Surprise, 30 July 1998, *A.R. Bean* 13757 & *I. Fox* (BRI, CNS, DNA, MEL, NSW); Messmate Spring, Whitewater, E of Mt Surprise, 2 June 2001, *R.J. Fensham* 4516 (BRI); 29 km NW of ‘Corinda’, 8 May 1974, *S. Jacobs* 1517 (NSW); 15.7 km by road N of Coen Road bridge,

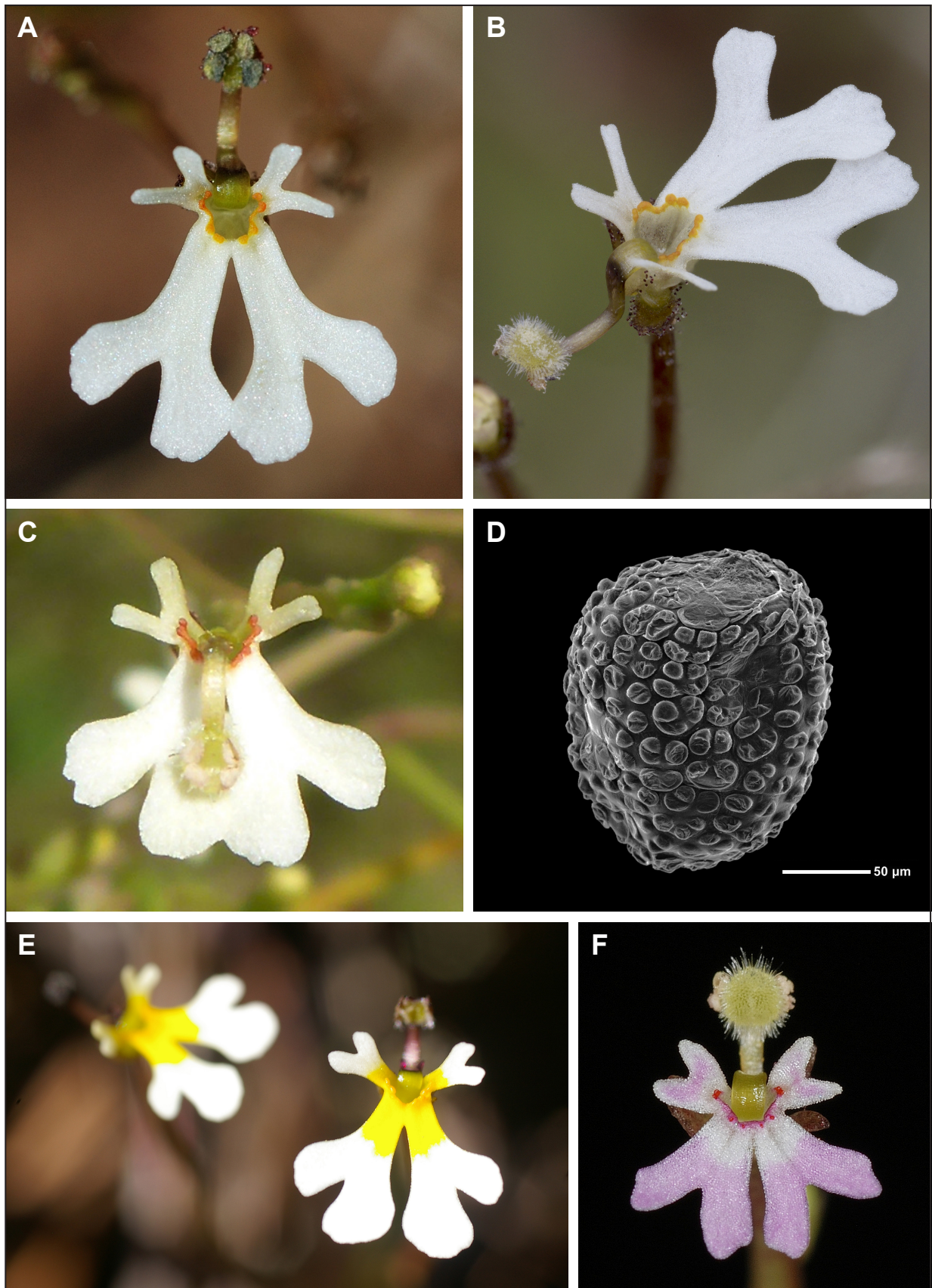


Figure 5. A–C – *Stylidium brennanianum* flowers showing the strongly dissected upper corolla lobes, bilobed lower lobes with flared apex, and prominent orange-yellow or dull reddish throat appendages; D – *S. brennanianum* colliculate seed; E – *S. oviflorum* flowers, showing the yellow throat and throat appendages, and bilobed lower corolla lobes with unequal segments; F – *S. diffusum* flower. Photographs by K. Brennan (A, B, F), M.D. Barrett (C), S.J. Dillon (D) and R.J. Cumming (E) from K. Brennan 12100 (A; D: DNA), K. Brennan 13223 (B), M.D. Barrett 5469 (C), Mt Zero, WNW of Townsville (E) and K. Brennan 8174 (F).

2 Sep. 2006, *K.R. McDonald* KRM5632 & *R. Jensen* (BRI); 1.4 km by road W of Lake Emma turnoff, Lakefield National Park, 27 June 2010, *K.R. McDonald* KRM9484 (BRI); Bull Swamp, Lama Lama National Park, 24 June 2013, *K.R. McDonald* KRM14525 & *Lama Lama Rangers* (BRI); Lama Lama National Park, Bull Swamp, 4 Aug. 2013, *K.R. McDonald* KRM14686 & *P.I. Forster* (BRI); Brooklyn Nature Refuge, Mitchell River, 8 July 2019, *K.R. McDonald* KRM21362 (BRI); c. 29 km NW of old 'Corinda' on the road from Doomadgee Aboriginal Station to Wollogorang, 8 May 1974, *R. Pullen* 9149 (BRI, CANB, DNA); 65 km SE of Coen in Balclutha Creek Nature Refuge, 29 June 2011, *S. Thomsson et al.* SLT 1141 (BRI); N of Coen, 18 Sep. 2007, *B.S. Wannan* 4830 & *P. Graham* (BRI); Gamboola, 11 Aug. 2011, *B.S. Wannan* 6284 & *M. Trenerry* (BRI, MEL n.v., NSW); 48 km ESE of Aurukun, Yuukingga Nature Refuge, 4 May 2016, *B.S. Wannan* 6783, *N. Kepple*, *T. Mitchell*, *S.L. Thompson* & *W. Lawrence* (BRI).

Spirit material examined. *A.R. Bean* 13757 & *I. Fox* (BRI); *K. Brennan* 12100 (DNA); Winneke Hills on track from Lajamanu to Tanami Rd, 4 Aug. 2023, *K. Brennan* 13223 (DNA, spirit only); *K. Coate* 366 (PERTH); *K.R. McDonald* KRM9484 (BRI); *B.S. Wannan* 6783 *et al.* (BRI). Flower reconstituted from *M.D. Barrett* MDB 5469 (PERTH).

Flowering period. April–September.

Distribution and habitat. Widespread in northern Australia, occurring from east of Derby in Western Australia's Kimberley region to south-east of Mount Carbine in northern Queensland including the Tanami Desert and near Pungalina in the Northern Territory. Grows in damp or waterlogged, sandy soils (sometimes in shallow water), beside seasonal streams, at the margins of swamps, or in drainage depressions and perched wetlands. Found amongst grasses, sedges and herbs, usually in low, open woodland with *Melaleuca viridiflora*, *M. nervosa*, *Corymbia polycarpa*, *Eucalyptus camaldulensis*, *E. brassiana* or *Asteromyrtus symphyocarpa*.

Conservation status. A widespread species that is more commonly recorded in Queensland, where its conservation status has not yet been assessed. To be listed as Priority Three under Conservation Codes for Western Australian Flora (T. Llorens pers. comm.). Data Deficient in the Northern Territory according to IUCN criteria but likely to be classified as Least Concern under the CAM (N. Cuff pers. comm.).

Etymology. Named for Kym G. Brennan (1954–) in recognition of his generous assistance in documenting the Northern Territory's triggerplants, most notably through an exceptional collection effort that has included flowers preserved in spirit, high quality photographs, and targeted collections of poorly known or undescribed taxa.

Vernacular name. Brennan's Triggerplant.

Affinities. *Stylidium brennanianum* has previously been confounded with *S. fissilobum* F.Muell. (W.A., N.T.), especially in Queensland, but can be differentiated by its pure white corolla with prominent yellow, orange or dull red throat appendages and strongly dissected upper (anterior) lobes (*cf.* corolla lobes usually pink or mauve-pink (rarely with the upper pair white) with orange or yellow callosities in the sinuses and emarginate upper lobes; Figure 6A–E). It also has a mostly shorter column (4.8–7 mm long *cf.* 7–9.5 mm in *S. fissilobum*) that is slender or with raised margins above the main bend (*cf.* with lateral lobes; Figure 6F), and colliculate rather than ± smooth (areolate) seeds (compare Figure 5D with Figure 6G).

Stylidium brennanianum is morphologically more similar to *S. oviflorum* A.R.Bean (Qld), a species with a distinct corolla shape and colour, specifically the yellow markings on the basal portion of the lobes and the unequal, lower lobe segments (Figure 5E). *Stylidium oviflorum* also has small but distinct lateral lobes above the main bend of the column, less prominent throat appendages and scarcely colliculate seeds (Figure 2H). With the exception of corolla colour, these features can also be used to separate *S. confertum* A.R.Bean (Qld: Figure 2I) from *S. brennanianum*. Indeed, *S. confertum*, which has a white

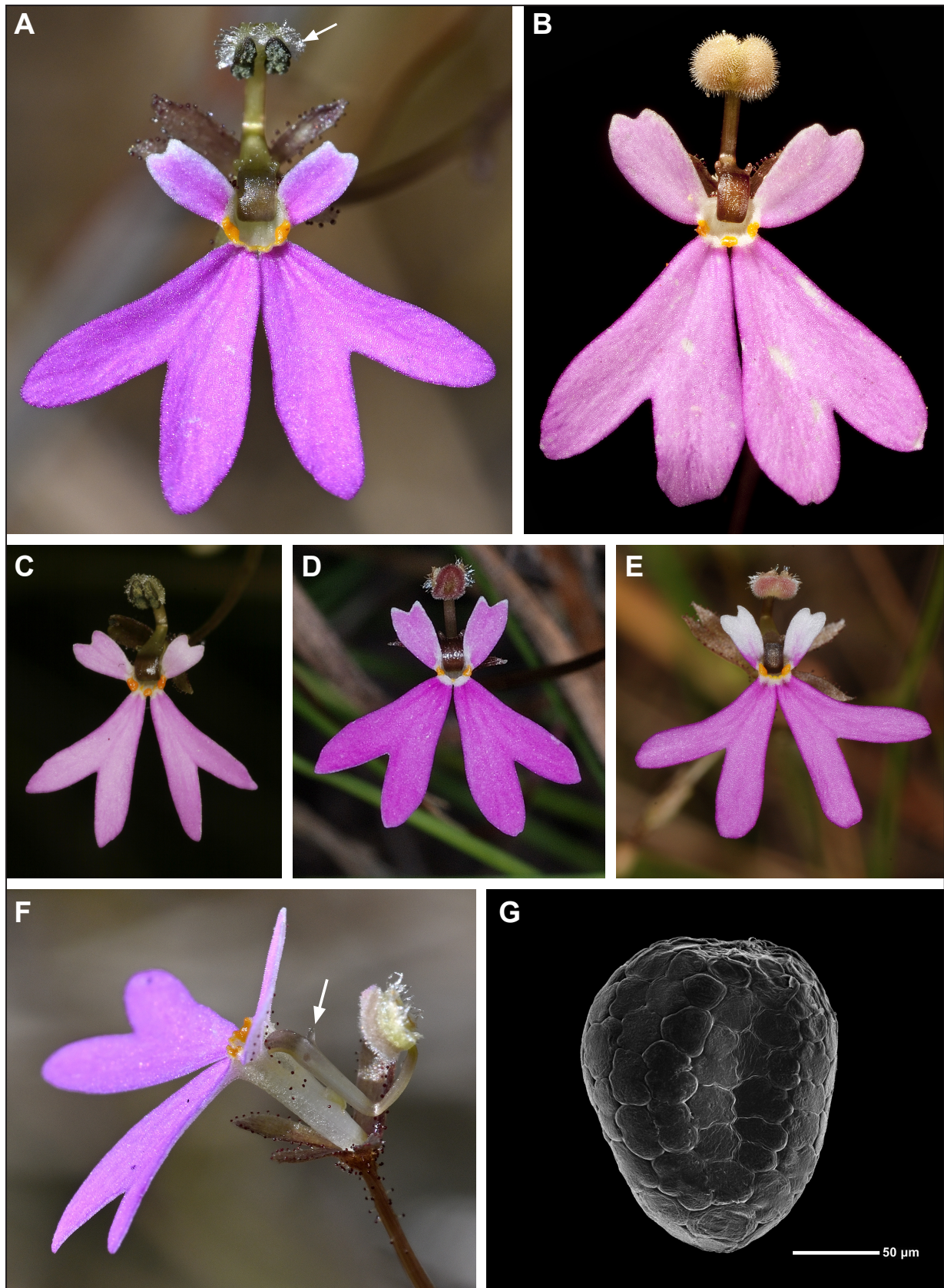


Figure 6. *Stylidium fissilobum*. A – flower, showing the emarginate upper corolla lobes and bilobed lower lobes (the latter free to the top of the corolla tube), and hairs near the anthers (arrow); B – flower, with stigma developed; C–E – subtle variation in corolla shape and colour, and in the prominence of the orange throat callosities; F – side view of flower showing the small lateral lobes on the column (arrow); G – ± smooth (areolate) seed. Photographs by K. Brennan (A, D–F), K.R. Thiele (B), M.D. Barrett (C) and S.J. Dillon (G) from K. Brennan 13102 (A, F), K.R. Thiele 4850 (B), M.D. Barrett MDB 2059, K. Brennan 7267 (D), K. Brennan 7596 (E) and M.J. Clark 1737 (G: DNA).

corolla, yellow throat appendages and leaves that are densely arranged near the base of the plant, may prove to be conspecific with *S. oviflorum* upon further study.

Stylidium diffusum R.Br. (N.T., Qld) has colliculate seeds like *S. brennanianum* (Figure 2G) but tends to have longer and broader leaves ($2\text{--}12 \times 0.4\text{--}2.5$ mm *cf.* $1\text{--}4\text{--}(8) \times 0.3\text{--}0.6$ mm) that are densely clustered towards the base of the stem. It also has a distinct corolla and throat appendage morphology (Figure 5F), and a column that it is often shorter (3.5–5.5 mm long) and lacks hairs around the anthers.

Stylidium aquaticum (N.T., W.A.) has a swollen stem base with densely clustered, linear leaves that are usually longer than those of *S. brennanianum* (2–12 mm long *cf.* 1–4(–8) mm), ± smooth (areolate) rather than colliculate seeds (see Figure 2B), and upper corolla lobes that are less deeply dissected (Figure 3); the typical form of *S. aquaticum* differs further from *S. brennanianum* in possessing lateral lobes above the main bend of the column.

A comparison with *S. torquatum* Wege & Brennan (N.T.), a species with a more northerly distribution and a distinct corolla and throat appendage morphology, is provided in the affinities section under that species.

Note. A specimen from south-east of Coen (*S. Thompson et al.* SLT1141: BRI) with linear leaves to 8 mm long is questionably recorded as having a yellow corolla but appears referable to *S. brennanianum*. A collection from north of Coen (*J. Wrigley & I. Telford* NQ 1768: CBG) with a cream corolla and hypanthium *c.* 25–30 mm long remains unplaced, with field observations and additional collections required to resolve its taxonomic status.

Stylidium capillare R.Br., *Prodr. Fl. Nov. Holland.* 570 (1810); *Candollea capillaris* (R.Br.) F.Muell., *Syst. Census Austral. Pl.*: 86 (1882). *Type:* Endeavour River, Queensland, 1770, *J. Banks & D. Solander s.n.* (*holo:* BM 000563895!).

Stylidium quadrifurcatum F.L.Erickson & J.H.Willis, *Vict. Naturalist* 73: 5–6 (1956). *Type:* Pine Creek, Northern Territory, April 1904, *J.H. Niemann s.n.* (*holo:* MEL 1061651!; *iso:* MEL 2386964!).

Diagnostic features. A diminutive annual herb with the following key features: a basal rosette of leaves 1.8–7 mm long; a slender scape with scattered sterile bracts 0.7–1.6 mm long; a ± linear hypanthium with glandular hairs restricted to the distal end; 3 free and 2 part-connate calyx lobes with glandular-hairy margins and an acute apex; cream to white or pale mauve-pink, vertically paired corolla lobes with an evenly bilobed apex, the upper (anterior) pair less than half the length of the lower pair, the lower pair free to the top of the corolla tube; 4 basally connate throat appendages (1 on each corolla lobe), white with a yellow, subacute to acute or obtuse tip; labellum positioned at the base of the anterior corolla sinus or on the tube just below the sinus; and ± smooth (areolate) seeds. (Figure 2J, 7)

Selected specimens. WESTERN AUSTRALIA [localities withheld for conservation reasons]: 22 Apr. 2008, *M.D. Barrett* MDB 1918 & *R.L. Barrett* (PERTH); 25 Mar. 2010, *M.D. Barrett* MDB 2779 & *R.L. Barrett* (PERTH); 7 May 2011, *M.D. Barrett* MDB 3551 (PERTH); 16 Apr. 1993, *R.L. Barrett* 570 (PERTH); 18 Apr. 1993, *R.L. Barrett* 579 (PERTH); 4 June 2014, *K.R. Thiele* 4982 (PERTH).

NORTHERN TERRITORY: Darwin Rural Area, between Palmerston and Berry Springs, 17 Apr. 2006, *K. Brennan* 6961 (DNA); Litchfield National Park, catchment of Aida Creek, 2 Mar. 1995, *I.D. Cowie* 5200 & *S. Taylor* (DNA); Kakadu National Park, 27 Mar. 1982, *C.R. Dunlop* 6232 (DNA); Nitmiluk National Park, near site 385, 3 Apr. 2001, *J.A. Risler* 1520 (DNA); Near creekline on Finn Rd, *c.* 3.75 km N of Cox Peninsula Rd, N of Berry Springs, 8 Apr. 2016, *J.A. Wege* JAW 2005 & *B.P. Miller* (PERTH).

QUEENSLAND: Brooklyn, *c.* 1 km W of road *c.* 13.7 km N of Mt Molloy along Peninsula Developmental Rd, 4 Mar. 2011, *R. Jensen* 2274 & *T. Roberts* (BRI, CNS *n.v.*); Hann Tableland National Park, NW of Mareeba, 11 May 2010, *M.T. Mathieson* MTM811 (BRI); *c.* 1.0 km by road W of Petford, 13 Mar. 2008,

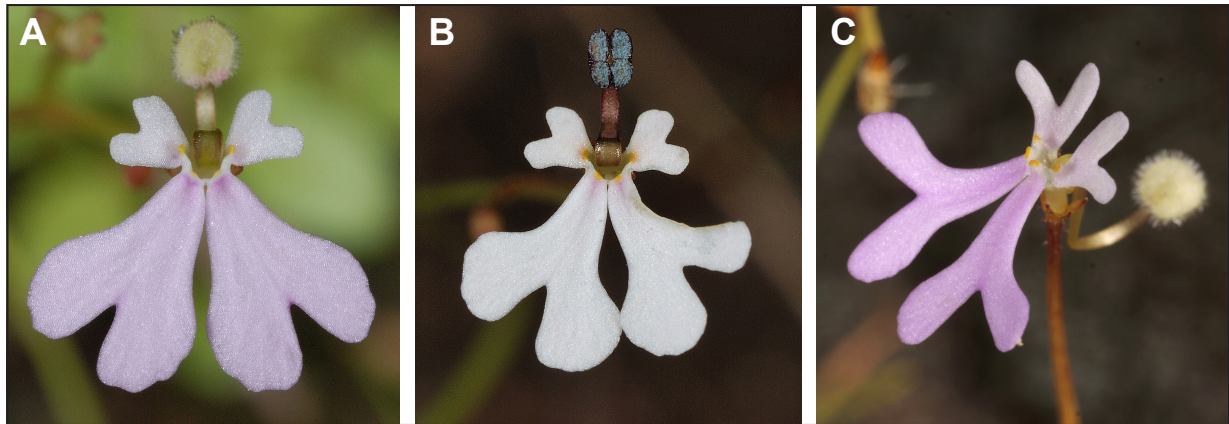


Figure 7. Flowers of *Stylidium capillare* s. lat. showing subtle variation in corolla morphology and yellow-tipped throat appendages. Photographs by K. Brennan (A, B) and R.L. Barrett (C) from K. Brennan 7501 (A), K. Brennan 8626 (B) and M.D. Barrett MDB 2852 & R.L. Barrett (C).

K.R. McDonald KRM7283 (BRI); Downstream from Hey Point, Franjum Point, on Embley River, S of Weipa, 22 Mar. 1981, A. Morton 1164 (BRI, CNS *n.v.*, MEL *n.v.*); Bridge Creek Holding (proposed National Park), upper Bridge Creek catchment, NW of Cooktown, 1 May 2010, P.I. Forster PIF36629 & M.B. Thomas (BRI); Quinkan Reserve 1 (West Quinkan), S of Laura, 7 Mar. 2017, P.I. Forster PIF44567, K.R. McDonald & Western Yalanji traditional owners (BRI); Escott Station, 47 km NW of Burketown, 28 Apr. 2007, E.J. Thompson & G.W. Wilson WES1229 (BRI).

Conservation status. A widespread species that is poorly known in Western Australia but otherwise assessed as Least Concern (Northern Territory Herbarium 2013) or Special Least Concern (Bean 2024). To be listed as Priority Three under Conservation Codes for Western Australian Flora (T. Llorens pers. comm.).

Notes. This widespread species was recorded between Litchfield National Park in the Northern Territory and Cooktown and Mareeba in northern Queensland by Bean (2000) but extends into Western Australia's Kimberley region. Some of the Western Australian collections have capsules that separate distally (rather than being coherent distally like material from Queensland and the Northern Territory).

The following two Western Australian collections from the Prince Regent River area have been annotated as *S. aff. capillare* on account of the widely divergent lower corolla lobe segments (Figure 7C) and apparently longer column (*c.* 8–8.5 mm long *cf.* 4.8–7 mm in typical *S. capillare*): 19 Jan. 2003, R.L. Barrett RLB 2600 & M.D. Barrett (PERTH); 27 Mar. 2010, M.D. Barrett MDB 2852 & R.L. Barrett (PERTH). Additional collections, including flowers preserved in spirit, are needed to enable further taxonomic assessment. More photographic records from across the range of *S. capillare* would also be of assistance in assessing variation in corolla shape.

A population in Prince Regent National Park with affinity to *S. capillare* but with longer, asymmetric upper corolla lobes and unique throat appendages is segregated below as *S. youwanjela* M.D.Barrett, R.L.Barrett & Wege.

Stylidium claytonioides W.Fitzg., J. & Proc. Roy. Soc. Western Australia 3: 219–220 (1918). *Type:* Between Isdell Range and Mt Bartlett, Western Australia, [20] July 1905, W.V. Fitzgerald 1242 (*lecto*, here designated: PERTH 01640526!; *isolecto*: NSW 923306 image!, PERTH 01640518! [excluding fragments of *S. cordifolium*]).

Typification. The collections made by Fitzgerald during Charles Crossland's expedition to the Kimberley in 1905 are variously dispersed, with no complete set held at any one institution (Maslin & Cowan 1994: 396). Specific collection dates are usually not noted on specimen labels (these usually only having the

month and year), but many of his collections can be matched to a single day with reference to Fitzgerald's unpublished expedition diary. Three syntypes of *S. claytonioides* are known, of which PERTH 01640526 has been selected as the lectotype since it is the best quality material and has been annotated by Fitzgerald with the published name. The other PERTH sheet includes fragments of *S. cordifolium* (a species that Fitzgerald also collected at a site between Isdell Range and Mt Bartlett) and has a typed label in which Fitzgerald's collecting number has been mistakenly given as 2242.

***Stylidium contrarium* Wege, sp. nov.**

Type: 15 km north-north-east of Jabiru East, Northern Territory, 22 March 1981, L.A. Craven 6555 (*holo:* CANB 338101!; *iso:* DNA D0021014!, MEL 0653766!).

Annual herb 8–18 cm high. *Glandular hairs* to *c.* 0.1 mm long, with a red, globose or discoid head. *Stem* erect, 1.7–7 cm long, 0.5–1.6 mm wide, straw-brown, greenish brown or pale reddish brown, simple, with sparse to dense stellate hairs. *Leaves* in a basal and terminal rosette (with the basal ones sometimes rotting off), occasionally also scattered on stem, glabrous adaxially, usually stellate-hairy abaxially especially towards base or sometimes glabrous, apex with a branched or simple acumen 0.3–1.3 mm long or with basal leaves sometimes subacute to acute or obtuse; margins hyaline- or white-crenulate or with simple, somewhat flattened hairs 0.2–0.4 mm long (rarely \pm entire); basal leaves narrowly oblanceolate to oblanceolate or spatulate, lamina 2–10 mm long, 0.5–2.7 mm wide; terminal leaves narrowly lanceolate or linear-subulate, lamina 3.5–8 mm long, 0.4–1.5 mm wide. *Scapes* 1–32 per plant, 5–12 cm long including flower, 0.2–0.3 mm wide, constricted (pulvinate?) and sparsely glandular-hairy near bracts otherwise glabrous. *Inflorescence* determinate, 1-flowered, flower rotated 180°; pedicels indistinct or *c.* 0.5 mm long above bracts, sparsely glandular-hairy; bracts paired, 0.4–1.2 mm long, glabrous or sparsely glandular-hairy. *Hypanthium* oblong to linear in outline, 5.5–11.5 mm long, 0.3–0.9 mm wide, glabrous or with a few glandular hairs distally. *Calyx lobes* with 3 connate for at least half their length and 2 connate for most of their length (the latter held at right angles to the hypanthium), 0.7–1.3 mm long, with glandular-hairy margins, apex subacute, obtuse or scarcely emarginate. *Corolla* pink or mauve-pink with white markings towards base of lobes and a yellow-green throat; lobes in a somewhat fan-like arrangement (the upper pair spreading, the lower ones paired vertically), glabrous or with a few glandular hairs abaxially towards base; anterior (upper) lobes elliptic to obovate with a rounded or emarginate apex, much smaller than the posterior pair, 0.6–2.5 mm long, 0.5–1.4 mm wide; posterior (lower) lobes basally connate for 1.5–2 mm, \pm obovate with a deeply bilobed apex (forming a 4-lobed lip, the segments subequal or unequal and bilobed, emarginate or obtuse), 3–4.5 mm long, 1.7–3 mm wide; tube 2–3.3 mm long, longer than calyx lobes, sparsely glandular-hairy mostly near anterior sinus. *Labellum* on outside of corolla tube, ovate, 0.4–0.6 mm long, glabrous, without appendages. *Throat appendages* absent or possibly rudimentary at base of posterior corolla lobes. *Column* 11–14 mm long, straight when extended, dilated distally with raised edges and a strong bend below anthers, sparsely glandular-hairy distally; anther locules 0.7–1 mm long, corona absent; stigma sessile, prominent, entire to shallowly bilobed. *Capsules* linear in outline, *c.* 7–12 mm long excluding calyx lobes, longitudinally ribbed, with a slight longitudinal twist; halves detaching distally, not or becoming recurved or sinuate on drying. *Seeds* brown, ellipsoid or \pm globose, *c.* 0.15 mm long, \pm smooth (areolate), with concave depressions. (Figure 8)

Diagnostic features. An erect, annual herb with the following key features: a stellate-hairy stem with a basal and terminal leaf rosette (sometimes with leaves scattered between); terminal leaves with a branched or simple acumen 0.3–1.3 mm long, a glabrous upper surface, a stellate-hairy lower surface (especially towards the base), and simple hairs 0.2–0.4 mm long on the margins or with the margins white-crenulate; slender scapes with a solitary flower borne above a pair of bracts; a 2-lipped calyx (with 3 lobes connate for *c.* half their length and 2 connate to near the apex); pink or mauve-pink corolla lobes with white markings towards the base, the upper (anterior) pair spreading, the lower pair basally connate and deeply bilobed; a long column (11–14 mm), with a prominent distal dilation and strong bend below the anthers; and linear capsules with longitudinal ribs.

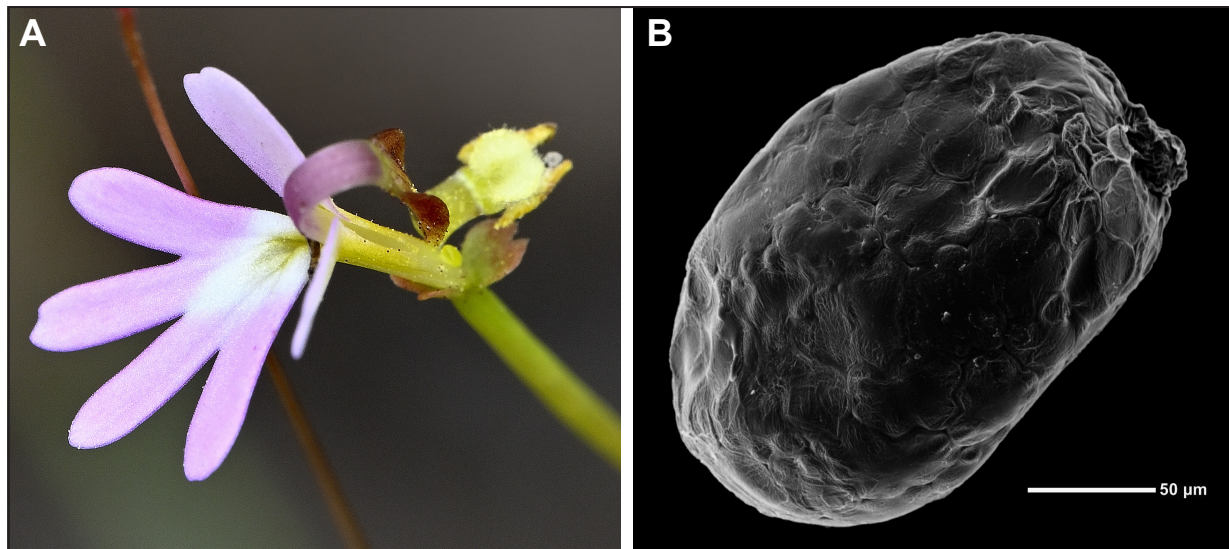


Figure 8. *Stylidium contrarium*. A – flower, showing the long column; B – ± smooth (areolate) seed. Photographs by K. Brennan (A) and S.J. Dillon (B) from *K. Brennan* 13470.

Specimens examined. NORTHERN TERRITORY: near Kakadu Fire Plot 132, Leichhardt Springs, 12 Apr. 2024, *K. Brennan* 13470 (BRI, CANB, DNA, PERTH); Radon Gorge, Mount Brockman, 19 Mar. 1982, *C.R. Dunlop* 6341 & *J.A. Taylor* (DNA); Mount Brockman, near fire plot 132, Kakadu, 4 Apr. 2017, *B. Wirf* 1309 (DNA).

Spirit material examined. *K. Brennan* 13470 (DNA); *L. Craven* 6555 (MEL); *C.R. Dunlop* 6341 & *J.A. Taylor* (DNA).

Flowering period. March–April.

Distribution and habitat. Endemic to Kakadu National Park in the Northern Territory where it is known from north-east of Jabiru and Mt Brockman. Grows in damp sand on sandstone pavements atop a plateau or amongst rocks near a creekline. Recorded in mixed shrubland and localised *Allosyncarpia* forest with *Micraira*, or *Eucalyptus phoenicea* open woodland.

Conservation status. Data Deficient according to IUCN criteria but may qualify for listing under a Threatened category due to its small extent of occurrence and area of occupancy (N. Cuff pers. comm.).

Etymology. From the Latin *contrarius* (against, counter, contrary), alluding to its long column but small stature.

Vernacular name. Contrary Triggerplant.

Affinities. *Stylidium contrarium* has been segregated from *S. ericksoniae* J.H. Willis on account of its longer column. Column length is usually a reliable taxonomic signal in *Stylidium*, with a fairly consistent length within species facilitating precise pollen placement on insect visitors. Indeed, *S. contrarium*, *S. ericksoniae* and the allied *S. pedunculatum* R.Br., which all occur in Kakadu National Park, have discretely different column lengths (11–14 mm, 5.2–8 mm and 2.2–4 mm, respectively).

Stylidium pedunculatum differs further in having very small corolla lobes (the larger, posterior pair < 1 mm long) and a corolla tube that is ± equal to or scarcely longer than the calyx lobes rather than distinctly longer. *Stylidium contrarium* and *S. ericksoniae* are more similar in corolla morphology: both species have bilobed posterior (lower) lobes, although the segments are themselves often bilobed or strongly emarginate in *S. contrarium* (but they can also be obtuse like those of *S. ericksoniae*).

Notes. Stellate hairs have not previously been reported in Stylidiaceae. They are present on the stem and leaves of *S. contrarium*, *S. ericksoniae* and *S. pedunculatum*.

Stylidium cordifolium W.Fitzg., *The Western Mail* 21(1068): 9, 25 (1906), with an expanded description provided in *J. & Proc. Roy. Soc. Western Australia* 3: 217–218 (1918); *Stylidium alsinoides* var. *cordifolium* (W.Fitzg.) Ewart, Jean White & B.Wood, *Proc. Roy. Soc. Victoria* (New Series) 23(2): 299–300, t. VI. (1911). *Type citation*: ‘north-east of the King Leopold Ranges’. *Type specimens*: Isdell River near Grace’s Knob, Western Australia, May 1905, *W.V. Fitzgerald* 940 (*lecto*, here designated: PERTH 01640941!; *isolecto*: NSW 923305 image!, PERTH 03120783!); Isdell River, W Kimberley [Western Australia], June 1905, *W.V. Fitzgerald s.n.* (*syn*: BM 000603727!); Isdell Range [Western Australia], July 1905, *W.V. Fitzgerald* 1246 (*syn*: PERTH 03120791!).

Typification. Fitzgerald (1906a, 1906b, 1906c) published three articles in *The Western Mail* to illustrate some of the species he encountered as a naturalist on the 1905 trigonometrical survey expedition to the Kimberley, led by Charles Crossland. *Stylidium cordifolium* is included in the third article and is described as follows: ‘Among the additions to the Stylidieae is the straggling *Stylidium Cordifolium*, W.V.F., with heart-shaped stem-leaves, and small, pinkish, dark-blotched flowers’. This description, which is accompanied by a photograph of pressed material showing detail that aids identification, constitutes valid publication under ICN Article 38.1 (Turland *et al.* 2018). An expanded description was later provided in the *Journal and Proceedings of the Royal Society of Western Australia* (Fitzgerald 1918), which has hitherto been considered the original publication of this name. Several syntypes have been located: the designated lectotype is the best quality material and has been annotated by Fitzgerald with the published name.

Upon naming *Stylidium alsinoides* var. *cordifolium*, Ewart *et al.* (1911) did not provide a direct reference to *S. cordifolium*; however, they indirectly refer to this species, stating ‘This plant has been considered by certain West Australian botanists as a distinct species...’ before arguing that it should instead be recognised as a variety. Accordingly, their name is herein regarded as a valid new combination under ICN Article 41.3 (Turland *et al.* 2018).

Stylidium elachophyllum A.R.Bean & M.T.Mathieson, *Austrobaileya* 8(4): 608–612, Figures 1–3 (2012). *Type*: Hann Tableland National Park, north-west of Mareeba, Queensland, 27 March 2012, *M.T. Mathieson* MTM1292 (*holo*: BRI AQ0852029!; *iso*: CNS 141337!).

Diagnostic features. A diminutive, weak-stemmed annual with the following key features: a glabrous, scape-like stem bearing small, bract-like leaves 0.5–1.7 mm long; an oblong to linear hypanthium 3.5–7.5 mm long; 3 free or scarcely connate calyx lobes and 2 connate for more than half their length; pale mauve-pink corolla lobes with an obtuse or rounded apex, somewhat fan-like (the upper (anterior) pair smaller than the lower ones and widely spreading, the lower ones paired vertically; see Wege & Brennan 2024: Figure 2D); labellum positioned at the base of the anterior corolla sinus; a short (3–4.8 mm long), glabrous column; and colliculate seeds (Figure 2K).

Selected specimens. NORTHERN TERRITORY: Wickham Point Rd, c. 1 km from Channel Island Rd, Wickham, 6 Mar. 2007, *A. Lowrie* 3381 & *D. Murfet* (PERTH); Wickham Point Rd, c. 2 km from Channel Island Rd, 7 Mar. 2008, *A. Lowrie* 3815 & *D. Murfet* (PERTH); Channel Island area, Wickham Point Rd, 6 Mar. 2007, *D.E. Murfet* 5612 & *A. Lowrie* (AD, DNA).

Conservation status. Data Deficient in the Northern Territory according to IUCN criteria based on insufficient survey (N. Cuff pers. comm.). Listed as Endangered in Queensland (Bean 2024).

Notes. This species was described from a single locality in the Hann Tableland west of Mareeba (Bean & Mathieson 2012). Two additional populations were subsequently unearthed at BRI, extending the species’ distribution to just north of Cooktown. The cited collections from the Northern Territory, which

are all from the same area, are a close match to those from Queensland and represent a significant range extension.

Stylidium eludens Wege & A.R.Bean, *sp. nov.*

Type: c. 500 m east of Emu Lagoon, Errk Oykangand National Park, Queensland, 2 September 2010, K.R. McDonald KRM9783b (*holo:* BRI AQ1005575!).

Stylidium sp. (Aurukun C.Dalliston CC429), A.R. Bean (ed.), *Census of Queensland Vascular Plants 2023 (Print)*, Queensland Department of Environment, Science and Innovation, Queensland Government.

Annual herb c. 7–11 cm high. *Glandular hairs* c. 0.1–0.2 mm long, with a red or yellowish, ellipsoid head. *Stem* contracted or more often to c. 3 cm long, 0.25–0.4 mm wide, straw-brown to reddish brown, simple, glabrous. *Leaves* in a terminal rosette and sometimes scattered below or appearing \pm basal through contraction of stem, linear, 5–20 mm long, 0.3–0.6 mm wide, glabrous, apex attenuate with a blunt acumen to c. 0.5 mm long; margins entire. *Scapes* 1–c. 15 per plant, 4.5–9 cm long including the inflorescence, 0.2–0.3 mm wide, glabrous. *Inflorescence* determinate, monochasially or dichasially cymose, (1–)3–7-flowered, flowers rotated 180°; branches glabrous; bracts 1–7 mm long, sparsely glandular-hairy on inner surface and margins; pedicels 3–7 mm long, usually with a few glandular hairs towards base. *Hypanthium* narrowly obovoid to obconical, 1.3–3 mm long, 0.7–0.8 mm wide, glabrous. *Calyx lobes* with 3 free and 2 connate for more than half their length (rarely scarcely connate basally), 1.5–2.5 mm long, glabrous externally but glandular-hairy on inner surface and margins, apex obtuse or subacute. *Corolla* pink; lobes paired vertically, glandular-hairy abaxially; anterior (upper) lobes elliptic with an obtuse apex, smaller than the posterior pair, c. 1–2.8 mm long, c. 0.9–1 mm wide; posterior (lower) narrowly obovate with an obtuse apex, c. 1.5–3.5 mm long, c. 1.4 mm wide; tube c. 2–3 mm long, longer than the calyx lobes, sparsely glandular-hairy, with an anterior sinus. *Labellum* at sinus base, c. 0.4–0.5 mm long with a terminal appendage to c. 0.2 mm, glandular-hairy. *Throat appendages* basally connate, forming a \pm semi-circular ridge with obtuse lobes, c. 0.1–0.3 mm high, minutely papillose and glandular-hairy. *Column* c. 8–9.5 mm long, slender above main bend, glandular hairy distally including the connective; anther locules c. 0.7–0.8 mm long, corona present; stigma sessile, entire. *Capsules* narrowly obovoid to obconical, 4–6 mm long excluding calyx lobes, without ribs; halves detaching distally, not recurved. *Seeds* brown, ellipsoid, c. 0.15–0.2 mm long, \pm smooth (areolate). (Figure 2L)

Diagnostic features. A diminutive annual herb with the following key features: linear, glabrous leaves mostly arranged in a dense rosette at the tip of the stem (sometimes scattered on the stem below or appearing \pm basal through contraction of the stem); a glabrous scape and inflorescence branches; a glabrous, narrowly obovoid to obconical hypanthium; glandular hairs on the inner surface and margins of the calyx lobes and bracts; pink, vertically paired corolla lobes, the upper (anterior) pair smaller than the lower ones; throat appendages forming a \pm semi-circular ridge with obtuse lobes and glandular hairs; a glandular-hairy column with a corona (i.e. hairs around the anthers); and \pm smooth (areolate) seeds.

Other specimen examined. QUEENSLAND: S of Aurukun, 32 km N of Peret Outstation, 21 July 1988, C. Dalliston CC429 (BRI).

Spirit material examined. None available. Flower reconstituted from K.R. McDonald KRM9783b; bud reconstituted from C. Dalliston CC429 to confirm the presence of glandular hairs on throat appendages.

Flowering period. July–September.

Distribution and habitat. Currently known from two sites on the western side of Cape York Peninsula in Queensland, one to the south of Aurukun, the other near the Alice River in Errk Oykangand National Park. Grows on floodplains in *Asteromyrtus* or *Melaleuca* woodland.

Conservation status. A poorly known species in need of survey and a formal conservation assessment.

Etymology. From the Latin *eludo* with the present participle ending *-ens* (evading, eluding, baffling), a reference to its poorly known status and dearth of herbarium collections.

Vernacular name. Elusive Triggerplant.

Affinities. *Stylidium eludens* is morphologically akin to the Cape York endemic *S. delicatum* A.R.Bean and the more widespread *S. floodii* F.Muell., the latter of which grows with *S. eludens* at the type locality (*K.R.McDonald* KRM9783 was originally a mixed collection of the two species that has been subsequently separated). It can be differentiated from both species by its glabrous scape, inflorescence branches and hypanthium (*cf.* glandular-hairy) and the presence of glandular hairs on the throat appendages. It also has distinct calyx lobes and bracts in which the glandular hairs are restricted to the inner surface and margins (*cf.* glandular-hairy on both surfaces in *S. delicatum* and usually only on the outer surface in *S. floodii*) and its capsules are narrowly obovoid to obconical (*cf.* ellipsoid to obovoid).

Notes. Further collections (including photographs and flowers preserved in spirit) are required to better document the precise colour and form of the corolla.

Stylidium evolutum Carlquist, *Aliso* 9(2): 309–313, Figures 1–8 (1978). *Type:* beside road heading to Shoal Bay, north-west of Darwin, Northern Territory, 25 June 1977, *S. Carlquist* 15190 (*holo:* RSA 283657!; *iso:* CANB 297677!, DNA D0017891!).

Diagnostic features. A weak-stemmed, annual herb with the following key features: a decumbent to erect and often much-branched stem 0.5–1 mm wide; scattered, linear-subulate or linear-lanceolate leaves 0.5–1 mm wide (sometimes \pm elliptic or narrowly ovate towards stem base); opposite, leaf-like bracts; indistinct or very short pedicels to 1 (rarely 2) mm long; a sparsely glandular-hairy hypanthium (rarely apparently glabrous); a white or dusty pink corolla with prominent red or pink markings towards the base of the lobes and a yellow throat (usually with red speckles), the lobes laterally paired, with each pair usually fused for half to more than half their length and the upper pair much smaller than the lower ones; \pm linear capsules with distally coherent halves; and papillose seeds 0.4–0.5 mm long. (Figure 9)

Selected specimens. NORTHERN TERRITORY: Amy Johnson Drive, near Boulter Rd intersection, 22 May 2010, *K. Brennan* 8635 (DNA); 23 miles [37.01 km] S of Darwin, 19 June 1978, *S. Carlquist* 15455 (DNA, RSA); Litchfield National Park, Florence Falls road, near turn off to Buley Rock Holes, 12 June 1999, *I.D. Cowie* 8337 (BRI, DNA, MEL); near Amys Creek, Weddell area, 14 Apr. 2014, *I.D. Cowie* 13680 (BRI, DNA); Howard Springs, 31 May 1995, *J. Egan* 4984 (DNA); Shoal Bay Conservation Reserve, Hope Inlet, 25 May 2000, *R.A. Kerrigan* 141 & *I.D. Cowie* (DNA); Gunn Point, 1 Aug. 2018, *D.L. Lewis* 3199 (DNA, PERTH); Point Stuart, Swim Creek, 11 June 1987, *J. Russell-Smith* 5568 (DNA).

Conservation status. Data Deficient according to IUCN criteria but may qualify as Near Threatened with further survey (N. Cuff pers. comm.).

Notes. Following the recent discovery of populations matching the type of *S. tenerrimum* F.Muell. (refer to the notes under that species), *S. evolutum* is herein reinstated to accommodate specimens assigned to that species by Bean (2000: 636). *Stylidium evolutum* is endemic to seasonal swamps and seepage zones in the Darwin Coastal bioregion in the Northern Territory and can be readily separated from *S. tenerrimum* by its corolla, which has markedly unequal lateral pairs (the upper much smaller than the lower) that are connate for *c.* half to more than half their length and have a prominent red colour band toward the base (*cf.* with \pm equal pairs that are connate for less than half their length and with discrete red-pink or purplish markings; compare Figure 9B with Figure 10B). *Stylidium evolutum* also has a more robust habit with stems 0.5–1.3 mm wide (*cf.* 0.2–0.5 mm in *S. tenerrimum*), and short or indistinct pedicels (usually 0–1 (rarely 2) mm long *cf.* 1–6 mm).

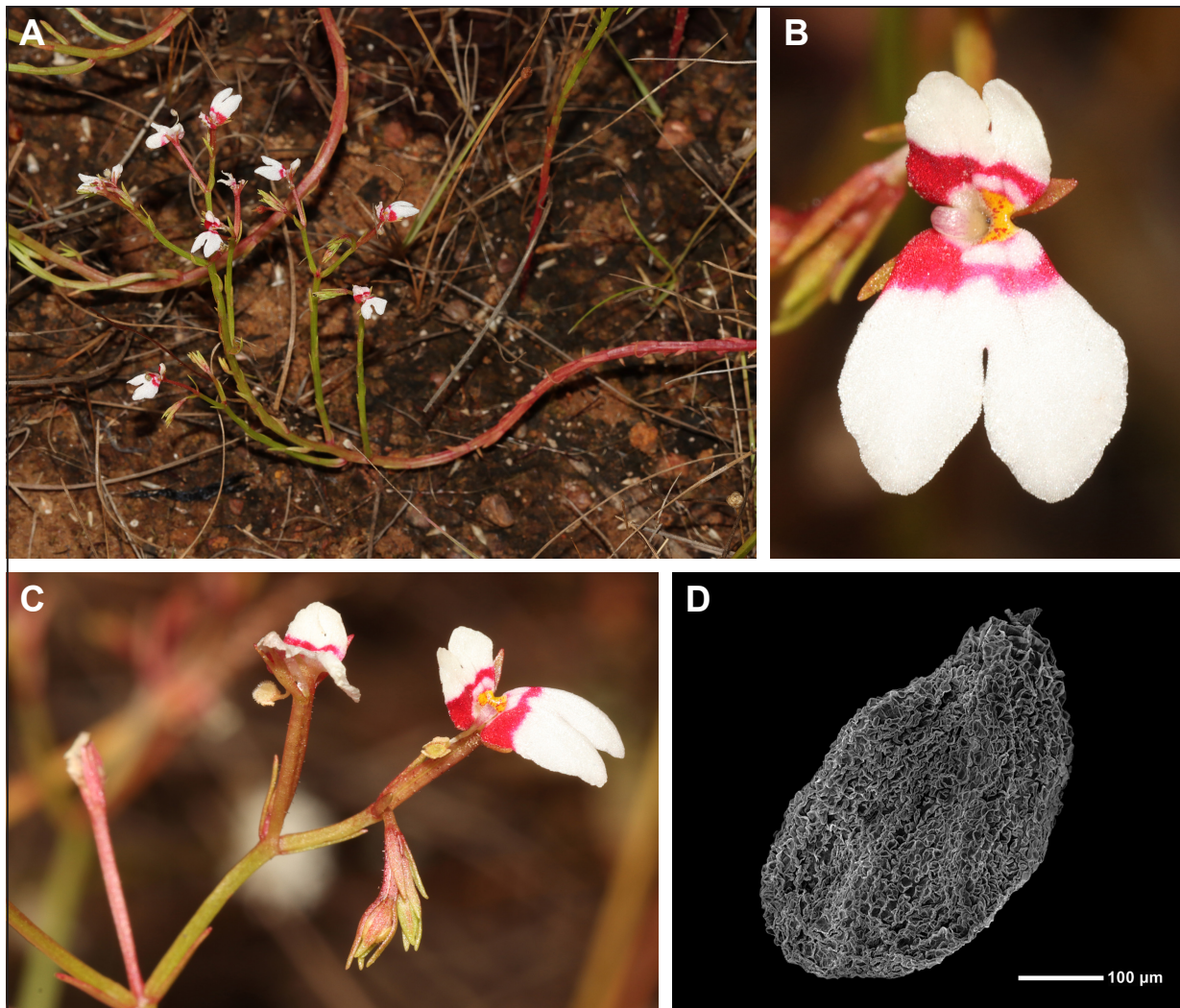


Figure 9. *Stylidium evolutum*. A – weak-stemmed habit; B – flower showing the asymmetrical, laterally paired corolla lobes with a broad colour band near the base; C – inflorescence portion showing the indistinct pedicels; D – papillose seed. Photographs by J.A. Wege (A–C) from Yarrowonga swamp (population DNA D0192632) and S.J. Dillon (D) from *I.D. Cowie* 14436 (DNA).

Stylidium anomalum, which is currently known from Western Australia but may extend into the Northern Territory in the Tanami bioregion, has markedly unequal corolla lobes like *S. evolutum*. Refer to the comparative notes provided under the treatment of that species.

Stylidium fissilobum F.Muell., *Fragm.* 1(6): 154 (1859); *Candollea fissiloba* (F.Muell.) F.Muell., *Syst. Census Austral. Pl.*: 86 (1882). *Type*: Victoria River, Northern Territory, May 1856, *F. Mueller s.n.* (*lecto*, designated by A.R. Bean, *Austrobaileya* 5(4): 623 (2000): MEL 1061830!; *isolecto*: BM 000645730!, GH 00033486 image!, K 000060549!, K 000741780!).

Diagnostic features. A weak-stemmed annual herb with the following key features: bract-like leaves 1–4 mm long, \pm evenly scattered along a scapiform stem or more densely arranged towards the base; a \pm linear hypanthium with glandular hairs restricted to the distal end; 3 free and 2 part-connate calyx lobes with glandular-hairy margins; pink or mauve-pink, vertically paired corolla lobes (rarely partially white), the upper (anterior) pair smaller than the lower ones and with an emarginate apex, the lower pair bilobed and \pm free to the top of the tube; orange or yellow callosities in corolla lobe sinuses (these are especially prominent between each upper and lower lobe but can also be present between the lower lobes); a 7–9.5 mm long column with small, obtuse lobes immediately above the main bend; and \pm smooth (areolate) seeds. (Figure 6)

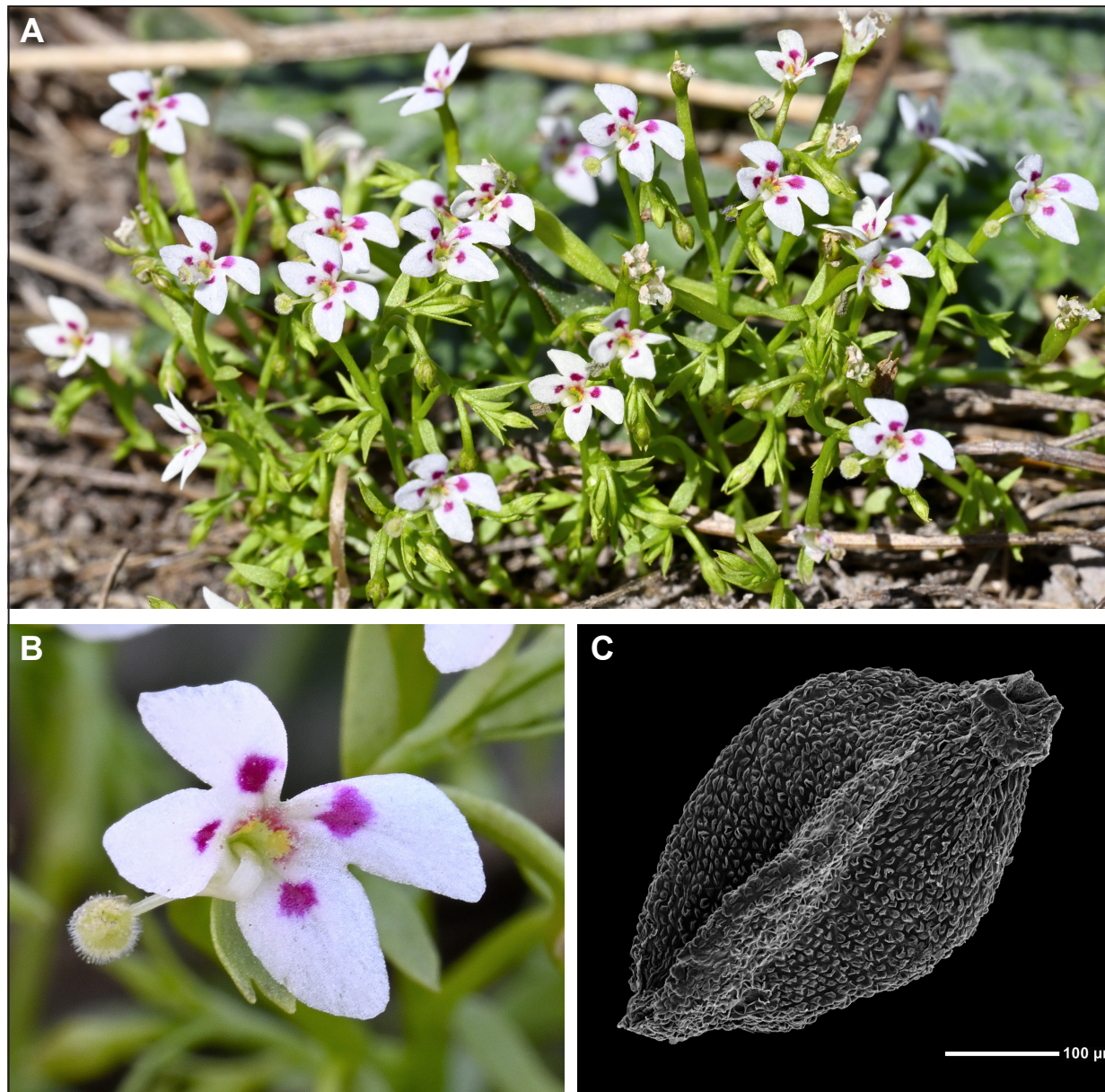


Figure 10. *Stylidium tenerrimum*. A – diminutive, weak-stemmed habit with a delicate, much-branched stem; B – flower, showing the laterally paired lobes with discrete purple-pink markings; C – densely papillose seed. Photographs by K. Brennan (A, B) from K. Brennan 13191 and S.J. Dillon (C) from H.I. Aston 2553 (PERTH).

Selected specimens. WESTERN AUSTRALIA: Beverley Springs Station, c. 35 km NW of Homestead, 27 June 1993, M. Barrett MDB 210 (PERTH); Durack River Station, 61.5 km at 224.5 degrees from Home Valley Station homestead, 3 June 2014, R. Butcher RB 1877 & A.N. Start (DNA, PERTH); Karunjie Station, 112 km at 217.6 degrees from Home Valley Station homestead, 4 June 2014, R. Butcher RB 1926 & A.N. Start (PERTH); Chilli's Garden, 2.5 km SW from El Questro Township, 28 June 2008, G. Byrne 3456 (PERTH); Bindoola Creek, Jack's Waterhole, NE Kimberley, 12 April 2002, K. Coate 660 A (PERTH); Pseudomys Hills, Drysdale River National Park, N Kimberley, 7 Aug. 1975, K.F. Kenneally 4034 (PERTH); Gibb River Rd, 9.1 km W of Home Valley Homestead turnoff, 30 May 2014, K.R. Thiele 4850 (PERTH); Karunjie Station, c. 3.2 km direct line W of confluence of Nugget Creek and Chapman River, 4 June 2014, K.R. Thiele 4980 (PERTH).

NORTHERN TERRITORY: 40.5 km NW of Pine Creek, 28 May 2005, A.R. Bean 23932 (BRI); Macadam Range, 13 June 2007, K. Brennan 7267 (DNA); Litchfield National Park, Reynolds track, 12 May 2016, K. Brennan 10604 (DNA); Mary River, 1 May 1989, M.J. Clark 1737 (DNA); Litchfield National Park,

16 Apr. 1999, *I.D. Cowie* 8300 & *K. Brennan* (BRI, DNA, MEL *n.v.*); Fish River Station, headwaters of Snape Creek, 25 Apr. 2012, *I.D. Cowie* 13196 (DNA, MEL *n.v.*); Bradshaw Field Training Area, c. 48 km NW of Bradshaw Homestead, 11 May 2017, *I.D. Cowie* 14191 & *N.J. Cuff* (B *n.v.*, DNA, MEL *n.v.*, NY *n.v.*); 18 km SSW Cooina on Pine Creek road, 19 May 1980, *L. Craven* 5624 (CANB, DNA, MEL, RSA); Douglas Station c. 3.5 km SW of Hayes Creek, 12 June 2014, *N.J. Cuff* 52 & *I.D. Cowie* (DNA); Bullo River Station c. 25 km NW of homestead, 22 Mar. 2009, *D.L. Lewis* 944 (DNA); Keep River National Park, c. 68 km NE of Ranger Station, 12 May 2011, *D.L. Lewis* 1684 (DNA, MEL *n.v.*).

Notes. We have adopted a narrower circumscription of *S. fissilobum* relative to that of Bean (2000), aided by recent collections and photographs of the typical form and two taxonomic segregates (refer to the comparative notes provided under *S. brennanianum* and *S. torquatum*). *Stylidium fissilobum* is widespread in the Kimberley region and across the Top End, occurring as far east as Kakadu National Park. Specimens from Queensland previously assigned to *S. fissilobum* are mostly referable to *S. brennanianum*.

Stylidium floodii F.Muell., *Fragm.* 1(6): 149 (1859). *Candollea floodii* (F.Muell.) F.Muell., *Syst. Census Austral. Pl.*: 86 (1882). *Type citation*: ‘Ad ripas glareoso-arenosas prope originem fluminis Victoriae et rivi Roper River.’ *Type specimens*: Dry lagoons on the Roper River, Gulf of Carpentaria, Northern Territory, 8 July 1856, *F. Mueller s.n.* (*lecto*, designated by K.F. Kenneally & A. Lowrie, *Nuytsia* 9(3): 347 (1994): MEL 233150!; *isolecto*: GH 00033487 image!, K 000741765!, MEL 233151A! [individual on left hand side], MEL 233152B! [individual on upper portion of sheet, and individuals on the lower left and third from the left]); Depot Creek [Victoria River], Northern Territory, March 1856, *F. Mueller s.n.* (*syn*: MEL 233151B! [individual on right hand side], MEL 233152A! [individuals on lower portion of sheet and second from the left and on right hand side]), = *S. adenophorum* Lowrie & Kenneally.

Stylidium symonii Carlquist, *Aliso* 9(3): 439, 441–443, Figures 78–83 (1979), *syn. nov.* *Type*: At old B.H.P. (Broken Hill Pty.) flying field, Arnhem Land, Northern Territory, 17 June 1972, *D.E. Symon* 7731 (*holo*: DNA A0041348! [NT 41348]; *iso*: AD 98599542 *n.v.*, RSA 283547! [ex NT 41348]).

Diagnostic features. A tufted annual herb with the following key features: a pale stem that is usually shortly elongated and multi-branched; linear, glabrous leaves with an acumen to 0.6 mm long, arranged in a terminal rosette and scattered on the stem below (sometimes appearing ± basal through contraction of the stem), occasionally also forming rosettes along stem length or at base; glandular-hairy scape and inflorescence (including the hypanthium and calyx lobes); subacute to obtuse calyx lobes; pink or mauve-pink, vertically paired corolla lobes, the upper (anterior) pair smaller than the lower ones; throat appendages forming a ± semi-circular ridge with obtuse, scarcely papillose lobes; ellipsoid to obovoid capsules without raised ribs; a glandular-hairy column with a corona (i.e. hairs around the anthers); and ± smooth (areolate) seeds. (Figure 11)

Selected specimens. NORTHERN TERRITORY: Arnhem Land, Koolatong River Crossing, Numbulwar Rd, 8 Oct. 1987, *M.J. Clark* 1622 (DNA); Amungee Mungee Waterhole, 3 May 1991, *I.D. Cowie* 1819 & *B.A. Wilson* (DNA); Koolatong River, 18 Oct. 1996, *I.D. Cowie* 7360 (DNA, MEL); Groote Eylandt, 21 June 2021, *D.L. Lewis* 3567 & *K. Brennan* (DNA, PERTH); Nitmiluk National Park, E boundary, 2 May 2002, *C.R. Michell* 3842 (DNA); Manbulloo Station, 12 Aug. 2021, *J. Patykowski* 124 (DNA).

QUEENSLAND: Richmond – Croydon road, 76.8 km S of ‘Esmeralda’, 2 July 1998, *A.R. Bean* 13443 (BRI); One Hundred Mile Swamp, Undara Resort, E of Mt Surprise, 30 July 1998, *A.R. Bean* 13760 & *I. Fox* (BRI); Thornton Station, 40 km NW of Gunpowder, 23 May 2006, *R. Booth* & *D. Kelman* CAM14-1 (BRI, DNA); Rock Hole at Emu Lagoon, Errk Oykangand National Park, 8 June 2010, *K.R. McDonald* KRM9294 & *T. Cockburn* (BRI); Mimosa Creek, Errk Oykangand National Park, 10 June 2010, *K.R. McDonald* KRM9407 & *L. Little* (BRI); 118 km W of Burketown, 17 Apr. 2004, *E.J. Thompson* & *M. Newton* WES859 (BRI).

Typification. *Stylidium symonii* was described by Carlquist (1979) from a gathering by David Symon from north-eastern Arnhem Land, although this name has not been applied to any additional collections.

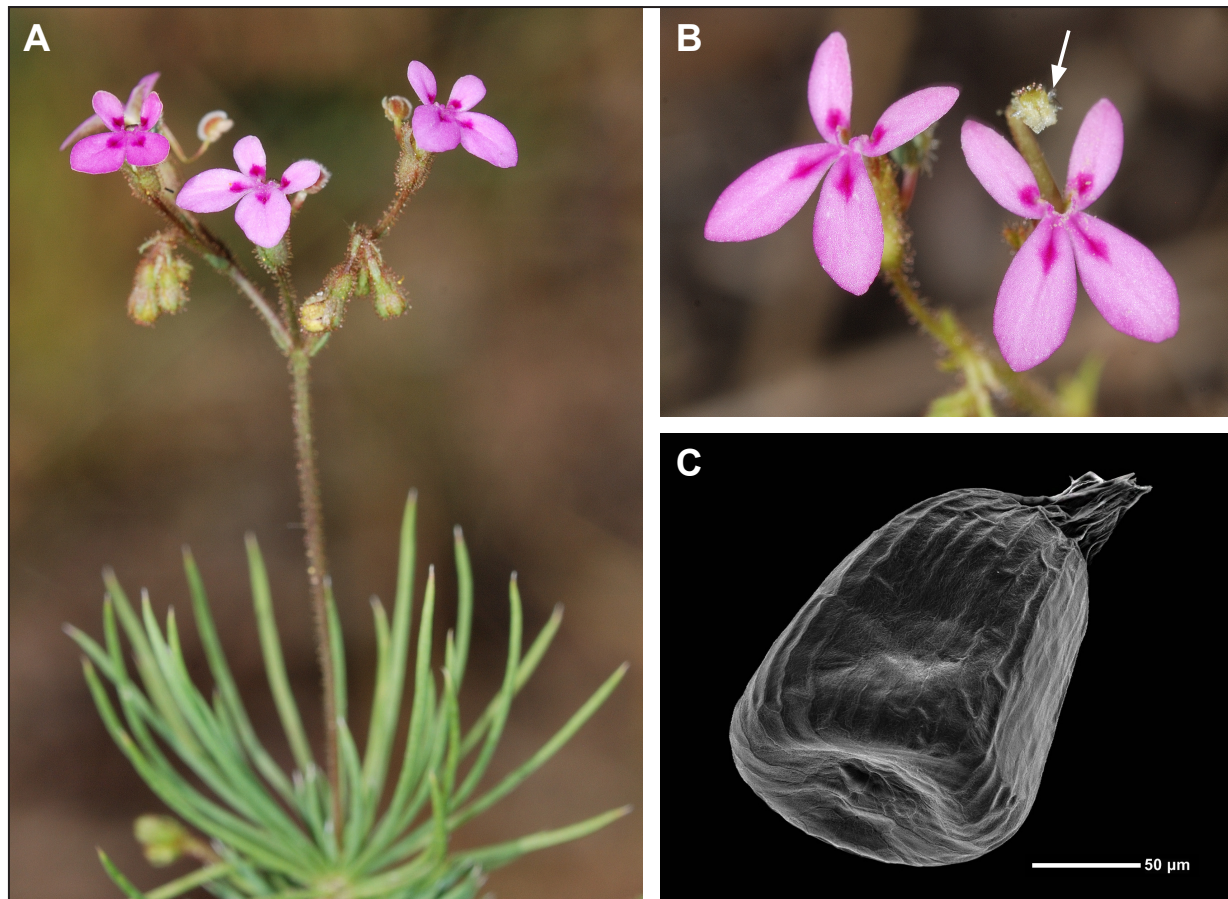


Figure 11. *Stylidium floodii*. A – linear leaves and glandular-hairy inflorescence; B – flowers, with hairs around the anthers (arrow) and adjacent glandular hairs; C – ± smooth (areolate) seed. Photographs by K. Brennan (A, B) and S.J. Dillon (C) from K. Brennan 9909 (A), K. Brennan 8672 (B) and K.R. McDonald KRM 9407 (C: BRI).

Two duplicates of Symon’s collection have been examined and found to be identical to *S. floodii*. It is of note that Carlquist applied the name *S. floodii* to collections of *S. turbinatum* Lowrie & Kenneally (e.g. *S. Carlquist* 15178 and 15461: DNA, RSA; *S. Carlquist* 15389 and 15420: RSA), and *S. adenophorum* Lowrie & Kenneally (e.g. *J.R. Clarkson* 3713 and 3747: RSA; *L.A. Craven* 4090: RSA; *T.S. Henshall* 250: DNA; *A. Kanis* 1720: DNA; *P.K. Latz* 3520: DNA).

Carlquist (1979) cites the holotype of *S. symonii* as ‘N.T.: sheet no. 41348’, noting that he examined this sheet when he visited and annotated the NT specimens in June 1978. Fragments from this sheet were acquired by him during this visit: RSA 283547 is annotated by Carlquist as ‘from NT 41348’, and photographs of the fragments were published alongside his description. Curiously there is no mention of this in the protologue. DNA A0041348 is not annotated by Carlquist, although he annotated the specimen at RSA as an isotype. The AD isotype could not be found on a recent visit to that institution.

***Stylidium incognitum* Wege, sp. nov.**

Type: south-east of Wyndham, Western Australia [precise locality withheld for conservation reasons], 25 July 2023, *J.A. Wege* JAW 2284 & *B.P. Miller* (*holo:* PERTH 09608184; *iso:* BRI, CANB, DNA, MEL).

Rosulate annual herb 8–34 cm high, with a slender tap root. *Glandular hairs* 0.15–1.2 mm long, with a red, ellipsoid head. *Stem* contracted. *Leaves* basal, spreading, lanceolate or oblanceolate (sometimes narrowly so), (6–)10–90 mm long, (1.8–)3–15 mm wide, glabrous, apex subacute, acute or acuminate with a slender acumen (0.3–)0.8–1.8 mm long; margins hyaline, irregularly serrate or crenulate to ± entire. *Scapes* 1–c. 15 per plant, 8–34 cm long including inflorescence, 0.3–1.3 mm wide, glandular-hairy.

Inflorescence determinate, monochasially or dichasially cymose, 5–c. 75-flowered, flowers rotated c. 90°; branches glandular-hairy; bracts 1–7.5 mm long, glandular-hairy; pedicels 1.5–5 mm long, glandular-hairy. *Hypanthium* ellipsoid to obovoid or ± globose, 1–2 mm long, 0.8–1.6 mm wide, glandular-hairy. *Calyx lobes* free, 1.3–2.3 mm long, glandular-hairy, apex obtuse or rounded. *Corolla* medium pink to magenta (rarely white) with dark purplish-pink to red markings towards base of lobes and a golden yellow throat, cream or yellowish abaxially with a dark red stripe or mottled markings on each lobe; lobes paired laterally, sparsely glandular-hairy abaxially; anterior lobes obovate or elliptic with an obtuse apex, shorter than the posterior pair, 2–3 mm long, 1.3–2.1 mm wide; posterior lobes obovate with an obtuse apex, 2.5–4 mm long, 1.6–2.1 mm wide; tube 1.8–2.5 mm long, c. equal to or more often a little longer than the calyx lobes, sparsely glandular-hairy distally, with an anterior sinus. *Labellum* on outside of corolla tube just below sinus (rarely at base of sinus), broadly ovate, orbicular or elliptic, 0.5–0.8 mm long, usually sparsely glandular-hairy abaxially, without appendages. *Throat appendages* absent. *Column* 7–8.7 mm long, with a slight lateral curve when extended and a strong bend below the anthers, slightly broadened and scarcely concave above main bend, glabrous; anther locules 0.6–0.9 mm long, corona absent; stigma sessile, entire. *Capsules* ellipsoid to subglobose, 1.7–2.8 mm long excluding calyx lobes, without ribs; halves detaching distally or irregularly dehiscent towards base, not recurved. *Seeds* brown with a pale nipple, ellipsoid or ovoid, 0.2–0.3 mm long, colliculate, with concave depressions. (Figure 12)

Diagnostic features. A basally-rosetted annual with the following key features: a spreading rosette of lanceolate or oblanceolate leaves with a hyaline margin and a subacute, acute or acuminate apex with a slender acumen; glandular-hairy scapes and inflorescences; an ellipsoid to obovoid hypanthium; obtuse to rounded calyx lobes that are c. equal to or longer than the hypanthium; medium pink to magenta (rarely white), laterally paired corolla lobes with a golden yellow throat that lacks appendages; a column that is glabrous and slightly broadened above the main bend and lacks a corona (i.e. hairs around the anthers); and colliculate seeds.

Selected specimens examined. WESTERN AUSTRALIA [localities withheld for conservation reasons]: 17 Aug. 1999, *E. Bennett* EB 9909 (PERTH); 11 July 2001, *D.J. Edinger* 2569 (PERTH); 13 July 2001, *D.J. Edinger* 2580 (PERTH); 15 July 2001, *D.J. Edinger* 2582 B (PERTH); 3 Aug. 1974, *K.F. Kenneally* 1899 (PERTH); 17 June 1993, *A. Lowrie* 719 (DNA, PERTH); 30 May 2014, *K.R. Thiele* 4920 (PERTH); 30 July 2023, *J.A. Wege* JAW 2287 & *B.P. Miller* (BRI, DNA, PERTH).

NORTHERN TERRITORY: Keep River National Park, 14 Aug. 2008, *K. Brennan* 7799 (DNA); Spirit Hills Station, 21 Aug. 1987, *P.L. Wilson* 736 (DNA).

Spirit material examined. *D.J. Edinger* 2569 (PERTH); *J.A. Wege* JAW 2284 & *B.P. Miller* (PERTH); *J.A. Wege* JAW 2287 & *B.P. Miller* (PERTH).

Flowering period. Late May–August (and potentially into September), with peak flowering in July.

Distribution and habitat. Known from the Victoria Bonaparte bioregion and adjacent Central Kimberley, from Durack Station in Western Australia to Keep River National Park in the Northern Territory. Grows in sand on flood plains, in drainage lines and near watercourses and billabongs. Favours open savanna woodland, growing amongst grasses in association with *Adansonia*, *Melaleuca*, *Grevillea*, *Pandanus*, *Eucalyptus* or *Syzygium*.

Conservation status. To be listed as Priority Two under Conservation Codes for Western Australian Flora (T. Llorens pers. comm.). Data Deficient in the Northern Territory under IUCN criteria due to inadequate survey (N. Cuff pers. comm.).

Etymology. From the Latin *incognitus* (unknown, unidentified), a reference to its lack of recognition as a distinct species despite herbarium collections dating back to 1974.



Figure 12. *Stylidium incognitum*. A – flower with laterally paired corolla lobes, a golden yellow throat without appendages, and a glabrous column that is slightly broadened above the main bend; B – triggered flower, revealing the simple labellum positioned just below the anterior corolla sinus (arrow); C – basal leaves; D – flower, showing the pale corolla undersurface with red markings; E – rare, white-flowered form; F – colliculate seed. Photographs by J.A. Wege (A–E) and S.J. Dillon (F) from *J.A. Wege 2287 & B.P. Miller (A–D)*, *J.A. Wege 2284 & B.P. Miller (E)* and *K. Brennan 7799 (F: DNA)*.

Vernacular name. Clandestine Triggerplant.

Affinities. Akin to the Cape York endemic *S. austrocapense* A.R.Bean, a species with a similar habit, floral morphology and seed coat. It can be differentiated by its column, which is slightly broadened above the main bend and lacks hairs (a corona) around the anthers (*cf.* slender in *S. austrocapense* with a corona). *Stylidium incognitum* also has a more uneven indumentum of glandular hairs on the scape and inflorescence (0.15–1.2 mm long *cf.* 0.15–0.5 mm long in *S. austrocapense*), obtuse to rounded calyx lobes that are roughly equal to or longer than the hypanthium (*cf.* acute to obtuse and usually shorter than the hypanthium), and flowers with a golden yellow throat (*cf.* pale greenish yellow or white). Its leaves also tend to have a more pronounced acumen.

Stylidium incognitum has previously been confused with *S. multiscapum* O.Schwarz (Figure 13A–D), a pink-flowered, rosulate species that differs in having white (*cf.* yellow) markings at the base of the corolla lobes, eight throat appendages (*cf.* none), and a slender column with hairs around the anthers. The distribution of these two species overlaps in the Kununurra and Keep River National Park areas.

Stylidium leptorrhizum F.Muell. (Figure 13E–G) is another pink-flowered, rosulate species that overlaps in distribution and flowering time with *S. incognitum*. It can be differentiated by its long corolla tube (4–5 mm long and exerted well beyond the calyx lobes *cf.* 1.8–2.5 mm long and equal to or a little longer than the calyx lobes), prominent throat appendages, and dorsally operating, hairy column (*cf.* laterally operating, glabrous column).

Stylidium irriguum W.Fitzg., *J. & Proc. Roy. Soc. Western Australia* 3: 219 (1918). *Type citation:* ‘Messmate Creek, in the Packhorse Range; Isdell and Charnley Rivers (W.V.F.)’ *Type specimens:* Charnley River near F.B. 33, Western Australia, August 1905, *W.V. Fitzgerald* 1396 (*lecto*, here designated: PERTH 01641484!); Messmate Creek, Packhorse Range, Western Australia, May 1905, *W.V. Fitzgerald* 996 (*syn:* NSW 923304 image!, PERTH 01641492! [packet contents, i.e. excluding fragment of *S. semipartitum* F.Muell. attached to sheet]).

Diagnostic features. A diminutive annual herb with the following key features: leaves arranged in a somewhat erect rosette (sometimes also scattered on stem below), 6–30 mm long, the lamina narrowly oblanceolate or elliptic with a slender petiole; a ± linear hypanthium a 2-lipped calyx with glandular-hairy margins; a white or pale mauve-pink corolla with a yellow throat bearing ridges and glandular hairs, lobes ± vertically paired (the upper lobes somewhat spreading) with an emarginate apex; the labellum positioned at the base of the anterior sinus; and ± smooth (areolate) seeds (Figure 14A).

Selected specimens. WESTERN AUSTRALIA: *c.* 35 km NW of Beverley Springs Station Homestead, 8 July 1993, *M. Barrett* MDB 252 (PERTH); campsite on Bachsten Creek (S arm) on Walcott Inlet Track, W Kimberley, *M.D. Barrett* MDB 2962 & *R.L. Barrett* (BRI, DNA, PERTH); Cascade Creek of Prince Regent River, N Kimberley, 4 Aug. 2005, *K. Coate* 729 (DNA, PERTH); Blyxa Creek, Prince Regent River Reserve, 21 Aug. 1974, *A.S. George* 12501 (CANB, PERTH); King Cascade, Prince Regent River, Kimberley, 31 May 1992, *K.F. Kenneally* 11175 (PERTH).

NORTHERN TERRITORY: East Alligator Rd, Narridj Creek, 23 Apr. 1995, *K. Brennan* 3170 (DNA); Arnhem Land Plateau, 15 June 1978, *S. Carlquist* 15440 (RSA); Buckingham River swampland, 9 km E of Wamalana radio site, 20 Sep. 2009, *D.E. Murfet* 6588 (AD, DNA); South Bay, Bickerton Island, 6 June 1948, *R.L. Specht* 465 (AD, BRI, CANB, MEL *n.v.*, RSA); 10 km from East Alligator River crossing on Oenpelli road towards Arnhem Hwy, 19 Apr. 1980, *I.R. Telford* 7681 & *J.W. Wrigley* (CBG).

Conservation status. Not currently considered to be at risk in Western Australia (Western Australian Herbarium 1998–). Least Concern in the Northern Territory according to IUCN criteria (N. Cuff pers. comm.).

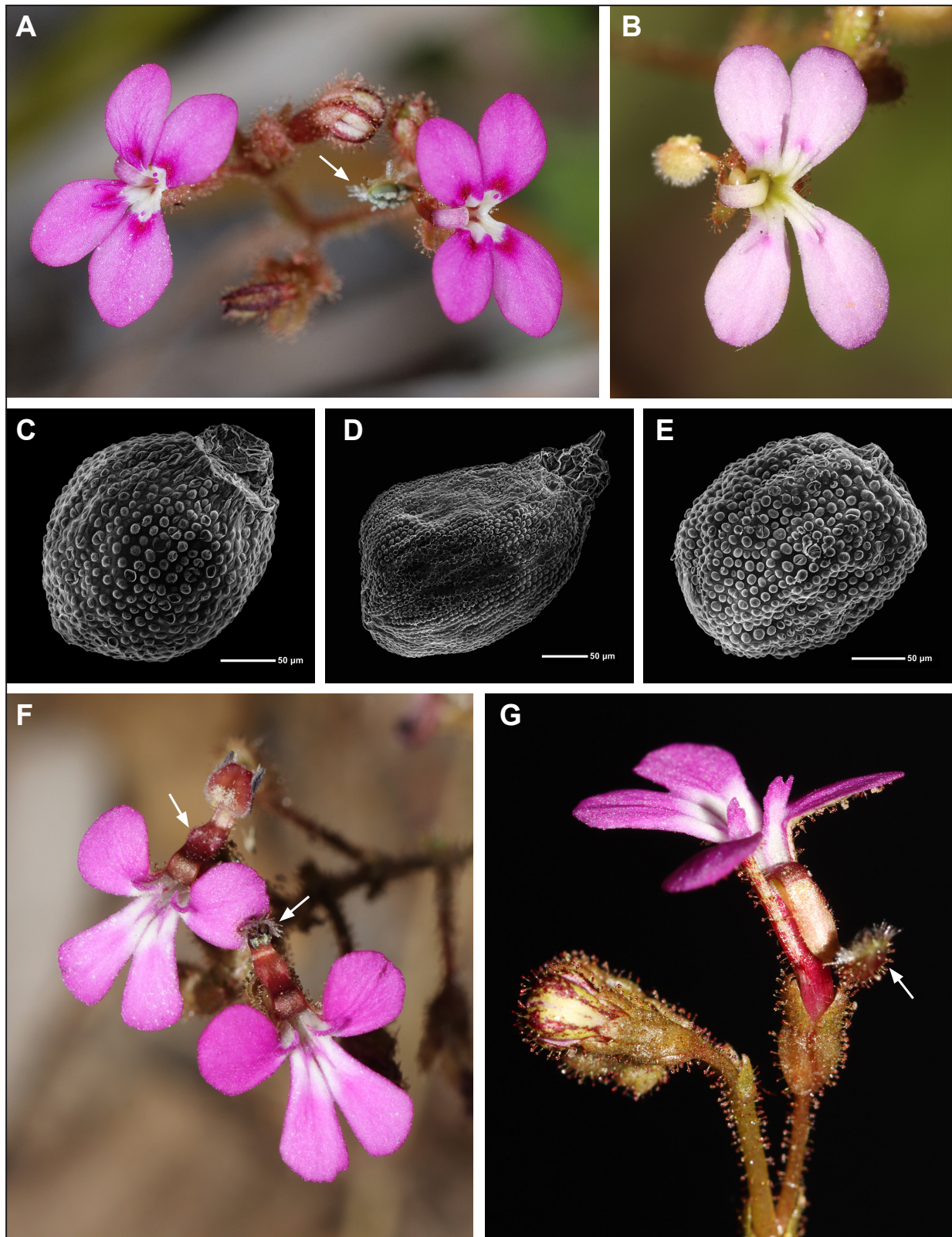


Figure 13. A, B – *Stylium multiscapum* flowers, showing the laterally paired corolla lobes and hairs around the anthers (arrow), and slender appendages at the base of each corolla lobe; C, D – *S. multiscapum* colliculate seed; E – *S. leptorrhizum* colliculate seed; F – *S. leptorrhizum* flowers, showing the distinctive corolla lobe arrangement, simple hairs on the column above the main bend (L arrow), and hairs around the anthers (R arrow); G – *S. leptorrhizum* flower, showing the long corolla tube with red markings, prominent throat appendages and glandular hairs at the column tip (arrow). Photographs by K. Brennan (A), J.A. Wege (B, F, G) and S.J. Dillon (C–E) from K. Brennan 7310 (A), J.A. Wege 2283 & B.P. Miller (B), J. Westaway 2716 (C: DNA), D.E. Murfet 6036 (D: PERTH), G. & N. Sankowsky 2221 (E: PERTH), and J.A. Wege 2286 & B.P. Miller (F, G).

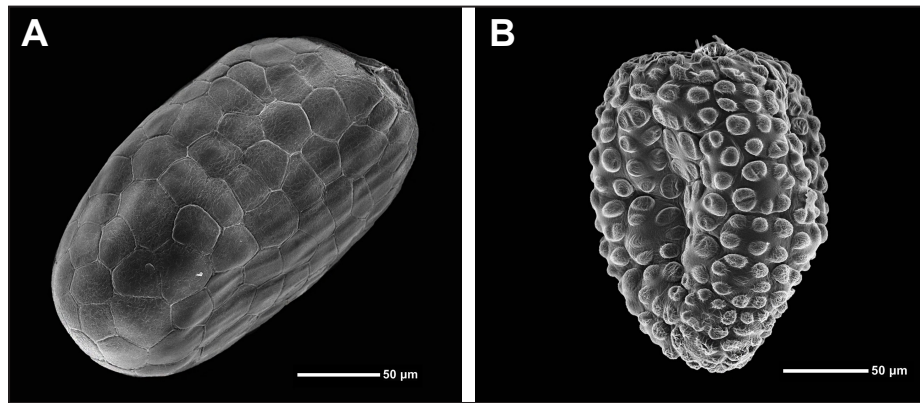


Figure 14. A – *Stylidium irriguum* ± smooth (areolate) seed; B – *S. rotundifolium* colliculate seed. Photographs by S.J. Dillon from K. Coate 372 (A: PERTH) and P.I. Forster PIF32887 & K.R. McDonald (B: BRI).

Typification. Fitzgerald collected specimens of *S. irriguum* from Messmate Creek and Charnley River, the latter of which is known from a single sheet at PERTH. This sheet is designated as the lectotype since it is the best quality material, bearing flowers, capsules and seed, and has been annotated by Fitzgerald with the published name. The PERTH sheet of Fitzgerald’s Messmate Creek gathering is mixed material, comprising three individuals of *S. irriguum* in an envelope and a fragment *S. semipartitum* affixed to the sheet. Fitzgerald’s description of *S. irriguum* does not contain elements of *S. semipartitum*, which he collected on the same expedition (Fitzgerald 1918: 218, as *S. leptorrhizum* F.Muell.: PERTH 03121526).

Notes. *Stylidium irriguum* was treated as a synonym of *S. rotundifolium* R.Br. by Bean (2000) before being reinstated on Western Australia’s Vascular Plant census in 2014 (Parker 2015). These two species have a similar floral morphology; however, *S. irriguum* can be reliably separated from *S. rotundifolium* by its seeds, which are ± smooth (areolate) rather than colliculate (Figure 14). It also tends to have narrower leaves that are held more upright to form a habit somewhat reminiscent of *S. osculum* A.R.Bean, which similarly grows in shallow water and sodden ground.

Stylidium irriguum and *S. rotundifolium* are part of a taxonomically challenging species complex that includes *S. osculum* A.R.Bean, *S. dunlopianum* Carlquist, *S. sp.* King Cascade (K.F. Kenneally 11173) and additional undescribed taxa. There is considerable variation across the Kimberley region that remains the subject of ongoing research.

Stylidium longibracteatum Carlquist, *Aliso* 7(1): 37–38, Figures 77–80 (1969). *Type:* c. 5 miles north of Yalgoo, Western Australia, 6 September 1967, *S. Carlquist* 3006 (*holo:* RSA 0005435!; *iso:* RSA 0005436!).

Notes. *Stylidium longibracteatum* is a hardy, perennial stilt plant that inhabits rocky outcrops in Western Australia’s Yalgoo and Murchison bioregions (Western Australian Herbarium 1998–). A collection of this species by Western Australian naturalist William (Harry) Butler from Kata Tjuta in the Northern Territory, some 360 km south-west of Alice Springs, was recently unearthed at PERTH (Mount Olga, Mar. 1967, *W.H. Butler s.n.:* Figure 15). If the location information is correct, this collection represents a significant range extension and may indicate a much broader distribution in Australia’s arid zone; however, the accuracy of this record must be questioned given that Butler specimens are somewhat notorious for their locality errors (Michael Hislop pers. comm.). Indeed, it is perhaps more likely that the specimen was collected by Butler in Western Australia en route to Kata Tjuta. The March flowering time is noteworthy since *S. longibracteatum* is otherwise known to flower from August to October; however, this may have been a response to seasonal conditions. Examination of rainfall records indicates above average rainfall in the three months leading up to March 1967 at Kata Tjuta and across much of Western Australia’s arid zone (Bureau of Meteorology 2023).



Figure 15. *Stylidium longibracteatum* (PERTH 03172236), ostensibly collected from the N.T. by William Butler but perhaps more likely originating from a locality in W.A. Photograph by Suprema Sinha.

Stylidium mitrasacmoides F.Muell., *Fragm.* 1(6): 150 (1859). *Type citation*: ‘Ad ripas fluvii Victoriae prope Palm Island. Flood’. *Type specimen*: Victoria River [Northern Territory], October 1855, J.A. Flood s.n. (*holo*: K 000741781!).

Notes. *Stylidium mitrasacmoides* was tentatively placed under *S. tenerrimum* by Bean (2000: 636) who was unable to locate the holotype, which was at that time on loan to Kevin Kenneally and Allen Lowrie at PERTH. This specimen, which was returned to K some years ago, is highly fragmentary and extremely difficult to interpret. The habit is not discernible, although the presence of a broad, lanceolate, cauline leaf suggests a placement in sect. *Alsinoidea* (Mildbr.) A.R.Bean (*sensu* Bean 2000). The linear, more or less sessile hypanthium, partly connate calyx lobes (with three free and two fused for more than half their length), and sparse indumentum on the hypanthium, calyx lobes and undersurface of the corolla lobes support this interpretation. Indeed, Bentham (1868: 24) suggested the material was a depauperate individual of *S. alsinoides* R.Br., noting the bracts are mostly opposite (a feature that characterises most members of this group and is not found elsewhere in *Stylidium*); however, *S. alsinoides* is not currently recorded for the Northern Territory, occurring from northern Queensland to the Philippines (Bean 2000).

Four species from sect. *Alsinoidea* occur in the Northern Territory: *S. cordifolium*, *S. evolutum*, *S. tenerrimum* and *S. fluminense*. Of these, *S. evolutum* is the only species whose distribution does not occur near the type locality of *S. mitrasacmoides*; it is endemic to the Darwin Coastal bioregion and, unlike the type of *S. mitrasacmoides*, is characterised by markedly unequal corolla lobes and mostly linear-subulate or linear-lanceolate leaves. The type of *S. mitrasacmoides* is similarly not referable to *S. tenerrimum*, a species with smaller leaves, finer stems, distinctly pedicellate flowers, and a glabrous hypanthium and calyx lobes (refer to the information provided below under this species), nor does it appear to match *S. cordifolium*, which has distinctive cordate or ovate leaves with a cordate or rounded base (*cf.* lanceolate with a cuneate base). It is potentially referable to the later named *S. fluminense* (Erickson & Willis 1966), which has a comparable leaf morphology; however, Mueller’s description of the corolla as white and minute, and his likening of the flowers and stature to that of the southern Australian annual *S. despectum* R.Br. (rather than the allied *S. tenerrimum*, which he named at the same time), adds a degree of doubt to this interpretation. *Stylidium fluminense* usually has a bright pink to mauve-pink corolla with striking markings, although white-flowered individuals have been recorded (e.g. J.E. Wajon 382: PERTH; R. Kerrigan 181 & J. Risler: DNA). Its corolla lobes are 3–6.5 mm long (not especially small relative to other species in the genus) and, like other members of the section, each lateral pair is basally connate (the lobes in *S. despectum* are free to the top of the tube and 1–2.2 mm long). The type of *S. mitrasacmoides* has corolla lobes *c.* 2.5 mm long and the hypanthium is shorter than or at the lower end of the range currently documented for *S. fluminense* (*c.* 4–5.5 mm long *cf.* 5–20 mm).

In view of the poor-quality type specimen (including the limited floral material upon which to draw any firm taxonomic conclusions) and the information in the protologue, we currently regard *S. mitrasacmoides* as a name of uncertain application. A direct comparison of the type fragments against modern day collections of *S. fluminense*, including additional collections from the Victoria River area, may help to resolve whether *S. mitrasacmoides* is an earlier name for this taxon.

Stylidium modicum M.D.Barrett, R.L.Barrett & Wege, *sp. nov.*

Type: Northern Prince Regent National Park, 14.9 km west of Mt Brookes, Kimberley region, Western Australia, 26 April 2023, M.D. Barrett MDB 6439, A. Spiridis & D. Chemello (*holo*: PERTH 09597018; *iso*: BRI, CANB, DNA, MEL).

Erect annual herb (5–)10–28 cm high. Glandular hairs 0.1–0.6 mm long, with a red or red-black, discoid or globose head. Stem 0.5–12 cm long, 0.5–2 mm wide, red to red-brown, straw-brown or greenish, simple or sometimes branched distally, glabrous. Leaves in a loose terminal rosette and scattered on stem below, with an elliptic, orbicular to suborbicular, ovate or obovate lamina, (6–)12–75 mm long including a slender petiole, (4–)8–30 mm wide, glabrous, apex rounded or obtuse; margins entire, sometimes finely hyaline-erose. Scapes 1–12 per plant, 7–22 cm long including inflorescence, 0.4–1.3 mm wide, glandular-

hairy. *Inflorescence* determinate, monochasially or dichasially cymose, 7–c. 60-flowered, flowers rotated 180°; branches glandular-hairy; bracts 0.8–4.5 mm long, sparsely glandular-hairy; pedicels indistinct. *Hypanthium* linear in outline, 10–22 mm long, 0.4–0.6 mm wide, glandular-hairy. *Calyx lobes* with 3 free and 2 connate for more than half their length, 2.2–3.2 mm long, glandular-hairy, apex obtuse. *Corolla* mauve-pink or pink to dark pink, with small, red-pink markings near base of upper (anterior) lobes, yellowish abaxially; lobes paired vertically, sparsely glandular-hairy abaxially; anterior (upper) lobes obovate with an emarginate or ± rounded apex, smaller than the posterior pair, 2.5–3.7 mm long, 2–3 mm wide; posterior (lower) lobes obovate with a bilobed apex (segments usually divergent, very rarely not so or tending emarginate), 4–6.2 mm long, 3–5 mm wide; tube 2.8–3.5 mm long, longer than the calyx lobes, sparsely glandular-hairy, with a sinus on the anterior side. *Labellum* on outside of corolla tube (sometimes appearing ± at edge of sinus), elliptic to narrowly ovate, glabrous, 0.6–0.8 mm long with a terminal appendage 0.1–0.2 mm long. *Throat appendages* 6 (1 on each anterior corolla lobe, 2 on each posterior lobe), apparently basally connate or with the posterior ones in basally connate pairs, yellow, sometimes creamy white basally, 0.2–0.5 mm high, obtuse or rounded, papillose. *Column* 9–12 mm long, straight when extended, slightly broadened above main bend with a second bend well below the anthers, glabrous; anther locules 0.8–1 mm long, corona absent; stigma sessile, entire. *Capsules* linear in outline, 16–38 mm long excluding calyx lobes, without ribs or faintly ribbed; halves detaching distally, somewhat recurved. *Seeds* brown, ellipsoid, c. 0.2 mm long, ± smooth (areolate), with concave depressions. (Figure 16A, B)

Diagnostic features. An erect annual herb with the following key features: broad, petiolate leaves in a loose terminal rosette and scattered on the stem below; glandular hairs on the scape and inflorescence including the calyces; calyx with 3 free lobes and 2 connate for more than half their length; mauve-pink or pink, vertically paired corolla lobes with a yellowish undersurface, the smaller, upper pair with an emarginate or rounded apex, the lower pair usually bilobed with divergent segments and free to the top of the corolla tube; labellum positioned on the corolla tube below the anterior sinus; 6 yellow or yellowish throat appendages; a 9–12 mm long column that is broadened above the main bend and has a second bend well below the anthers; linear capsules bearing seeds with rounded or somewhat angular partitions on the surface.

Specimens examined. WESTERN AUSTRALIA: 5.6 km ESE of (new) Theda Station Homestead, N Kimberley, 1 May 2008, *M.D. Barrett* MDB 2235 (PERTH); E bank of Lawley River near tidal/freshwater confluence, Lawley River National Park, N Kimberley region, 29 Mar. 2010, *M.D. Barrett* MDB 2895 & *R.L. Barrett* (PERTH); edge of sandstone massif overlooking King Edward River, N boundary of Theda Station, 30.5 km NNW of (new) homestead, N Kimberley region, 4 May 2011, *M.D. Barrett* MDB 3441 (BRI, DNA, PERTH); northern Prince Regent National Park, 16.7 km WNW of Mt Brookes, Kimberley region, 26 Apr. 2023, *M.D. Barrett* MDB 6380, *A. Spiridis* & *D. Chemello* (PERTH); northern Prince Regent National Park, 4 km ESE of Mt Brookes, Kimberley region, 27 Apr. 2023, *M.D. Barrett* MDB 6523, *A. Spiridis* & *D. Chemello* (PERTH); Roe River ‘pavement 1’ on mainland, 3 km ESE of Gertrude Cove, Kiska Island, 23 Apr. 2008, *R.L. Barrett* RLB 4611 & *M.D. Barrett* (PERTH); Camp Creek Gauging Station, Mitchell Plateau, 27 Apr. 1982, *G.J. Keighery* 4758 (PERTH); Mitchell River Falls, Mitchell Plateau, NW Kimberley, 17 June 1976, *K.F. Kenneally* 4993 (PERTH); Mitchell Falls, Mitchell River, N Kimberley, 21 July 1976, *J. Lewis* 43 (PERTH); Lenae on SW side of Vansittart Bay, 24 Mar. 1993, *A.A. Mitchell* 2908 (PERTH); c. 2 km E of Mitchell Falls, 15 Mar. 1994, *A.A. Mitchell* 3363 (PERTH); small tributary of Garimbu Creek, Prince Regent National Park, 22 June 2014, *B.S. Wannan* 6680, *M. Wardrop*, *P. Lane* & *H. Hofman* (BRI, CNS *n.v.*, PERTH).

Spirit material examined. *M.D. Barrett* MDB 2895 & *R.L. Barrett* (PERTH). Flowers reconstituted from *M.D. Barrett* MDB 2895 & *R.L. Barrett* (PERTH); *M.D. Barrett* MDB 3441 (PERTH); *M.D. Barrett* MDB 6439, *A. Spiridis* & *D. Chemello* (PERTH); *M.D. Barrett* MDB 6523, *A. Spiridis* & *D. Chemello* (PERTH); *R.L. Barrett* RLB 4611 & *M.D. Barrett* (PERTH); *J. Lewis* 43 (PERTH).

Flowering period. March–July.

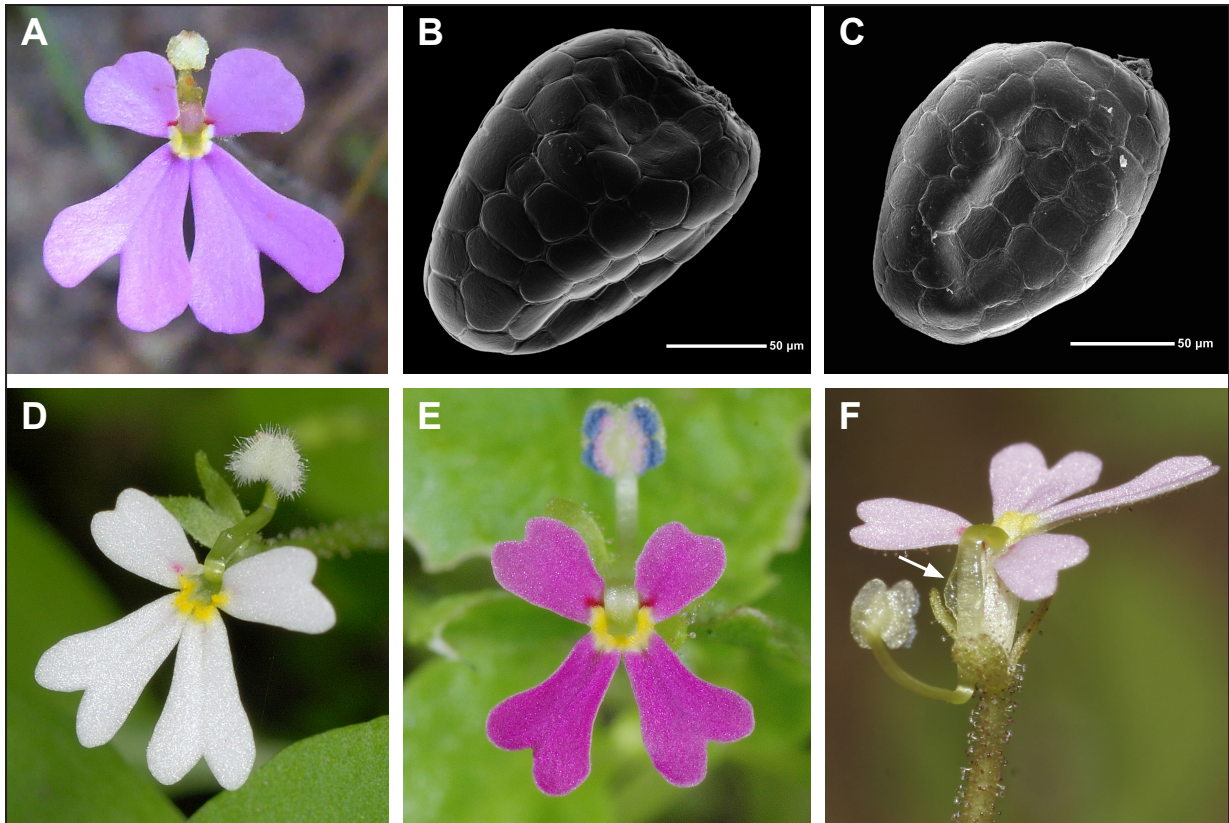


Figure 16. A – *Stylidium modicum* flower, showing the bilobed lower corolla lobes with divergent segments; B – *S. modicum* ± smooth (areolate) seed; C – *S. muscicola* ± smooth (areolate) seed; D–F – *S. muscicola* flowers, showing the emarginate to shallowly bilobed corolla lobes. Note the broadened column above the main bend (arrow). Photographs by M.D. Barrett (A), S.J. Dillon (B, C), K. Brennan (D, E) and R.L. Barrett (F) from M.D. Barrett 6523, A. Spiridis & D. Chemello (A), M.D. Barrett 6439, A. Spiridis & D. Chemello (B: PERTH), I.D. Cowie 13344 (C: PERTH), K. Brennan 10088 (D), K. Brennan 7605 (E) and Pangoor, Theda Station (F).

Distribution and habitat. Endemic to the North Kimberley bioregion in Western Australia, including occurrences in Prince Regent, Mitchell River and Lawley River National Parks. Grows in rugged sandstone country under rock overhangs and in small caves, or on shaded sandstone walls and ledges, often near creeks, small pools and waterfalls. Recorded from open woodland over mixed shrubland and grassland, shrubland with *Triodia*, and herbfields. Commonly growing in shaded microhabitat with *Thedachloa annua*, *Lindernia barkeri*, *Cheilanthes* spp., *Doryopteris concolor* and *Coleus scutellarioides*, and also with either *Stylidium muscicola* F.Muell. or *S. tremendum* Wege, M.D.Barrett & R.L.Barrett (but never with both species at any given location).

Conservation status. Occurs in dense colonies albeit over a small area due to its habitat specificity. Not considered to be at risk.

Etymology. From the Latin *modicus* (medium, middling), a reference to its intermediate column length with respect to the allied *S. muscicola* and *S. tremendum*.

Vernacular name. In-between Triggerplant.

Affinities. *Stylidium modicum* is morphologically allied to *S. muscicola* (Figure 16C–F) and *S. tremendum* (Figure 17) and usually has a column of intermediate length, i.e. 9–12 mm long *cf.* 5.5–8.5 mm in *S. muscicola* and usually 12–18 mm in *S. tremendum* (although sometimes as short as 9 mm when co-occurring with *S. muscicola*). It can be further differentiated from both species by its lower (posterior) corolla lobes, which are usually prominently bilobed with divergent segments rather than emarginate or shallowly bilobed and without divergent segments. Additional differences to *S. muscicola* include its labellum position (on the outer wall of the corolla tube *cf.* at the base of the anterior sinus in *S. muscicola*),

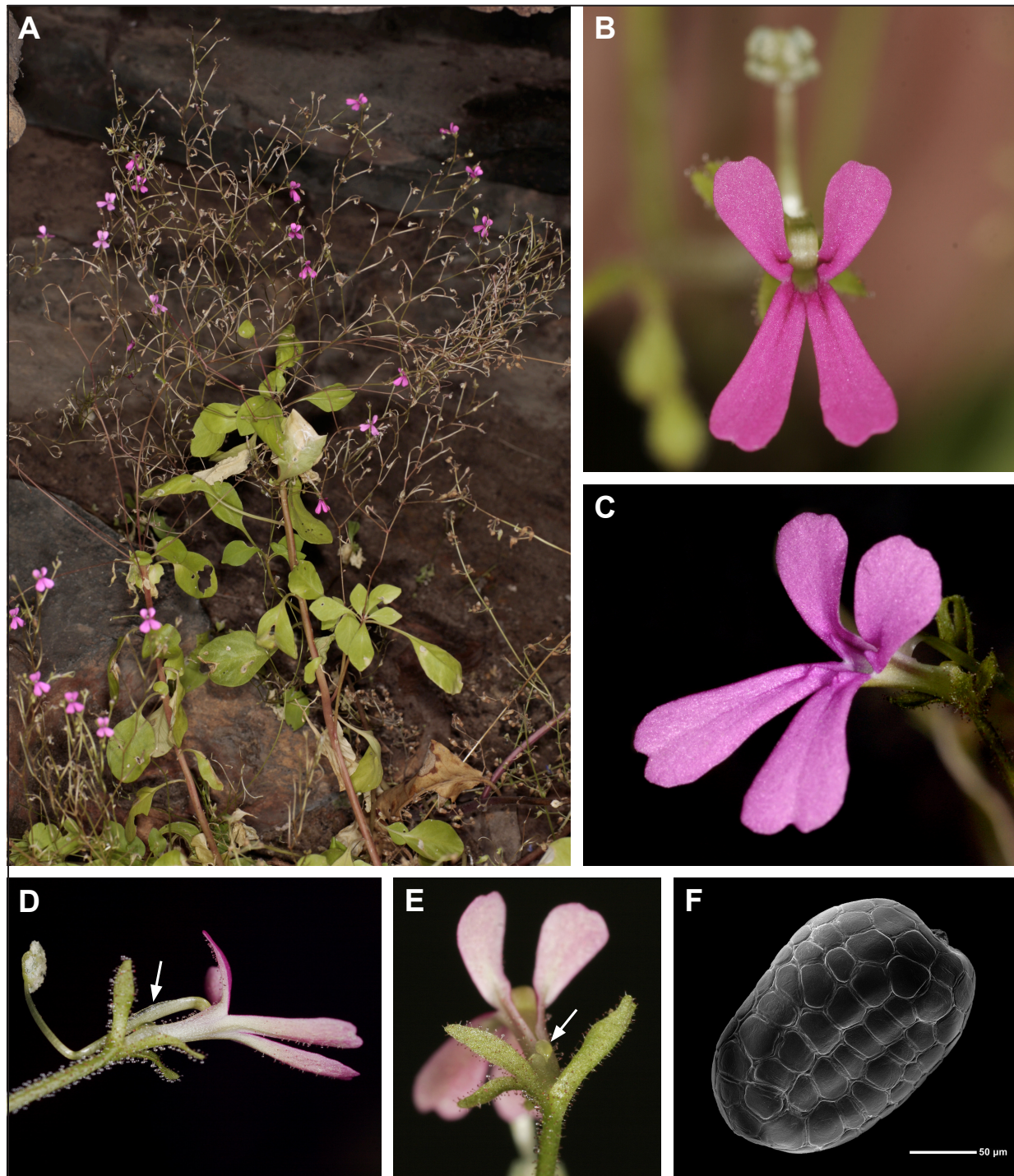


Figure 17. *Stylidium tremendum*. A – habit; B – flower with emarginate to rounded corolla lobes and long column; C – flower showing the magenta throat appendages at the base of each corolla lobe and the distinct lower corolla lobes (i.e. free to the top of the corolla tube); D – side view of flower showing the long corolla tube and broadened column above the main bend (arrow); E – flower showing the labellum at the base of the anterior sinus (arrow); F – ± smooth (areolate) seed. Photographs by R.L. Barrett (A, C), M.D. Barrett (B, D, E) and S.J. Dillon (F) from Old Mitchell River Rd, Theda Station (A, C), M.D. Barrett 1978 & R.L. Barrett (B, D, E) and A. Lowrie 758 (F: PERTH).

larger lower corolla lobes (4–6.2 × 3–5 mm *cf.* 2.2–4 × 1–2.7 mm) and larger anther locules (0.8–1 mm long *cf.* 0.4–0.7 mm). *Stylidium modicum* is also reliably differentiated from *S. tremendum* by the undersurface of the corolla lobes (yellowish *cf.* white) and its yellow throat appendages (*cf.* magenta or mauve-pink).

Stylidium modicum is potentially confused with *S. willingii* R.L.Barrett, Kenneally & Lowrie, a species that has a shorter column (5–7 mm long) with small, lateral lobes above the main bend, and emarginate, truncate or shallowly bilobed posterior corolla lobes (i.e. lower lobes without divergent segments). *Stylidium willingii* tends to have a basally-rosetted habit (although more rarely has a terminal rosette and additional leaves scattered below on a stem to 5 cm long).

Notes. Additional photographs and collections of *S. modicum*, including flowers preserved in spirit, are required to improve the above description, especially the throat appendage detail.

Stylidium multiscapum O.Schwarz, *Repert. Spec. Nov. Regni Veg.* 24(4–13): 105–106 (1927). *Type:* Darwin, Northern Territory, April 1927, F.A.K. Bleeser 360 (*holo:* B, destroyed in WWII; *lecto*, here designated: NSW 470185 image!).

Diagnostic features. A basally-rosetted annual with the following key features: a slender tap root; oblanceolate or ± lanceolate leaves (sometimes narrowly so), often with a fine hyaline border and usually with a slender acumen 0.2–1 mm long; glandular-hairy scapes and inflorescences; an ellipsoid or obovoid hypanthium; laterally paired corolla lobes that are pink with a white base and bear 8 throat appendages (2 on each lobe); a slender, glabrous column with a corona (i.e. hairs around the anthers); and colliculate seeds (note the protuberances are sometimes difficult to detect under a stereo microscope). (Figure 13A–D)

Selected specimens. WESTERN AUSTRALIA [localities withheld for conservation reasons]: 6 July 1974, G.W. Carr 3078 & A.C. Beauglehole 46837 (DNA); 18 June 1980, U. Roberts 5 (AD); 24 July 2023, J.A. Wege JAW 2283 & B.P. Miller (BRI, PERTH).

NORTHERN TERRITORY: 3.4 km along Edith Falls road, NW of Katherine, 28 May 2005, A.R. Bean 23905 (BRI, CANB, DNA, MEL, NY *n.v.*); Napier Peninsula, 28 June 2007, K. Brennan 7310 (DNA); Arafura Swamp, near Glyde river crossing, 23 Sep. 1998, I.D. Cowie 7987 & C.P. Mangion (DNA); Melville Island, S of Milikarpiti, 23 Aug. 2000, I.D. Cowie 8968 (BRI, DNA); Arnhem Land c. 18 km ESE of Ramingining, 23 June 2001, I.D. Cowie 9436 (DNA); Keep River National Park, Flying Fox Creek, 13 June 1995, J. Egan 5073 (DNA); Darwin, Knuckey's Lagoon, 10 miles Stuart Hwy, 9 July 1955, R. Erickson *s.n.* (PERTH); Cox Peninsula Rd next to Belyuen Community, 3 July 2008, D.E. Murfet 6036 (AD, DNA, PERTH); Gatji, 7 Sep. 1998, P.S. Short & C.R. Dunlop 4858 (BRI, CANB, DNA); Keep River National Park, 14 May 2011, B. Stuckey 815 (DNA); Western Arnhem Land, Oenpelli–Maningrida road, 27 July 2008, J. Westaway 2716 (DNA).

Conservation status. Recently listed as Priority One under Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–). Widespread in the Northern Territory where it is listed as Least Concern according to IUCN criteria (Northern Territory Herbarium 2013).

Typification. Schwarz (1927) named 43 species from the Darwin area using the collections of Florenz August Karl Bleeser (McKee 1963). The type material housed at B was subsequently destroyed in WWII as was Bleeser's private collection in Darwin; duplicate material is sometimes present at NSW and MEL (McKee 1963, Willis 1966). The designated lectotype is the only duplicate of Bleeser 360 that is known to exist.

Notes. With the taxonomic recognition of both *S. incognitum* and *S. pezidium* Wege, Brennan & S.J.Dillon (see below), *S. multiscapum* is now mostly known from northern parts of the Northern Territory, although it is also recorded from near Kununurra in Western Australia.

Stylidium pezidium Wege, Brennan & S.J.Dillon, *sp. nov.*

Type: track from Lajamanu to Tanami Road, c. 43 km north of Tanami junction, Northern Territory, 9 August 2023, *K. Brennan* 13257 (*holo:* DNA D0290828; *iso:* AD, BRI, CANB, NT, PERTH).

Rosulate *annual herb* 6.5–35 cm high, with a slender tap root. *Glandular hairs* 0.15–0.4 mm long, with a red or yellowish, ellipsoid head. *Stem* contracted. *Leaves* basal, oblanceolate or ± lanceolate (sometimes narrowly so), 6–50 mm long including petiole, 2–10 mm wide, glabrous; apex ± obtuse, subacute, acute or acuminate, with a slender acumen 0.2–1 mm long; margins conspicuously hyaline, ± entire or irregularly serrate. *Scapes* (1–)2–18 per plant, 6.5–35 cm long including inflorescence, 0.4–1 mm wide, glandular-hairy. *Inflorescence* determinate, monochasially or dichasially cymose, 5–c. 75-flowered, flowers rotated c. 90°; branches glandular-hairy; bracts 1–4 mm long, glandular-hairy; pedicels 1.5–8.5 mm long, glandular-hairy. *Hypanthium* ellipsoid to obovoid, 1–2.5 mm long, 1–1.6 mm wide, glandular-hairy. *Calyx lobes* free, 1–1.7 mm long, glandular-hairy, apex subacute, acute or obtuse. *Corolla* pale to medium bright pink, sometimes with darker pink markings towards base of lobes, white at base of lobes, yellowish green in throat (sometimes with small red markings deep inside), whitish abaxially with a prominent dark red stripe on each lobe; lobes paired laterally, sparsely glandular-hairy abaxially; anterior lobes ± elliptic with an obtuse apex, smaller than the posterior pair, 2.6–4 mm long, 1.8–2.5 mm wide; posterior lobes elliptic or narrowly obovate with an obtuse apex, 3–4.5 mm long, 2–2.8 mm wide; tube 1.7–2.7 mm long, longer than the calyx lobes, with an anterior sinus, glandular-hairy distally. *Labellum* at sinus base or on tube just below, broadly ovate to ± orbicular, 0.5–0.7 mm long, glabrous or sparsely glandular-hairy; lateral appendages 0.1–0.2 mm long or sometimes absent. *Throat appendages* 2–8 (1 or 2 on each anterior corolla lobe, 0 or 2 on each posterior lobe), completely or basally adnate to corolla, pink with a white base or white if rudimentary, ± oblong or tooth-like, c. 0.1–1 mm long, obtuse. *Column* 6–8.5 mm long, with a slight lateral curve when extended, slender above main bend with a second bend below the anthers, glabrous; anther locules 0.7–0.9 mm long, corona present; stigma sessile, entire. *Capsules* ellipsoid to obovoid, 1.5–3 mm long excluding calyx lobes, halves detaching distally. *Seeds* brown with a pale nipple, ellipsoid, ovoid or globose, 0.2–0.25 mm long, reticulate. (Figure 18)

Diagnostic features. A basally-rosetted annual with the following key features: a slender tap root; oblanceolate or ± lanceolate leaves with a prominent hyaline border and fibrous acumen 0.2–1 mm long; glandular-hairy scapes and inflorescences; an ellipsoid to obovoid hypanthium; pink, laterally paired corolla lobes with 2–8 appendages near the base (the posterior ones absent or inconspicuous); a glabrous column with a prominent corona (i.e. hairs around the anthers); and reticulate seeds.

Specimens examined. WESTERN AUSTRALIA: drill site named Missing, northern Great Sandy Desert, 2 Oct. 2001, *C.P. Campbell* 4013 (PERTH); Mt Brophy Springs, Gardner Range, 190 km SE of Halls Creek, 4 July 1995, *K. Coate* 375 (PERTH); Lake Betty on Yougga Walla Station, Great Sandy Desert, 4 July 2001, *K. Coate* 627 (PERTH); Bulka Swamp, Bohemia Downs Station, S Kimberley, 3 July 2001, *K. Coate* 640 (PERTH); D2 Red Dune Site, near Edgar Ranges, SE of Broome, 11 Aug. 1976, *K.F. Kenneally* 5569 (BRI, DNA, PERTH); between Walyarta Conservation Park and Anna Plains Station, 48 km E of Sandfire Roadhouse, 207 km SSW of Broome, 28 Aug. 2018, *A. Markey & S. Dillon* WL 10976 (DNA, PERTH).

NORTHERN TERRITORY: Attack Creek, 1.2 km W of Stuart Hwy crossing, 18 Oct. 2006, *D.E. Albrecht* 12073 (*K n.v.*, NT); 20 km NW The Granites, 18 July 2000, *B. Davies & M. Richardson s.n.* (NT); Lake Surprise, 12 Aug. 1993, *J. Cole s.n.* (NT); 43 km ENE Lake Surprise, 21 Sep. 1991, *P.K. Latz* 12252 (BRI, CANB, DNA, MEL *n.v.*, NSW, NT, PERTH); Tipirirpa Rockhole, 70 km E Lake Surprise, 22 Sep. 1991, *P.K. Latz* 12280 (AD, MO *n.v.*, NT).

QUEENSLAND: Nicholson River area, 3 June 1974, *T.S. Henshall* 251 (DNA).

Spirit material examined. *K. Brennan* 13257 (DNA); *K.F. Kenneally* 5569 (PERTH; corolla dissolved on dissection). Flower reconstituted from *A. Markey & S. Dillon* WL 10976 (PERTH).

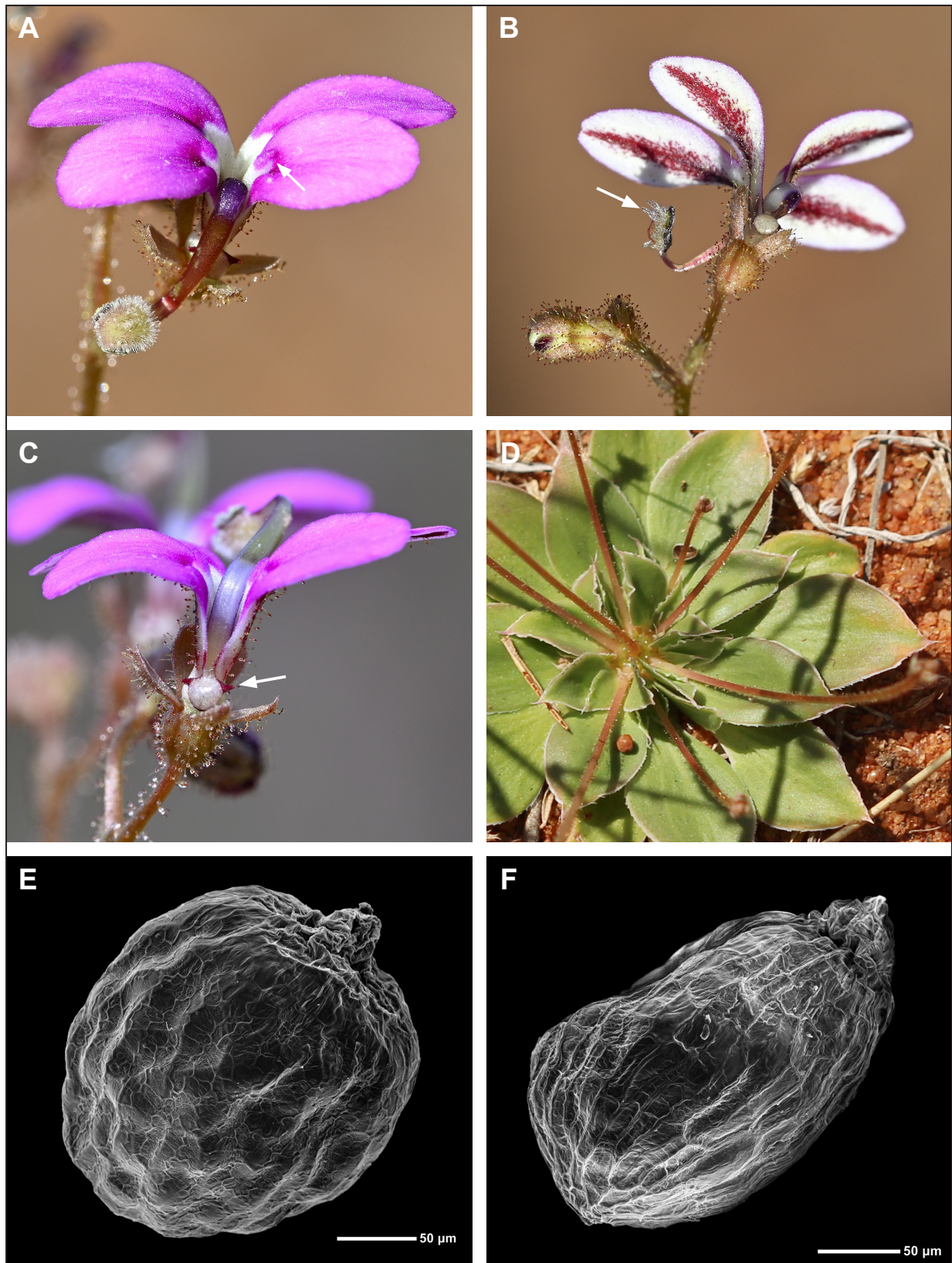


Figure 18. *Stylidium pezidium*. A – flower, showing the laterally paired corolla lobes with small appendages at the base of the anterior ones (arrow) and developed stigma; B – flower, showing the strong markings on the undersurface of the corolla and hairs around the anthers (arrow); C – triggered flower, revealing the labellum with lateral appendages (arrow); D – basal leaves with a conspicuous hyaline margin; E, F – seeds with a reticulate surface. Photographs by K. Brennan (A–C) from K. Brennan 13257, A. Markey (D) from A. Markey & S. Dillon WL 10976, and S.J. Dillon from A. Markey & S. Dillon WL 10976 (E: PERTH) and K.F. Kenneally 5569 (F: PERTH).

Flowering period. Late June–October.

Distribution and habitat. Found across Australia’s northern deserts, with records extending from east of Eighty Mile Beach in Western Australia to the Nicholson River area in western Queensland, including the Great Sandy and Tanami Deserts. Grows in red sand or clayey sand on plains in seasonally damp areas, either between dunes, near watercourses and seasonal swamps, or within paleo-drainage channels. Recorded in *Melaleuca* shrubland, *Eucalyptus victrix* open woodland, and *Triodia* hummock grassland.

Conservation status. A widespread species that is somewhat poorly collected but not currently considered to be at risk. It will not be conservation-listed in Western Australia (T. Llorens pers. comm.) and will be categorised as Least Concern in the Northern Territory under IUCN criteria (N. Cuff pers. comm.). Known from a single population in Queensland where its conservation status has not been assessed.

Etymology. From the Greek *pezidion* (diminutive of *peza* = border, edge, ribbon), a reference to the leaf margins.

Vernacular name. Ribbon Triggerplant.

Affinities. *Stylidium pezidium* is extremely similar to *S. multiscapum*, differing primarily in having seeds with a reticulate rather than colliculate surface (compare Figure 18E, F with Figure 13C, D). This difference is taxonomically compelling and correlates with discrete geographic distributions (*S. multiscapum* is confined to northern parts of the Northern Territory and the adjacent Kimberley). *Stylidium pezidium* also has less prominent throat appendages than *S. multiscapum* (particularly the posterior ones, which are rudimentary or absent), and leaf margins that tend to be more prominently hyaline.

Stylidium pezidium could be confused with *S. incognitum* (Figure 12), although the latter has a corolla with a bare, golden yellow throat, a distally broadened column without a corona, colliculate seeds, and a more northerly distribution. Material of *S. pezidium* has been previously misidentified as *S. pindanicum* R.L.Barrett, a species with glandular-hairy leaves that lack an acumen, vertically paired corolla lobes, a column with both simple and glandular hairs, and a distribution centred on Western Australia’s Dampier Peninsula.

Stylidium pezidium can grow in sympatry with *S. desertorum* Carlquist, a species with linear leaves, a denser indumentum of glandular hairs to 1.2 mm long, a longer column (more than 10 mm), and flowers without throat appendages. It can also co-occur with the similarly broad-leaved *S. floribundum* R.Br., which has an indumentum of both simple and glandular hairs, flowers that lack throat appendages, and obconical capsules.

Stylidium pseudotenellum O.Schwarz, *Repert. Spec. Nov. Regni Veg.* 24(4–13): 104 (1927). *Type:* ‘Port Darwin, 8 miles NE, moist flat (Bleeser no. 466)’ (*holo:* B, destroyed in WWII).

Notes. *Stylidium pseudotenellum* has long been treated as a synonym of *S. fissilobum* (Carlquist 1978; Bean 2000); however, Schwarz’s (1927) description of the corolla—specifically the strongly dissected upper (anterior) corolla lobes and the basally connate lower (posterior) lobes—does not agree with our revised concept of this species (refer to the notes under *S. fissilobum*). We have also ruled out *S. pseudotenellum* as an earlier name for the novel species *S. torquatum* on account of the latter’s emarginate upper corolla lobes and throat appendages (prominent, basally connate, somewhat irregularly lobed and non-glandular *cf.* minute, four (the middle ones bifid), and glandular in *S. pseudotenellum*).

Corolla shape is taxonomically informative in this group of scapiform annuals, with both *S. aquaticum* and *S. brennanianum* characterised by highly dissected upper lobes; however, unlike both *S. fissilobum* and *S. torquatum*, neither species is known from the Darwin area, with both differing from Schwarz’s description in corolla colour and throat appendage morphology; *S. aquaticum* also has distinctly filiform

leaves clustered near the base of the stem (*cf.* alternate and linear in *S. pseudotenellum*). There are unplaced specimens from Kakadu with dissected upper corolla lobes (e.g. *K. Brennan* 3147: DNA; *L. Craven* 548: DNA); this material remains the subject of ongoing taxonomic assessment although a preliminary examination of key features (e.g. throat appendage morphology and hypanthium length) suggests that the name *S. pseudotenellum* is similarly unlikely to be able to be confidently applied to this material (refer to the notes under *S. torquatum*).

The holotype of *S. pseudotenellum* was destroyed in WWII and no duplicates are known (see typification section under *S. multiscapum* for notes on Bleeser's collections). We regard *S. pseudotenellum* as a name of uncertain application.

Stylidium rubriscapum W.Fitzg., *J. & Proc. Roy. Soc. Western Australia* 3: 218 (1918). *Type citation*: 'Calder River; Messmate Creek in the Packhorse Range (W.V.F.)'. *Type specimens*: Calder River, Western Australia, August 1905, *W.V. Fitzgerald* 1442 (*lecto*, here designated: PERTH 01642057!; *isolecto*: NSW 923308 image!); Charnley River, August 1905, *W.V. Fitzgerald* s.n. (*syn*: BM 000563901!).

Typification. The PERTH sheet is designated as an appropriate lectotype since the locality information matches the protologue and, unlike NSW 923308, the specimen is annotated by Fitzgerald with the published name. Although the locality information 'Charnley River' is not a precise match for the protologue, BM 000563901 is interpreted as part of the original material since it is from Fitzgerald's personal herbarium and is annotated by him with the published name.

PERTH 09565949 is a fragment of *S. rubriscapum* affixed to Fitzgerald's collection of *S. costulatum* Lowrie & Kenneally from the Isdell Range (PERTH 02946327; as *S. floodii* by Fitzgerald *loc. cit.*). It is unclear whether this represents a mixed collection or whether the fragment of *S. rubriscapum* is type material that has subsequently been mixed with this collection.

Stylidium synaptum Wege, Brennan & A.R.Bean, *sp. nov.*

Type: Melville Island, c. 8 km south of Milikapiti, Northern Territory, 24 March 2021, *K. Brennan* 12044 & *W. Rioli* (*holo*: DNA D0286793; *iso*: BRI, CANB, PERTH 09624716).

Stylidium sp. Melville Island (R.J. Fensham 432) K.G. Brennan, in Northern Territory Government, FloraNT, <https://eflora.nt.gov.au/> [accessed 15 May 2023].

Rosulate annual herb 3–20 cm high. *Glandular hairs* c. 0.1–0.15 mm long, with a red or black, discoid or globose head. *Stem* contracted. *Leaves* basal, spreading, narrowly oblanceolate to oblanceolate or spatulate, 1.5–8 mm long, 0.8–2.8 mm wide, glabrous, apex obtuse or rounded; margins entire. *Scape* 1–3 per plant, 5–20 cm long including inflorescence, 0.2–0.5 mm wide, glabrous, sometimes with 1 or a few scattered sterile bracts 0.4–0.9 mm long. *Inflorescence* determinate, monochasially or dichasially cymose, 1–25-flowered, flowers rotated 180°; branches glabrous; bracts 0.6–2 mm long, glabrous; pedicels indistinct or c. 0.5 mm long and glabrous. *Hypanthium* linear in outline, 2.5–12 mm long, 0.3–0.6 mm wide, sparsely glandular-hairy distally. *Calyx lobes* arranged in 2 groups, connate within each group for more than half their length, 0.8–1.5 mm long, glabrous or sparsely glandular-hairy towards base, apex obtuse or subacute to acute. *Corolla* pale mauve-pink or white (or with the lower lobes mauve-pink and the upper ones white), with small purple-pink markings towards base of each lobe; lobes ± paired vertically with the upper pair often somewhat spreading, glabrous or with the anterior lobes sparsely glandular-hairy abaxially; anterior (upper) lobes elliptic or narrowly obovate with an emarginate (rarely obtuse) apex, smaller than the posterior pair, 0.8–2.1 mm long, 0.5–1.5 mm wide; posterior (lower) lobes obovate with a bilobed apex (segments rounded or sometimes emarginate, usually divergent), 2.2–4.6 mm long, 1.8–3.5 mm wide; tube 1.2–2.5 mm long, longer than the calyx lobes, with a sinus on both the anterior and posterior sides, glabrous or sparsely glandular-hairy near anterior sinus. *Labellum* on corolla tube below anterior sinus, narrowly ovate, 0.5–0.8 mm long, sometimes with a terminal appendage c. 0.1 mm

long, glabrous. *Throat appendages* 2 or 4 (0 or 1 on each anterior corolla lobe, 1 on each posterior lobe), glabrous or scarcely papillose, white or pink-tipped, usually with a small yellow callosity in the sinus each anterior and posterior corolla lobe; posterior (lower) appendages broad and thick with a rounded to scarcely emarginate or subacute apex, 0.2–0.5 mm high, sometimes connecting basally to a barely visible obtuse protuberance *c.* 0.1 mm high on the adjacent anterior corolla lobe. *Column* 5.5–8 mm long, straight when extended, slender above the main bend with a second bend well below the anthers, glabrous; anther locules 0.5–0.8 mm long, corona absent; stigma sessile, entire. *Capsules* linear in outline, 5.8–13 mm long excluding calyx lobes, without ribs; halves detaching distally, recurved. *Seeds* brown, ellipsoid, ovoid or globose, 0.15–0.2 mm long, scarcely and somewhat irregularly colliculate, with concave depressions. (Figure 19)

Diagnostic features. A rosulate annual herb with the following key features: strictly basal, spatulate to oblanceolate leaves that are 1.5–8 mm long; a \pm linear hypanthium with glandular hairs restricted to the distal end; calyx lobes that are arranged in 2 groups (each fused for more than half their length) and glabrous or sparsely glandular-hairy towards the base; mauve-pink or white, vertically paired corolla lobes with small purple-pink markings towards the base, the upper pair smaller than the lower ones and usually emarginate, the lower pair bilobed; a sinus on both the anterior and posterior sides of the corolla tube; a slender, glabrous column; and scarcely colliculate seeds (protuberances barely visible).

Specimens examined. WESTERN AUSTRALIA: [localities removed for conservation reasons] 16 Mar. 2011, *M.D. Barrett* MDB 3327 (BRI, CANB, DNA, MEL, PERTH); 18 Apr. 1993, *R.L. Barrett* RLB 580 (PERTH); 20 May 1995, *R.L. Barrett* RLB 8565 (BRI, DNA, PERTH).

NORTHERN TERRITORY: Snake Bay [Melville Island], 16 Feb. 1987, *R.J. Fensham* 432 (DNA).

QUEENSLAND: Jumna Creek on the access road to the Bluff Mine between Watsonville and Irvinebank, 1 Apr. 2001, *R.L. Jago & B. Wannan* 5856 (BRI); 1.5 km N along Stannary Hills Rd, 6 Apr. 2004, *K.R. McDonald* KRM1957 (BRI).

Spirit material examined. *M.D. Barrett* MDB 3327 (PERTH); Nitmiluk, Murrawal Plateau, 1 Apr. 2005, *K. Brennan* 6526 (DNA, spirit only); Gurig National Park, along Main Rd, site 100, before Danger Point turn off, 5 Apr. 2006, *K. Brennan* 6885 (DNA, spirit only); Groote Eylandt, eastern gorges, 29 May 2019, *K. Brennan* 11494 (DNA, spirit only); Melville Island, *c.* 8 km S of Milikapiti, 6 Mar. 2021, *K. Brennan* 12025 (DNA, spirit only); *K. Brennan* 12044 & *W. Rioli* (DNA); *R.L. Jago & B. Wannan* 5856 (BRI).

Flowering period. February–May.

Distribution and habitat. Broadly distributed across monsoonal Australia, from Charnley River – Artesian Range Wildlife Sanctuary in the Kimberley to east of Herberton on the Atherton Tablelands in Queensland, including Melville Island, Nitmiluk and Gurig National Parks, and Groote Eylandt in the Northern Territory. Grows in damp sand in seepage areas near creeks, and on sandstone pavement and granitic hills. Recorded in open woodland with *Lophostemon lactifluus*, *Grevillea pteridifolia*, *Melaleuca viridiflora*, *Eucalyptus* or *Callitris*.

Conservation status. A widespread albeit infrequently recorded species. To be listed as Priority Three under Conservation Codes for Western Australian Flora (T. Llorens pers. comm.). Least Concern in the Northern Territory under the Common Assessment Method (CAM) in light of its widespread distribution and lack of plausible threat (N. Cuff pers. comm.). A conservation assessment is required in Queensland where there are only two records.

Etymology. From the Greek *synaptos* (joined together, united), a reference to the calyx lobes, which are arranged in two, basally connate groups.

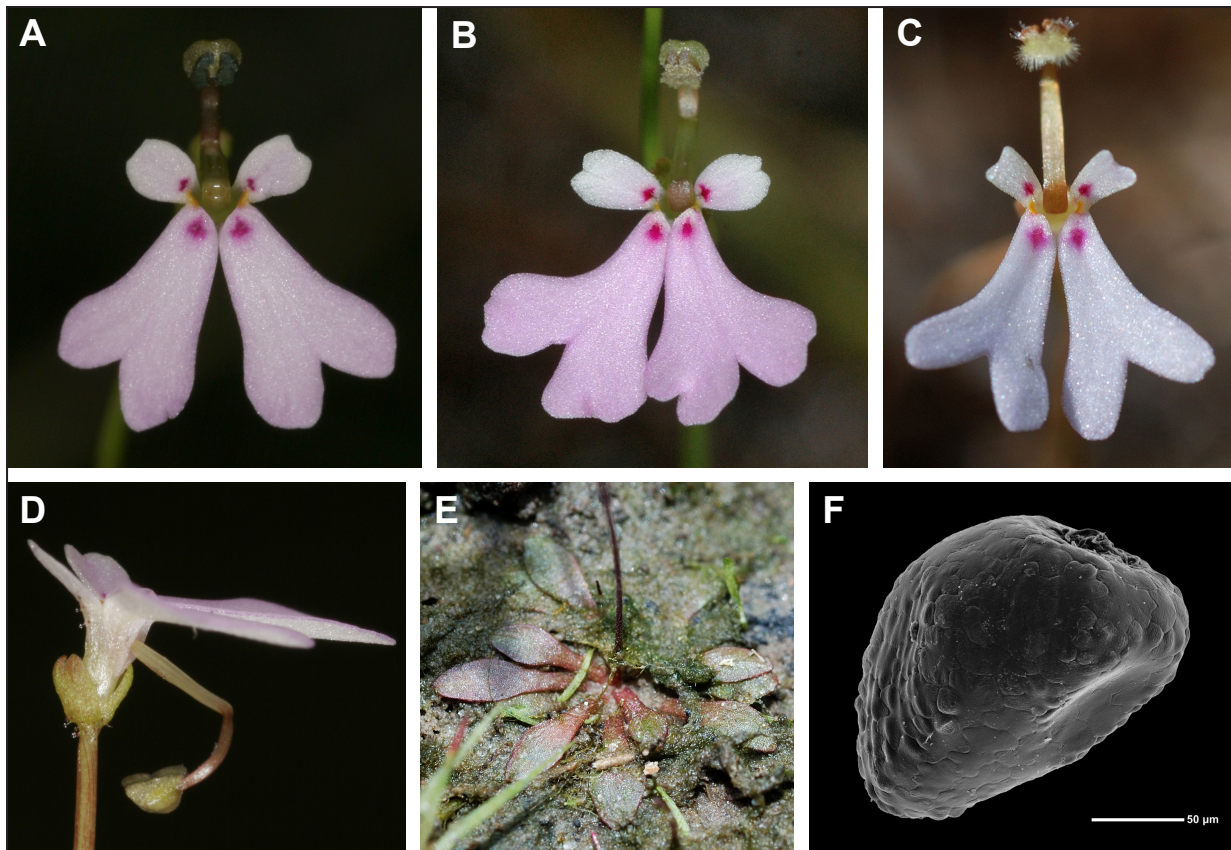


Figure 19. *Stylidium synaptum*. A–C – flowers showing subtle variation in corolla shape; D – side view of flower showing the distinctive calyx lobes and triggered column, which is resting through the posterior corolla sinus; E – basal leaf rosette; F – seed with subtle protuberances. Photographs by M.D. Barrett (A, D), K. Brennan (B, C, E) and S.J. Dillon (F) from M.D. Barrett MDB 3327 (A, D; F: PERTH), K. Brennan 6885 (B), K. Brennan 11494 (C) and K. Brennan 12025 (E).

Vernacular name. Connected Triggerplant.

Affinities. *Stylidium synaptum* has similarities to *S. candelabrum* Lowrie & Kenneally *s. lat.* (Figure 20A–C), a species endemic to the northern part of the Northern Territory including regions where *S. synaptum* occurs. Both species have calyx lobes arranged in two basally connate groups, a sinus on both the anterior and posterior sides of the corolla, and a comparable column morphology. *Stylidium synaptum* is most readily distinguished from *S. candelabrum* by its strictly basally-rosetted habit (i.e. with a contracted stem *cf.* with an elongated, leafy stem and loose, terminal rosette), spatulate to oblanceolate leaves that lack a slender petiole (*cf.* with an ovate or elliptic lamina and distinct petiole), and scarcely colliculate rather than \pm smooth (areolate) seeds.

Stylidium synaptum is also morphologically similar to *S. uliginosum* Sw. ex Willd. (Figure 20G–I), a rosulate species with capsules of similar size and comparable seeds but with glandular-hairy scapes and inflorescences, three free and two part-connate calyx lobes, a shorter column (2.5–4 mm long *cf.* 5.5–8 mm in *S. synaptum*), and a morphologically distinct throat appendages.

Stylidium synaptum could be confused with the basally-rosetted *S. capillare* (Figure 7, 2J) and *S. exiguum* A.R.Bean (Figure 20D–F), although both of these species have three free and two part-connate calyx lobes, \pm smooth (areolate) seeds, and lack a posterior corolla sinus. *Stylidium capillare* differs further in having flowers with four basally connate, yellow-tipped throat appendages, while *S. exiguum* has longer sterile scape bracts (2–6 mm *cf.* 0.4–0.9 mm in *S. synaptum*) and flowers with red-tipped throat appendages.

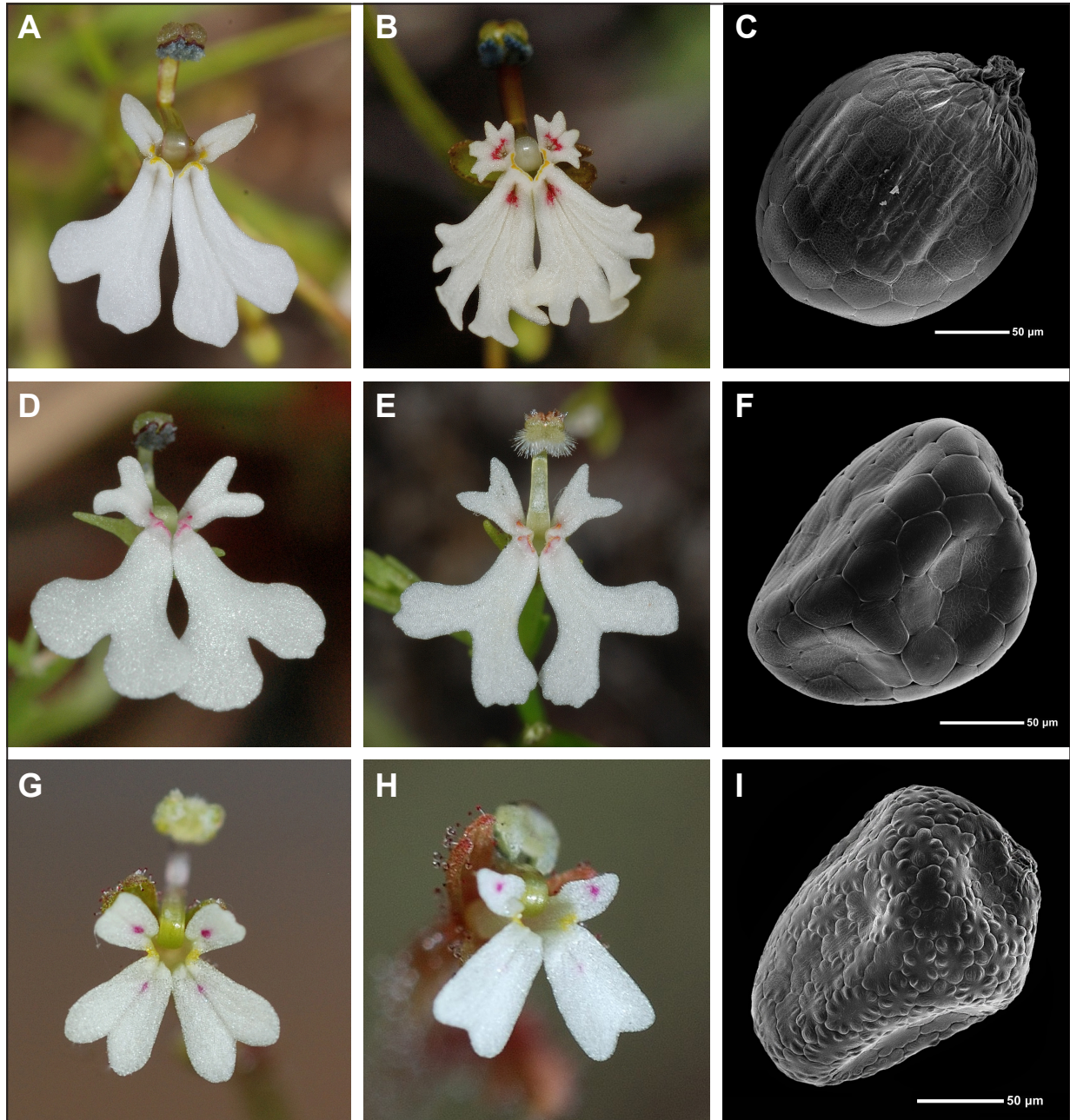


Figure 20. A, B – *Stylidium candelabrum* flowers with yellow-tipped throat appendages (note the atypical form (A; see Wege & Brennan 2024) lacks coloured markings near the base of the corolla lobes and has entire upper lobes); C – *S. candelabrum* (typical form) ± smooth (areolate) seed; D, E – *S. exiguum* flowers with red-tipped throat appendages; F – *S. exiguum* ± smooth (areolate) seed; G, H – *S. uliginosum* flowers (throat appendages present but minute); I – *S. uliginosum* seed with subtle protuberances. Photographs by K. Brennan (A, B, D, E, G, H) and S.J. Dillon (C, F, I) from K. Brennan 7523 (A), K. Brennan 7486 (B), G.M. Wightman 3906 (C: BRI), K. Brennan 6907 (D), K. Brennan 7576 (E), I.D. Cowie 8869 (F: DNA), K. Brennan 9843 (G), D.L. Lewis 3580 & K. Brennan (H) and D. Halford & M. Mathieson QM146 (I: BRI).

Stylidium tantillum Wege & Brennan, *sp. nov.*

Type: Baroalba Creek, Mt Brockman massif, Northern Territory, 28 March 1995, *K. Brennan* 3072 (*holo:* DNA D0141473).

Illustrations. A.R. Bean, *Austrobaileya* 8(2): 108, Figure 1A–C (2010), as *S. exiguum*.

Rosulate annual herb 1.2–7.5 cm high. *Glandular hairs* to *c.* 0.1 mm long, with a red or red-black, discoid or globose head. *Stem* contracted, sometimes to 0.3 cm long, to 1 mm wide, white, simple, glabrous. *Leaves* basal, sometimes loosely rosetted or with a few leaves below rosette, narrowly oblanceolate to spatulate, 2–5 mm long, 0.3–1.3 mm wide, glabrous, apex subacute to obtuse; margins entire. *Scape* solitary, 1.2–7.5 cm long including inflorescence, 0.15–1 mm wide, glabrous, usually with scattered sterile bracts 2–4 mm long (although sometimes absent when branched close to base). *Inflorescence* determinate, monochasially or dichasially cymose, 1–*c.* 100-flowered, flowers rotated 180°; branches glabrous; bracts 1–4 mm long, glabrous; pedicels ± indistinct. *Hypanthium* oblong to linear in outline, 1.5–4.5 mm long, 0.2–0.5 mm wide, glabrous or very sparsely glandular-hairy distally. *Calyx* with 3 free lobes and 2 connate for *c.* half their length, 1–1.7 mm long, sparsely glandular-hairy on margins or sometimes glabrous, subacute to acute. *Corolla* creamy white; lobes paired vertically, with sparse glandular hairs mostly on margins (sometimes restricted to anterior lobes); anterior (upper) lobes ± narrowly obovate to elliptic or cuneiform with a rounded, emarginate or bilobed apex, smaller than the posterior pair, 1–1.2 mm long, 0.3–1 mm wide; posterior (lower) lobes narrowly cuneiform to narrowly obovate with an emarginate or bilobed apex, 1.2–2 mm long, 0.7–1.5 mm wide; tube 0.5–0.7 mm long, shorter than the calyx lobes, usually with sparse glandular hairs near anterior sinus. *Labellum* at edge of sinus or on tube immediately below, narrowly ovate, 0.3–0.5 mm long with a terminal appendage *c.* 0.1 mm long, glabrous. *Throat appendages* 2 (1 on each posterior corolla lobe), creamy yellow, rounded, concave, 0.3–0.5 mm high, glabrous. *Column* 2.5–3.7 mm long, straight when extended, slender above main bend with a second bend well below the anthers, glabrous; anthers 0.3–0.5 mm long, corona absent; stigma sessile, entire. *Capsules* oblong to linear in outline, 3–6 mm long excluding calyx lobes, without raised ribs; halves detaching distally, not recurved. *Seeds* brown, ellipsoid, 0.15–0.2 mm long, ± smooth (areolate), with concave depressions. (Figure 21)

Diagnostic features. A diminutive annual herb with the following key features: a basally-rosetted habit; a glabrous scape to 7.5 cm high (including inflorescence), with scattered sterile bracts 2–4 mm long; an oblong to linear hypanthium (1.5–4.5 mm long) and capsules (3–6 mm long); 3 free and 2 part-connate calyx lobes; creamy white, vertically paired corolla lobes, the lower (posterior) pair larger than the upper ones; 2 yellowish, rounded throat appendages (1 on each lower lobe); and a short column (< 4 mm long).

Specimens examined. NORTHERN TERRITORY: near carpark at start of Baroalba spring walking track, 9 Apr. 1994, *K. Brennan* 2772 (DNA); Kakadu Fire Plot 140, 24 Apr. 1999, *K. Brennan* 3838 (DNA); Nabarlek, outcrops N of lease entrance, 25 Apr. 2008, *K. Brennan* 7560 (BRI, DNA); Arnhem Land, upper catchment of Magela Creek, 11 Apr. 1995, *I.D. Cowie* 5618 & *K. Brennan* (BRI, DNA, PERTH); Mt Brockman, Kakadu National Park, 28 Mar. 1995, *J. Egan* 4548 (DNA); Mt Brockman, Kakadu National Park, 31 Mar. 1995, *J. Egan* 4597 (DNA); Kakadu National Park, S end of Northern Outliers 11.5 km NE of Jabiru Airfield, 18 Mar. 2004, *R.A. Kerrigan* 780 (DNA); Cooper Creek, Nabarlek, 26 Apr. 1979, *M.O. Rankin* 2213 (CANB, DNA).

Spirit material examined. *K. Brennan* 7560 (DNA); Kakadu National Park, near Fire Plot 65, 1 Mar. 2014, *K. Brennan* 10246 (DNA, spirit only); Kakadu National Park, adjacent ‘bottom’ carpark for Gubarra Pools, 20 Mar. 2021, *K. Brennan* 12043 (DNA, spirit only); *R.A. Kerrigan* 780 (DNA); *M.O. Rankin* 2213 (DNA).

Flowering period. March–April.

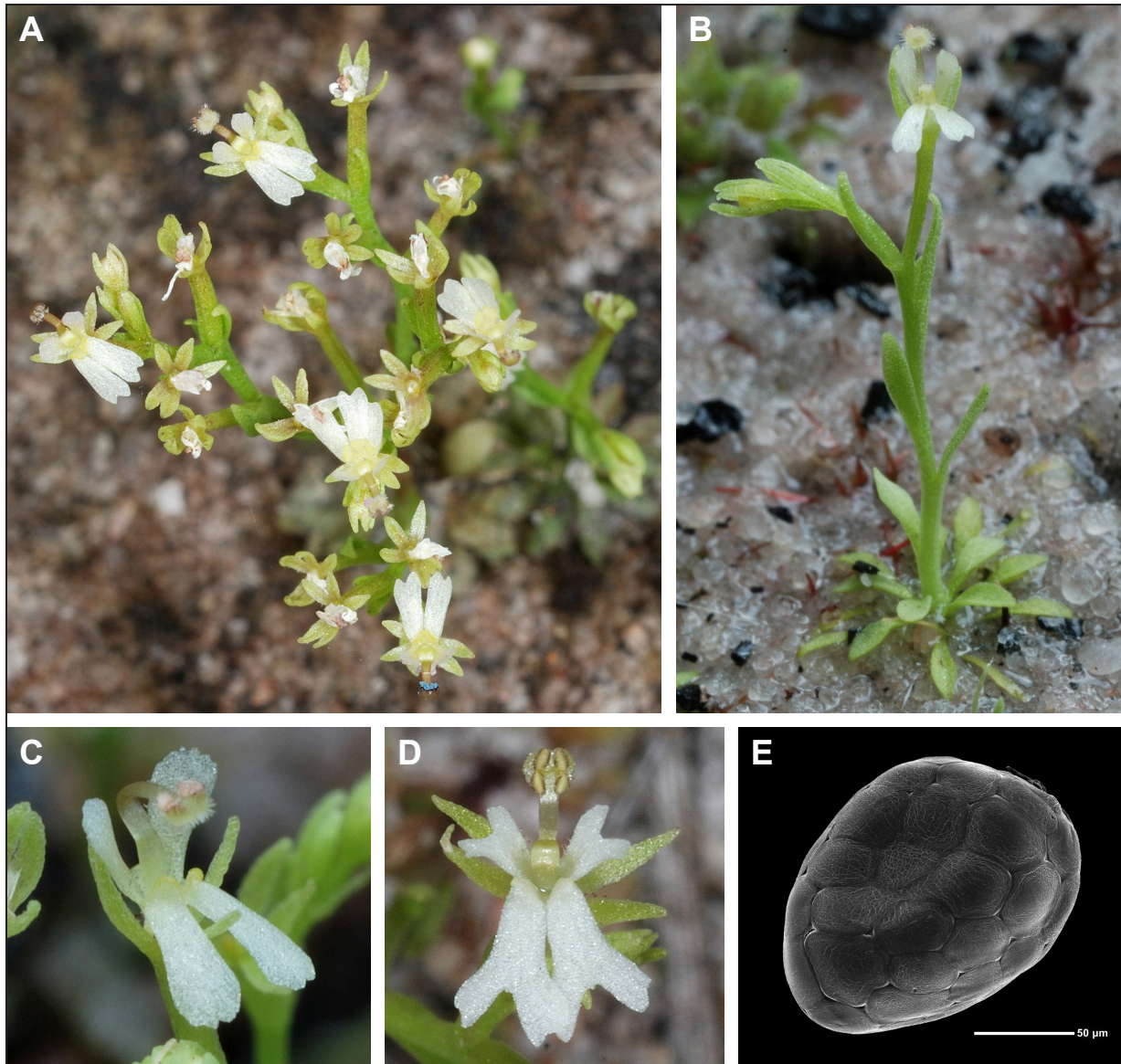


Figure 21. *Stylidium tantillum*. A – a many-flowered plant viewed from above; B – habit, showing the basal leaves and scattered scape bracts; C – flower, with rounded or emarginate corolla lobes and a triggered column. Note the yellowish, rounded throat appendages on the lower corolla lobes; D – flower, with bilobed corolla lobes; E – ± smooth (areolate) seed. Photographs by K. Brennan (A–D) and S.J. Dillon (E) from K. Brennan 10246 (A), K. Brennan 12043 (B, C), K. Brennan 7560 (D) and K. Brennan 2772 (E: DNA).

Distribution and habitat. Endemic to the Northern Territory where it is known from Kakadu National Park and Arnhem Land, from south and south-west of Jabiru to Narbarlek. Grows in shallow, damp sand on sandstone escarpments and pavements or at the base of sandstone outliers, sometimes near creek lines. Found amongst other ephemeral herbs and *Dapsilanthus*, sometimes in association with *Verticordia* and *Banksia*, or in heath with *Micraira pungens*.

Conservation status. Data Deficient according to IUCN criteria but may qualify under a Threatened category with further survey due to its small extent of occurrence and area of occupancy (N. Cuff pers. comm.). Readily overlooked due to its small stature and potentially short flowering period.

Etymology. From the Latin *tantillus* (so little, such a trifle), a reference to its tiny stature.

Vernacular name. Trifling Triggerplant.

Affinities. Akin to *S. exiguum*, with material previously included under that species (Bean 2010); however, the two species have distinct floral morphologies. The corolla is creamy white in *S. tantillum* with narrowly cuneiform to narrowly obovate lower (posterior) lobes that have an emarginate or bilobed apex and a creamy yellow, rounded appendage at the base (Figure 21C, D). In contrast, the corolla of *S. exiguum* has a pure white corolla that has strongly bilobed lower lobes with flared or divergent segments, and red- or pink-tipped throat appendages that connect across the upper and lower lobes (Figure 20D, E). The corolla lobes are also shorter in *S. tantillum* (the longer, posterior pair are 1.2–2 mm long *cf.* 3–3.8 mm in *S. exiguum*) as is the corolla tube (0.5–0.7 mm long *cf.* 1.5–1.7 mm) and column (2.5–3.7 mm long *cf.* 4.2–5.5 mm). The hypanthium and capsules are also mostly shorter (hypanthium 1.5–4.5 mm long *cf.* 4–10 mm in *S. exiguum*; capsules 3–6 mm long *cf.* 7–13 mm).

Stylidium tantillum has also been confused with *S. capillare*, a species with shorter sterile scape bracts (0.7–1.6 mm long *cf.* 2–4 mm in *S. tantillum*), a longer hypanthium (6.5–20 mm long) and column (4.8–7 mm long), longer capsules (11–22 mm long), and morphologically distinct corolla lobes with four, yellow-tipped throat appendages (Figure 7).

Note. A plant has been removed from the holotype, although we do not know when or by whom; an isotype may therefore be extant somewhere.

Stylidium tenerrimum F.Muell., *Fragm.* 1(6): 150 (1859); *Candollea tenerrima* (F.Muell.) F.Muell., *Syst. Census Austral. Pl.*: 86 (1882). *Type:* Between Providence Hill and M'Adam's [MacAdam] Range, Northern Territory, October 1855, *F. Mueller s.n.* (*lecto*, designated by A.R. Bean, *Austrobaileya* 5(4): 636 (2000): MEL 1061526!; *isolecto*: BM 000563903!, K 000741775!, PERTH 09703314! [ex Herbarium Lowricanum; material appropriated from K 000741775]).

Diagnostic features. A weak-stemmed herb with the following key features: a diminutive stature (2.5–12 cm high) with delicate, branched stems 0.2–0.5 mm wide; scattered, narrowly lanceolate to lanceolate or ± elliptic leaves 1–4 mm × 0.2–1 mm; conspicuous pedicels (1–6 mm long); a glabrous hypanthium 3–6 mm long; a glabrous calyx with 3 free and 2 part-connate lobes; a white or very pale pink corolla with discrete red-pink or purplish markings, the lobes laterally paired with each pair fused for less than half their length; ± oblong-linear capsules with distally coherent halves; and densely papillose seeds 0.3–0.5 mm long. (Figure 10)

Specimens examined. WESTERN AUSTRALIA [localities withheld for conservation reasons]: 1 July 2021, *B. Buirchell s.n.* (PERTH); 20 July 2022, *S.A. James SAJ2824*, *B. Anderson*, *A. Markey* & *S. Nulgit* (PERTH).

NORTHERN TERRITORY: 1 km S of the Arnhem Hwy, Annaburroo [Annaburro] Station, 11 July 1984, *H.I. Aston* 2553 (CANB, DNA, MEL *n.v.*, PERTH); Annaburroo Billabong, *c.* 1.8 km SW of Bark Hut, 26 July 2023, *K. Brennan* 13191 (BRI, DNA, PERTH); near lagoon, Daly River area, 26 June 1977, *L.A. Craven* 4412 (CANB, DNA, PERTH); Daly River area, 26 June 1976, *L.A. Craven* 4443 (CANB); 0.7 km W of Drum Creek on the track to Leichhardt Billabong, 18 May 1987, *B.S. Wannan* & *K.L. Wilson* UNSW20291 (UNSW image!).

Conservation status. To be listed as Priority One under Conservation Codes for Western Australian Flora (T. Llorens pers. comm.). Data Deficient according to IUCN criteria in the Northern Territory but may qualify as Near Threatened with further survey (N. Cuff pers. comm.). Sparsely recorded but likely to have been overlooked by collectors due to its diminutive stature. Potentially threatened by feral pig activity.

Typification. The locality on the isoelectotype at K is near Table Hill, which is between Providence Hill and MacAdam Range. This sheet is interpreted as type material since it was collected by Mueller in October 1855 and is comparable to the other duplicates. Some of its packet contents were appropriated and incorporated into Herbarium Lowricanum, presumably while the specimen was on loan from K to

PERTH. Herbarium Lowricanum was bequeathed to PERTH following Lowrie's passing in 2021 and is gradually being processed and incorporated; the type material of *S. tenerrimum* is one of a number of stolen fragments and specimens that has thus far been unearthed, among them the PERTH duplicate of *S. austrocapense* A.R.Bean (Bean 1999b; PERTH 09593381) and floral fragments from the holotype of *S. ferricola* Wege (PERTH 09549862). It is unclear whether further appropriated type material will be discovered.

Notes. A collection made in 1984 from Annaburro Station in the Northern Territory (*H.I. Aston 2553*) was examined at DNA in 2019 and initially thought to represent a novel species within *S.* sect. *Alsinoida* on account of its diminutive habit with slender stems, distinctly pedicellate flowers, and a white corolla with discrete red-pink or purplish markings; however, re-examination of the type of *S. tenerrimum* and Mueller's (1859) description—'corolla alba, lobis omnibus macula sanguinea signatus' [corolla white, the lobes all marked blood-red]—has revealed this anomalous collection to be an excellent match for this species. Two comparable collections have recently been made from Charnley River – Artesian Range Wildlife Sanctuary in the west Kimberley and the Annaburro population relocated, with photographs from both areas matching one another and the protologue. Additional collections from the Daly River area were recently unearthed at CANB, and a collection at UNSW from Kakadu confirmed following examination of a specimen image.

Stylidium tenerrimum grows amongst herbs in damp sand on floodplains near billabongs or semi-permanent lakes. *Stylidium evolutum* has been reinstated to accommodate populations from the Darwin Coastal bioregion mistakenly referred to *S. tenerrimum* (refer to the comparative notes under that species).

Stylidium torquatum* Wege & Brennan, *sp. nov.

Type: Shoal Bay Conservation Reserve, Gunn Point Road, c. 5 km north of Howard River bridge, Northern Territory, 25 June 2023, *A.T. Webb 78 & K. Brennan* (*holo:* DNA D0290061; *iso:* BRI, CANB, MEL, PERTH).

Weak-stemmed *annual herb* 10–45 cm high. *Glandular hairs* 0.1–0.2 mm long, with a red or red-black, discoid or globose head. *Stem* scapiform, sometimes a little fleshy towards base, 10–45 cm long including inflorescence, 0.7–2.5 mm wide, green with a reddish base, glabrous. *Leaves* bract-like, ± *evenly scattered on stem*, sometimes rotting if submerged in water, adpressed or sometimes prorext towards base, narrowly ovate to narrowly lanceolate, 1–3.5 mm long, 0.3–0.8 mm wide, glabrous; apex obtuse to somewhat truncate; margins entire. *Scape* absent. *Inflorescence* determinate, monochasially cymose, (3–)9–c. 50-flowered, flowers rotated 180°; branches glabrous; bracts 1.5–3.5 mm long, glabrous or with a few glandular hairs; pedicels ± indistinct. *Hypanthium* ± linear in outline, 6–20 mm long, 0.3–0.7 mm wide, glandular-hairy distally. *Calyx* with 3 free lobes and 2 connate for more than half of length, 1.8–3 mm long, glandular-hairy on margins and usually near base, apex obtuse. *Corolla* mauve-pink or deep pink with white towards base of lobes, creamy yellow abaxially; lobes paired vertically, sparsely glandular-hairy abaxially (mostly on anterior lobes); anterior (upper) lobes cuneiform with an emarginate to shallowly bilobed apex, smaller than the posterior pair, 1.3–2.2 mm long, 0.6–1.5 mm wide; posterior (lower) lobes free to top of tube or more often basally connate for c. 0.2–0.5 mm, obovate with a bilobed apex, 3–5 mm long, 1.5–3 mm wide; tube 2–3 mm long, c. equal to or just longer than the calyx lobes, sparsely glandular-hairy near anterior sinus. *Labellum* on outside of corolla tube, narrowly ovate, 0.5–0.9 mm long with a terminal appendage 0.2–0.5 mm long, glabrous. *Throat appendages* basally connate, ± *semi-circular* and somewhat irregularly lobed, predominantly dark purple or purple-pink (occasionally with the anterior-most lobe red), 0.2–0.7 mm high, glabrous. *Column* 7–9.5 mm long, straight when extended, with raised margins above the main bend and a second bend well below the anthers, glabrous; anther locules 0.5–0.9 mm long, corona present; stigma sessile, entire. *Capsules* ± linear in outline, 9–20 mm long excluding calyx lobes, halves coherent distally. *Seeds* brown, ± ellipsoid, 0.15–0.2 mm long, colliculate with concave depressions. (Figure 22)

Diagnostic features. A weak-stemmed annual herb with the following key features: bract-like leaves 1–3 mm long, ± evenly scattered along a scape-like stem; a ± linear hypanthium with glandular hairs

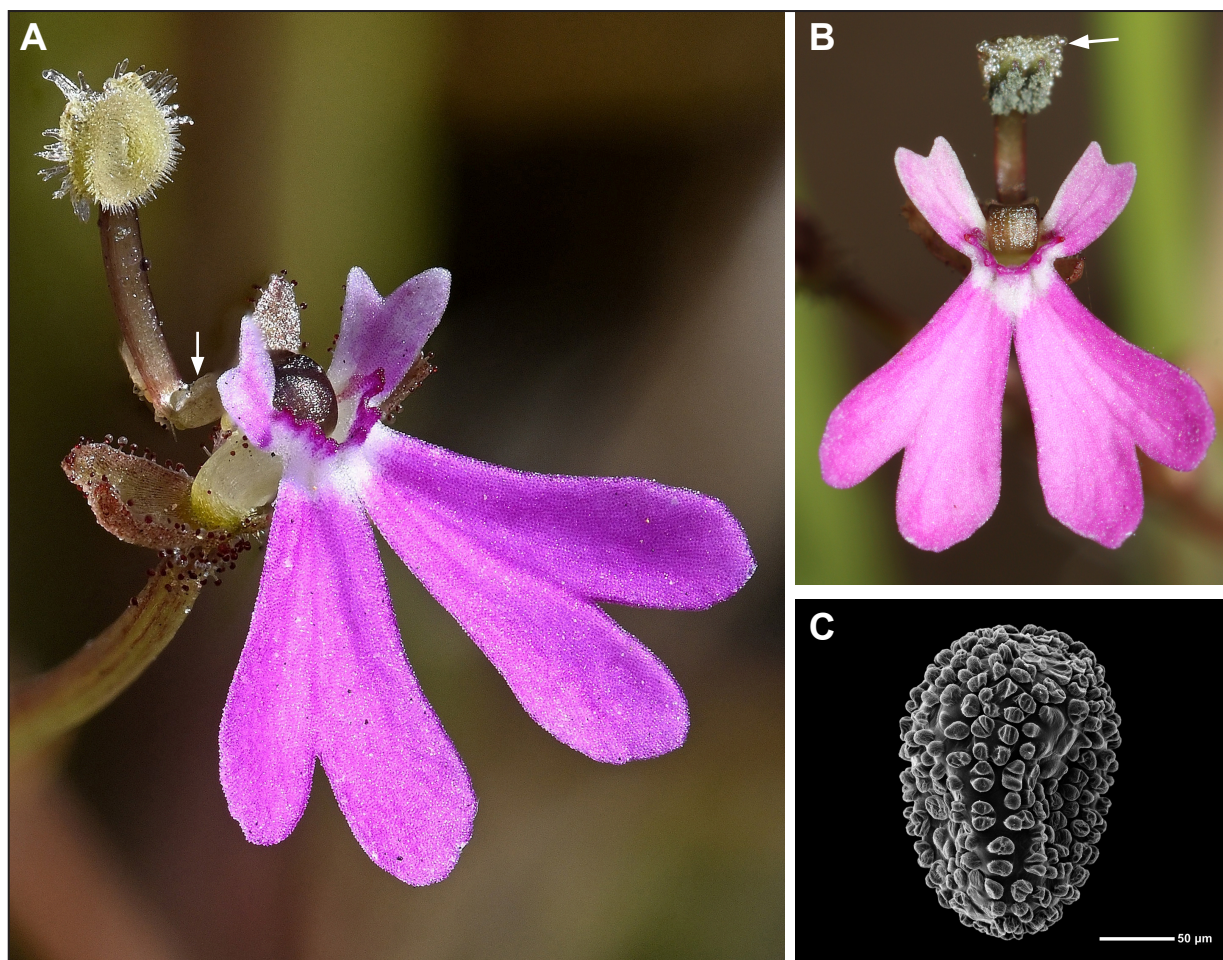


Figure 22. *Stylidium torquatum*. A – flower, showing the emarginate upper corolla lobes, bilobed and basally connate lower lobes, dark purple-pink throat appendages, and raised margins of the column above the main bend (arrow); B – flower, showing the hairs around the anthers (arrow); C – colliculate seed. Photographs by K. Brennan (A), J.A. Wege (B) and S.J. Dillon (C) from A. Webb 78 & K. Brennan (A, B) and N.J. Cuff 57 & I.D. Cowie (C: DNA).

restricted to the distal end; 3 free and 2 part-connate calyx lobes with glandular-hairy margins; mauve-pink or deep pink, vertically paired corolla lobes with a white base, the upper (anterior) pair smaller than the lower ones and with an emarginate apex, the lower pair bilobed and basally connate or free to the top of the corolla tube; dark purple or purple-pink, basally connate and somewhat irregularly lobed throat appendages; a 7–9.5 mm long column with raised margins above the main bend and a corona (i.e. hairs around the anthers); and colliculate seeds.

Specimens examined. NORTHERN TERRITORY: Elizabeth Valley area, S off Noonamah Rd off Alvertly Rd, 3 July 2022, K. Brennan 12881 (DNA, PERTH); Berry Springs, 2 km E t/o on road to Darwin water supply dam, 26 June 1977, S. Carlquist 15195 (CANB, DNA, NSW, RSA); Churcher Wetland Reserve, central area, 19 Aug. 2014, N.J. Cuff 57 & I.D. Cowie (DNA); Sunday Creek, Arnhem Hwy, 20 Aug. 2018, N.J. Cuff 754 (DNA); access to mangrove off end of Gulnare Rd, Elizabeth River, 28 Mar. 1995, D. van Kerckhof 36 (DNA); Gunn Point, 1 Aug. 2018, D.L. Lewis 3200 (DNA); Noonamah, Jenkins Rd, 13 July 2008, D.E. Murfet 6066 (AD, DNA); Gunn Point Rd, c. 6 km from Howard River, 13 July 2008, D.E. Murfet 6088 (AD, DNA); 4 km E of Alligator River, 8 Apr. 2009, D.E. Murfet 6486 & A. Lowrie (AD); Berry Spring Reserve, 18 May 1977, M.O. Parker 852 (CANB, DNA); Berry Springs, 27 Apr. 1978, M.O. Rankin 1217 (DNA); Humpty Doo, NE of Arnhem Hwy, track off Trippe Rd, 18 May 2005, B. Wirf 179 & D.L.W. Low Cho (DNA).

Spirit material examined. K. Brennan 12881 (DNA); M. Parker 852 (DNA); A.T. Webb 78 & K. Brennan (DNA).

Flowering period. (March–) May–August.

Distribution and habitat. Endemic to the Northern Territory where it has been collected from the greater Darwin area, although records on *iNaturalist* indicate a broader distribution that includes Kakadu National Park (<https://inaturalist.ala.org.au/observations/168471057> [accessed 23 February 2024]). Grows amongst grassy tussocks in damp sand or organic black hydrosol on alluvial plains, in open woodland with *Lophostemon lactifluus*, *Melaleuca nervosa*, *M. viridiflora* or *Grevillea pteridifolia*, often with *Eriachne burkittii*.

Conservation status. Data Deficient according to IUCN criteria although highly likely to qualify as a category of conservation significance with further survey given the threats across much of its distribution (N. Cuff pers. comm.).

Etymology. From the Latin *torquatus* (adorned with a necklace), a reference to the appendages at the base of the corolla lobes.

Vernacular name. Necklace Triggerplant.

Affinities. Most specimens of *S. torquatum* were previously placed under *S. fissilobum* (Figure 6). *Stylidium torquatum* can be readily separated from this species by its dark-tipped, irregularly lobed throat appendages (*cf.* throat bearing orange callosities in *S. fissilobum*), colliculate rather than \pm smooth (areolate) seeds, and raised margins above the main bend of the column (*cf.* small lateral lobes).

Stylidium torquatum could be confused with *S. diffusum*, a species with a somewhat similar corolla and throat appendage morphology (Figure 5F) and comparable seeds (Figure 2G); however, *S. diffusum* has mostly longer leaves (2–12 mm long *cf.* 1–3.5 mm in *S. torquatum*) that are more closely spaced toward the base of plant (*cf.* \pm evenly spaced), and a shorter column (3–5.5 mm long *cf.* 7–9.5 mm) that is slender above the main bend (i.e. without the raised margins) and lacks hairs around the anthers. *Stylidium diffusum* also has a mostly smaller corolla, with anterior (upper) lobes that are 0.5–1.2 mm long (*cf.* 1.3–2.2 mm in *S. torquatum*) and posterior (lower) lobes that are 1.5–3 mm long (*cf.* 3–5 mm).

Although similar in habit and seed morphology, *S. torquatum* and *S. brennanianum* are unlikely to be confused due to their geographic disjunction and the differences in the shape and colour of the corolla and throat appendages (compare Figure 5A–C with Figure 22A, B). *Stylidium torquatum* usually has a longer column than *S. brennanianum* (7–9.5 mm long *cf.* 4.8–7 mm).

Notes. Several populations of uncertain identification from Kakadu National Park have affinity to *S. torquatum* but have strongly bilobed upper corolla segments (*cf.* emarginate in *S. torquatum*), morphologically distinct throat appendages (a mixture of dark pink and orange protuberances that do not form a continuous ridge across the lower corolla lobes, and red (rather than translucent) hairs at the tip of the column. These collections have been annotated at BRI, CANB and DNA as *S. sp. (aff. S. torquatum)*; recent research has enabled their taxonomic resolution as a distinct species (see Wege & Brennan 2024).

Stylidium tremendum Wege, M.D.Barrett & R.L.Barrett, *sp. nov.*

Type: northern Prince Regent National Park, 14.9 km south-south-east of Mt Brookes, Kimberley region, Western Australia, 25 April 2023, *M.D. Barrett* MDB 6356, *A. Spiridis* & *D. Chemello* (*holo:* PERTH 09596836; *iso:* BRI, DNA).

Erect annual herb (3.5–)8–32 cm high. *Glandular hairs* 0.1–0.3 mm long, with a red or red-black, discoid or globose head. *Stem* 2–23 cm long, 0.4–2.2 mm wide, straw-brown or reddish, simple or more rarely branched, glabrous. *Leaves* in a loose terminal rosette and usually sparsely scattered on stem below, with an elliptic, orbicular to suborbicular, ovate or obovate lamina, 5–65 mm long including a

slender petiole, 3–28 mm wide, glabrous, apex rounded or obtuse; margins entire, sometimes finely and somewhat irregularly hyaline. *Scapes* 1–6 per plant, 5–22 cm long including inflorescence, 0.3–1 mm wide, glandular-hairy (sometimes sparsely so towards base). *Inflorescence* determinate, monochasially or dichasially cymose, *c.* 3–21-flowered, flowers rotated 180°; branches glandular-hairy; bracts 1–4 mm long, glabrous or sparsely glandular-hairy; pedicels indistinct. *Hypanthium* linear in outline, 9–25 mm long, 0.4–0.7 mm wide, glandular-hairy. *Calyx lobes* with 3 free and 2 connate to near apex, 2–4.5 mm long, glandular-hairy, apex obtuse. *Corolla* magenta or mauve-pink, white abaxially; lobes paired vertically, sparsely glandular-hairy abaxially; anterior (upper) lobes obovate with a rounded or scarcely emarginate apex, smaller than the posterior pair, (1.5–)3–4.8 mm long, 1.5–3 mm wide; posterior (lower) lobes narrowly obovate to obovate with an emarginate or shallowly bilobed apex (segments not or very rarely divergent), (2.8–)4–9 mm long, 1.5–3.5 mm wide; tube 3–5.5 mm long, longer than the calyx lobes, sparsely glandular-hairy near anterior sinus. *Labellum* at base of anterior sinus or on outer wall of corolla tube, elliptic to narrowly ovate, glabrous or with the odd glandular hair, 0.7–1.1 mm long usually with a terminal appendage *c.* 0.1–0.3 mm long. *Throat appendages* 4 (1 on each corolla lobe), magenta or mauve-pink, free or basally connate across each upper and lower corolla lobe, emarginate or obtuse to rounded, 0.2–0.5 mm high, scarcely papillose. *Column* (9–)12–18 mm long, straight when extended, slightly broadened above main bend with a prominent hinge-like second bend well below the anthers, glabrous; anther locules 0.8–1.1 mm long, corona absent; stigma sessile, entire. *Capsules* linear in outline, 13–26 mm long excluding calyx lobes, without ribs; halves detaching distally, usually recurved. *Seeds* brown, ellipsoid or ± ovoid, 0.2–0.25 mm long, ± smooth (areolate), often with concave depressions. (Figure 17)

Diagnostic features. An erect annual herb with the following key features: broad, petiolate leaves in a loose terminal rosette and usually also scattered on the stem below; glandular hairs on the scape and inflorescence including the calyces; calyx with 3 free lobes and 2 connate for more than half their length; magenta or mauve-pink, vertically paired corolla lobes with a white undersurface, the upper (anterior) pair smaller than the lower pair with a rounded or emarginate apex, the lower (posterior) pair emarginate to shallowly bilobed and free to the top of the tube; 4 magenta or mauve-pink throat appendages; a long (3–5.5 mm) corolla tube that is exerted beyond the calyx lobes; a long column (usually 12–18 mm long, although rarely as short as 9 mm) that is slightly broadened above the main bend with a hinge-like second bend well below the anthers; and linear capsules with seeds that have prominent partitions on the surface.

Selected specimens. WESTERN AUSTRALIA: Grevillea Gorge, Beverley Springs Station, 31 May 1992, *M.D. Barrett* MDB 8 (BRI, DNA, PERTH); mainland 8.3 km SE of Gertrude Cove on Kiska Island, N of Roe River mouth, West Kimberley, 23 Apr. 2008, *M.D. Barrett* MDB 1978 & *R.L. Barrett* (BRI, CANB, DNA, MEL, PERTH); 9 km S of new Theda Station Homestead on Loonjool Creek, north Kimberley, 28 Apr. 2008, *M.D. Barrett* MDB 2179 & *R.L. Barrett* (CANB, DNA, PERTH); Grevillea Gorge in the Synnot Range, 25 km NW of Beverley Springs Homestead, 23 Apr. 1993, *R.L. Barrett* 603 (PERTH); SW of Changoola Creek, Doongan Station, E of Gibb River–Kalumburu road, N Kimberley, 23 May 2009, *R.L. Barrett* RLB 5717 (PERTH); 6 km SE of King Edward River on old Mitchell River Rd, 31.2 km NW of Doongan Homestead, 18 May 2011, *R.L. Barrett* RLB 7284 (PERTH); Jack’s Melaleuca Wetland site, *c.* 20 km N of Doongan Station Homestead, 3 June 2012, *R.L. Barrett* RLB 7619 (BRI, CANB, DNA, PERTH); Bachsten Creek upper gorge at base of waterfalls, 11 July 2005, *C. Bugden*, *D. Clark* & *T. Whiteway* CDT 1 (PERTH); Prince [King] Edward River, Amax Road Crossing, 2 June 1971, *N. Byrnes* 2327 (CANB, DNA, PERTH); 1.5 km SE of Island, Charnley River, 9 km W of Synnot Creek, 14 June 1994, *D.J. Edinger* 889 (BRI, PERTH); Galvans Gorge, ‘Mt Barnett’, 3 June 1982, *S. Jacobs* 4397 (NSW); upper reaches of Hunter River, W Kimberley coast, 28 May 1996, *K.F. Kenneally* 11664 (CANB, PERTH); King Edward River crossing, 24 June 1993, *A. Lowrie* 758 (PERTH); Mount Hart Station, 14 June 2002, *B.S. Wannan* 2477 (BRI, PERTH).

Spirit material examined. *K.F. Kenneally* 11664 (PERTH). Flowers reconstituted from *M.D. Barrett* MDB 6356, *A. Spiridis* & *D. Chemello* (PERTH); *R.L. Barrett* RLB 7619 (PERTH).

Flowering period. March–August.

Distribution and habitat. Endemic to Western Australia where it has been mostly recorded from the Northern Kimberley bioregion including Prince Regent National Park and Charnley River – Artesian Range Wildlife Sanctuary, with a single record from the Central Kimberley near Moll Gorge. Favours herbfields and moss beds in seepage areas associated with sandstone, especially rock overhangs, cliff faces and gorge walls, sometimes growing near waterfalls. Also recorded growing amongst boulders or in steep rocky creeklines in open woodland with dense grasses.

Conservation status. Locally common at a number of sites. Not considered to be under threat.

Etymology. From the Latin *tremendus* (something to be trembled at, large), a reference to the column (from the insect's perspective).

Vernacular name. Tremendous Triggerplant.

Affinities. Some specimens of *S. tremendum* were assigned to *S. notabile* A.R.Bean (Western Australian Herbarium 1998–), a species with a similarly long column that is now known to be endemic to Kakadu National Park and West Arnhem in the Northern Territory. *Stylidium tremendum* can be distinguished by its lower (posterior) corolla lobes, which are free to the top of the tube (*cf.* basally connate in *S. notabile*), the absence of hairs (a corona) around the anthers, and \pm smooth (areolate) seeds (*cf.* colliculate; compare Figure 17 with Figure 23). Both species have four throat appendages; however, their morphology is distinct: the pair of winged ridges that extend into the corolla tube from the base of the lower corolla lobes in *S. notabile* are absent in *S. tremendum* as are the small callosities in the sinus of each anterior and posterior corolla lobe.

Stylidium tremendum is closely allied to *S. muscicola* and *S. modicum* and can co-occur with either species (but all three species have never been observed growing together at the same site). It can usually be separated from both species by its longer column, which is mostly 12–18 mm long (*cf.* 5.5–8.5 mm in *S. muscicola* and 9–12 mm in *S. modicum*) although can be as short as 9 mm at sites where it co-occurs with *S. muscicola* (e.g. *R.L. Barrett* RLB 2346 & *A.N. Start*: PERTH). It also has a white rather than yellowish corolla lobe undersurface, and magenta or mauve-pink (*cf.* yellow or mostly yellow) throat appendages that are morphologically distinct (see Figure 16 and Figure 17). *Stylidium tremendum* can be further differentiated from *S. muscicola* by its mostly longer corolla tube (3–5.5 mm long *cf.* 2–3 mm) and larger anther locules (0.8–1.1 mm long *cf.* 0.4–0.7 mm), and usually by its larger corolla lobes (upper pair mostly 3–4.8 mm long *cf.* 1.2–2.5 mm long; lower pair mostly 4–9 mm *cf.* 2.2–4 mm long). The apex of the lower (posterior) corolla lobes is often helpful in separating *S. tremendum* from *S. modicum* (usually emarginate or bilobed and without divergent segments *cf.* usually bilobed with divergent segments in *S. modicum*, but apparently with rare exceptions in both species).



Figure 23. *Stylidium notabile*. A, B – flowers, showing the basally connate lower corolla lobes; C – faintly colliculate seed. Photographs by K. Brennan (A, B) and S.J. Dillon (C) from *K. Brennan* 8361 (A), *K. Brennan* 3171 (B) and *K. Brennan* 10089 (C: DNA).

Stylidium tremendum is also potentially confused with *S. willingii*, a species that has a shorter column (5–7 mm long) with small, lateral lobes immediately above the main bend, and 6 or 8, basally connate throat appendages that are mostly yellow (or sometimes with the uppermost appendages red-pink).

Stylidium trichopodum F.Muell., *Fragm.* 10(85): 86 (1876). *Candollea trichopoda* (F.Muell.) F.Muell., *Syst. Census Austral. Pl.*: 86 (1882). *Type*: Etheridge River [Yeldham Creek], Queensland, *s. dat.*, *W.E. de M. Armit* 622 (*lecto*, here designated: MEL 716064!; *isolecto* [numbered]: MEL 2260465!; *isolecto* [unnumbered]: BM 000645726!, K 000060896!, M 0175778!, MEL 2260466!, MEL 2260467!, WU 0034236!, WU 0034237!).

Typification. Mueller had ample material of this north Queensland species at his disposal, distributing duplicates to several herbaria. The designated lectotype was retained at the National Herbarium of Victoria and is annotated by Mueller with the species name and some diagnostic information. The unnumbered sheets are interpreted here as type material.

Stylidium uliginosum Sw. ex Willd., *Sp. Pl.* 4: 147 (1805); O. Swartz, *Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin* 1: 52, t. II, Figure 4 (1807); *Candollea uliginosa* (Sw. ex Willd.) F.Muell., *Syst. Census Austral. Pl.* 86 (1882). *Type*: Ceylon, *s. dat.*, *J.G. Koenig s.n.* (*holo*: B-W 17045 -01 0 image! [collector incorrectly given as Roestel]; *iso*: BM 000563902!, S-G-5882!).

Stylidium tenerum Spreng., *Syst. Veg.* Edn. 16, 3: 749 (1826); *Stylidium tenellum* R.Br., *Prodr. Fl. Nov. Holland.* 571 (1810), *nom. illeg. non* Sw. ex Willd., *Sp. Pl.* 4(1): 146 (1805). *Type*: East Coast Shoal water Bay [Queensland], 6 August 1802, *R. Brown s.n.* [Bennett no. 2599] (*lecto*, designated by J.A. Wege, *Nuytsia* 28: 245 (2017): BM 000563897!; *isolecto*: BM 000563908!, E 00279223!, K 000060568!, K 000060570!, MEL 1061494!).

Stylidium sinicum Hance in W.G. Walpers, *Ann. Bot. Syst.* 2(6): 1030 (1852). *Type*: ‘Hab. in humidis ins. Hong-Kong Chinensium’ (*n.v.*).

Notes. *Stylidium tenerum* was considered a synonym of *S. uliginosum* by Bentham (1868) and Mildbraed (1908) but was reinstated by Bean (2000: 600), who applied the name to specimens from Australia and Papua New Guinea. He distinguished it from *S. uliginosum* (from south-east Asia) by the presence of a posterior corolla sinus and small throat appendages at the base of the corolla lobes (both considered absent in *S. uliginosum*, although photographs and flowers preserved in spirit were not available for examination). Both species were otherwise found to be comparable in terms of vegetative, floral and fruiting characteristics (Bean 2000). The posterior corolla sinus (situated between the lower corolla lobes) and throat appendages are features that can be very difficult if not impossible to discern on pressed material, even more so in this instance given the small corolla (with lobes to 2 mm long). Photographs of *S. uliginosum* have since become available for study including from Hong Kong (Hong Kong Herbarium 2021) revealing the presence of a posterior corolla sinus and a corolla shape that is comparable to Australian populations (e.g. Figure 20G, H), with descriptions of material from Hong Kong and mainland China noting the presence of throat appendages (Yip & Au 2009; Hong & Wege 2011). Additional photographs from Hong Kong, Vietnam and mainland China that are available on *iNaturalist* (e.g. <https://www.inaturalist.org/observations/196346633>, <https://www.inaturalist.org/observations/151121547> and <https://www.inaturalist.org/observations/113257850> [accessed 9 August 2024]) also confirm the presence of a posterior corolla sinus and throat appendages.

In the absence of any morphological features to support a taxonomic distinction, *S. tenerum* is returned herein to synonymy under *S. uliginosum*.

Typification. We have not located type material of *S. sinicum*, which may no longer be extant: Staffleu and Cowan (1979: 42) suggest that Hance lost his books and herbarium during the burning of the foreign factories at Canton in December 1884. That said, a specimen of *S. uliginosum* from Hance’s Herbarium

(n. 887), received by BM in 1887, bears the collection date 25 December 1854, which is before the factory fires but after *S. sinicum* was described. There are duplicates of this gathering at FI and W, and possibly at CGE.

Stylidium youwanjela M.D.Barrett, R.L.Barrett & Wege, *sp. nov.*

Type: near Youwanjela Creek, Prince Regent Nature Reserve, Western Australia [precise locality withheld for conservation reasons], 30 March 2010, *R.L. Barrett* RLB 6865 & *M.D. Barrett* (*holo:* PERTH 09617779; *iso:* BRI, CANB, DNA).

Rosulate *annual herb* 2–11 cm high. *Glandular hairs* *c.* 0.1–0.15 mm long, with a red or red-black, discoid or globose head. *Stem* contracted. *Leaves* basal, narrowly oblanceolate to oblanceolate, 1–5.5 mm long, 0.4–1.5 mm wide, glabrous, apex obtuse; margins entire. *Scapes* 1 or sometimes 2 per plant, 2–11 cm long including inflorescence, 0.2–0.7 mm wide, glabrous, with scattered sterile bracts 0.5–1.8 mm long. *Inflorescence* determinate, monochasially cymose, 1–16-flowered, flowers rotated 180°; branches glabrous; bracts 0.7–2 mm long, glabrous; pedicels ± indistinct. *Hypanthium* linear in outline, 5–13 mm long, 0.3–0.6 mm wide, glandular-hairy distally. *Calyx lobes* with 3 basally connate and 2 connate for more than half their length, 1.2–2 mm long, sparsely glandular-hairy on margins and sometimes towards base, apex acute. *Corolla* pale mauve pink or sometimes with white upper lobes, pale yellowish abaxially; lobes paired vertically, sparsely glandular-hairy with hairs mostly towards base of lobes or on margins of anterior lobes; anterior (upper) lobes obovate with a bilobed apex (segments of unequal width), a little smaller than the posterior pair, 1.7–3 mm long, 1.5–2.8 mm wide; posterior (lower) lobes ± obovate with a flared, bilobed apex (segments of unequal or subequal width and somewhat divergent), 2–3.5 mm long, 1.9–3.2 mm wide; tube 1.5–2.5 mm long, *c.* equal to or a little longer than the calyx lobes, sparsely glandular hairy near anterior sinus. *Labellum* on corolla tube immediately below sinus or ± at sinus base, narrowly ovate, sparsely glandular-hairy, 0.5–0.7 mm long, sometimes with a terminal appendage *c.* 0.1 mm long. *Throat appendages* 4 (1 on each corolla lobe), basally connate for more than half their length, golden yellow, 0.5–0.8 mm high, thickened, glabrous; lower (posterior) lobes more prominent, with a rounded and recurved apex; anterior (upper) lobes with an obtuse or emarginate and sometimes slightly recurved apex. *Column* 6–7.8 mm long, straight when extended, slender above main bend with a second bend below the anthers, glabrous; anthers 0.5–0.7 mm long, corona absent; stigma sessile, ± entire. *Capsules* linear in outline, 11–16 mm long excluding calyx lobes, without ribs; halves detaching distally, recurved. *Seeds* brown, ellipsoid or globose, 0.15–0.2 mm long, ± smooth (areolate), with concave depressions. (Figure 24)

Diagnostic features. A diminutive annual herb with the following key features: a basal rosette of leaves to *c.* 5.5 mm long; a slender scape with scattered sterile bracts 0.5–1.8 mm long; acute calyx lobes, with 3 basally connate and 2 connate for more than half of length; glandular hairs at the distal end of the hypanthium and on the calyx lobe margins; pale mauve pink corolla lobes (the upper pair sometimes white) with a bilobed apex, the upper (anterior) pair more than half the length of the lower pair and asymmetrically divided, the lower pair free to the top of the corolla tube; 4 golden yellow and basally connate appendages (1 on each corolla lobe), the lower ones very prominent, rounded and recurved; linear capsules with halves detaching distally; and ± smooth (areolate) seeds.

Spirit material examined. *R.L. Barrett* RLB 6865 & *M.D. Barrett* (PERTH).

Flowering period. February–April by inference (the type was collected at the end of March and has both flowers and fruit).

Distribution and habitat. Known from the crest of a single hill in Prince Regent National Park in the Northern Kimberley bioregion, where it grows on shallow sand lenses over sheeting sandstone pavement. Occurs amongst low shrubs of *Calytrix gomphrenoides* and *Acacia froggattii* with *Fimbristylis*, *Cyperus*, *Goodenia*, *Stylidium*, *Utricularia* and *Micraira*.

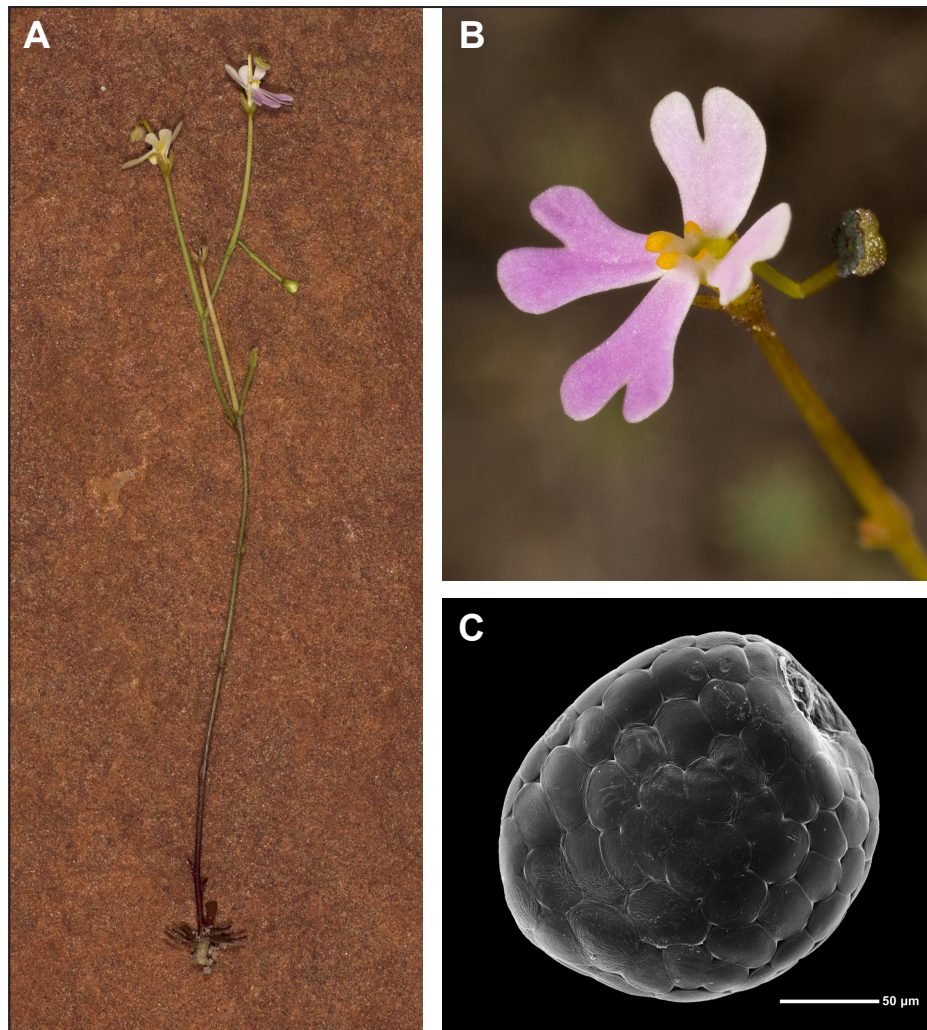


Figure 24. *Stylidium youwanjela*. A – basally rosetted habit with small, scattered bracts on the scape; B – flower, showing the distinctive corolla shape and prominent yellow throat appendages; C – \pm smooth (areolate) seed. Photographs by R.L. Barrett (A, B) and S.J. Dillon (C: PERTH) from R.L. Barrett RLB 6865 & M.D. Barrett.

Conservation status. To be listed as Priority Two under Conservation Codes for Western Australian Flora (T. Llorens pers. comm.). Known from a single locality. Wet season surveys of more than 30 sandstone pavement sites in the general vicinity have not located additional populations of this species, suggesting it may be naturally rare and/or highly localised.

Etymology. Named for Youwanjela Creek, the nearest named place to the type locality. The epithet is formed as a noun in apposition.

Vernacular name. Youwanjela Triggerplant.

Affinities. *Stylidium youwanjela* is morphologically similar to *S. nominatum* Carlquist (Figure 25), a species from the Northern Territory with a comparable habit and prominent, golden yellow throat appendages. Unlike *S. nominatum*, all four corolla lobes are bilobed in *S. youwanjela* (cf. rounded or with the lower lobes emarginate to shallowly bilobed) and the throat appendages are entire and smaller (0.5–0.8 mm high cf. 1.2–1.4 mm high and irregularly dissected in *S. nominatum*). *Stylidium youwanjela* also has shorter sterile scape bracts (1–1.8 mm long cf. 2–5 mm in *S. nominatum*).

Stylidium youwanjela may have closer affinity to *S. capillare* (Figures 2J, 7), with pressed material of the two species very difficult to separate since they differ chiefly in corolla and throat appendage morphology



Figure 25. *Stylidium nominatum*. A, B – flowers, showing the prominent yellow throat appendages and white corolla lobes of \pm equal length and with a rounded, emarginate or shallowly bilobed apex. Note the difference in throat appendages between these two populations; C – \pm smooth (areolate) seed. Photographs by K. Brennan (A, B) and S.J. Dillon (C) from K. Brennan 7978 (A), K. Brennan 11389 (B) and C.R. Dunlop 4884 (C: DNA).

(although both species have four, basally connate appendages). In *S. youwanjela*, the upper corolla lobes are more than half the length of the lower pair and asymmetrically bilobed, and the throat appendages are completely golden yellow, with the lower pair rounded and recurved. In contrast, the upper corolla lobes of *S. capillare* are less than half the length of the lower pair and evenly bilobed, and the throat appendages are white with a yellow, subacute to acute or obtuse apex.

The prominent, rounded throat appendages on the lower corolla lobes of *S. youwanjela* are somewhat reminiscent of those found in *S. divergens* from the Northern Territory; however, *S. divergens* has mostly longer leaves (5–65 mm long) that are usually in a terminal rosette and scattered below on an elongated stem, basally connate lower corolla lobes, hairs around the anthers (a corona), and ribbed capsules with colliculate (Figure 2E) rather than \pm smooth (areolate) seeds.

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