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Stylidium miscellany II: typification of some Sonder names and the description of a new subspecies of *S. uniflorum*

Juliet A. Wege

Western Australian Herbarium, Department of Parks and Wildlife,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
Email: Juliet.Wege@dpaw.wa.gov.au

Abstract

Wege, J.A. *Stylidium* miscellany II: typification of some Sonder names and the description of a new subspecies of *S. uniflorum*. *Nuytsia* 25: 197–208 (2015). A full synonymy is presented for *S. affine* Sond. to include *S. affine* var. *minus* E.Pritz., a name previously treated as a synonym of *S. caricifolium* Lindl. Lectotypes are selected for four species described by Otto Sonder, namely *S. lineatum* Sond., *S. pubigerum* Sond., *S. rupestre* Sond. and *S. uniflorum* Sond. *Stylidium rupestre* f. *abbreviatum* Mildbr., *S. rupestre* f. *congestum* Mildbr., *S. rupestre* f. *uniflorum* Mildbr. and *S. glaucum* var. *brownei* DC. are formally placed into synonymy under *S. rupestre*, with lectotypes designated for *S. rupestre* f. *abbreviatum* and *S. glaucum* var. *brownei*. Revised descriptions are provided for *S. rupestre* and *S. uniflorum*, and *S. uniflorum* subsp. *extensum* Wege is newly described. Putative hybrids between both subspecies of *S. uniflorum* and *S. leptophyllum* DC. are recorded.

Introduction

Following Wege (2010), this paper serves to review the types of several species of *Stylidium* Sw. (Stylidiaceae) endemic to south-western Western Australia prior to completion of a *Flora of Australia* account of the genus, and to describe a new taxon from this region.

Typifications

Stylidium affine Sond., in Lehm., *Pl. Preiss.* 1(3): 371 (1845), *nom. cons.*

Stylidium caricifolium subsp. *affine* (Sond.) Carlquist, *Aliso* 7(1): 56 (1969). *Type*: In confragosis montium continuorum Darling's-range, Perth [Western Australia], September 1841, *L. Preiss* 2291 (*lectotype*: LD, *fide* A. Lowrie *et al.*, *Nuytsia* 12(1): 44 (1998); *isolectotypes*: MEL 2156180!, MEL 2156181!. *Paralectotypes* [residual syntypes]: [Western Australia, 1841,] *J. Drummond* 1: 525 (BM!, G!, K!, MEL 2156182!, MEL 2156183!, P!, W!). Vasse-river [Western Australia], *s. dat.*, *G. Molley s.n.* (*n.v.*).

Stylidium drummondii Graham, *Edinburgh New Philos. J.* 30: 208 (Jan. 1841). *Neotype*: [icon] *Stylidium drummondii* in Maund, *Botanist*: 5: t. 213 (Apr. 1841), *fide* J.A. Wege, *Taxon* 56(2): 613 (2007).

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Stylidium affine var. [published as β] *minus* Sond. in Lehm., *Pl. Preiss.* 1(3): 371 (1845). *Type*: In glareosis sterilibus districtus Hay [Western Australia], November 1840, *L. Preiss s.n.* (*holotype*: MEL 2156117!).

Typification. *Stylidium affine* var. *minus* Sond. was treated as a synonym of *S. caricifolium* by Lowrie *et al.* (1998), although they did not view type material or provide a reasoning for this placement. The holotype, which is part of Sonder's personal herbarium and now at MEL, is a depauperate individual of *S. affine*.

Stylidium lineatum Sond., in Lehm., *Pl. Preiss.* 1(3): 376 (1845). *Candollea lineata* (Sond.) F.Muell., *Syst. Census Austral. Pl.* 86 (1882). *Type citation*: 'In Australasia occidentali legit. cl. Preiss. (Drummond!).' *Type specimens*: Swan River [Western Australia], 1839 [1835–1838], *J. Drummond s.n.* (*lectotype, here designated*: BM 000797705!; *isolectotypes*: ?BM 001041338!, ?CGE [Herb. C.M. Lemann]!, CGE [Herb. J. Lindley]!, ?E!, G-DC!, K 000060689!, ?K 000060690!, K 000355105!, ?M!). *Paralectotype* [*residual syntype*]: Western Australia, *s. dat.*, *L. Preiss s.n.* (MEL *n.v.*, probably stolen, see K. Mair & R.T.M. Pescott, *Taxon* 18(5): 606 (1969)).

[*Stylidium spathulatum auct. non* R.Br.: A.P. de Candolle, *in sched.* (G-DC); J. Lindley, *in sched.* (CGE).]

Typification. Although Sonder cites two gatherings in his protologue of *S. lineatum*, there is no material in his personal herbarium at MEL. I have failed to locate duplicate material of the Preiss gathering despite searches at a number of institutions. This sheet is likely to have been among material misappropriated from the National Herbarium of Victoria in the 1960s: J.H. Willis recorded that the only sheet of *S. lineatum* was stolen in this incident, that it was probably type material, and that it represented 'a serious loss' (Mair & Pescott 1969). Many of the missing specimens were subsequently sent back from the United States of America in poor condition (Mair & Pescott 1970); however, the type of *S. lineatum* was never returned.

I have located a duplicate of *S. lineatum* from Drummond's first unnumbered series that bears Sonder's script. This specimen (BM 00797705), which is designated herein as an appropriate lectotype, is from Shuttleworth's herbarium, which was purchased by BM in 1877 (Maslin & Cowan 1994). The label is mostly written in an unknown hand but bears an annotation in Sonder's script ('Stylidium lineatum Sond.!'). There are a number of additional Drummond *Stylidium* collections at BM that bear Sonder's annotations, although unlike the type of *S. lineatum*, they are usually written on pink rectangular slips (see Wege 2012: 151).

BM 001041338, the CGE sheet from Lemann's herbarium and K 000060690 are all unnumbered and undated Drummond collections and are treated here as possible isolectotypes. The only other Drummond collections of *S. lineatum* that I am aware of are *J. Drummond* 10 (E!) and *J. Drummond* 331 (W!), the latter being a mixed collection with *S. carnosum* Benth. My notes indicate that there is also unnumbered Drummond material at E and M, although I do not have photographic records and, since I am uncertain whether these are dated collections, they are similarly treated as possible isolectotypes.

BM 001041338 is annotated by Bentham as 'Stylidium obovatum nov. sp.', an identification that he subsequently corrected to *S. lineatum*.

Stylidium pubigerum Sond., in Lehm., *Pl. Preiss.* 1(3): 383 (1845). *Candollea pubigera* (Sond.) F.Muell., *Syst. Census Austral. Pl.*: 86 (1882). *Type*: In solo limoso arenoso inter frutices prope Woodbridge, Perth [Western Australia], 14 October 1839, *L. Preiss* 2278 (*lecto, here designated*: MEL 293413!; *isolecto*: BR 0000005423217 image seen, FI!, G 00358839!, G 00358840!, G 00358841!, GOET 011208 image seen, L 0012063 image seen, LD 1745431!, M 0175788!, MEL 293411!, MEL 293412!, MO-797522 image seen, P 00712418!, TCD [as *L. Preiss* 651 *p.p.*], W!). *Paralectotypes* [*residual syntypes*]: Swan River [Western Australia, 1841], *J. Drummond* [1:] 543 (BM 001041318!, E 00279184!, G 00358835!, G 00358836!, K 000060759!, K 000355288!, K 000355293!, MEL 2295042!, OXF!, P 00712423!, P 00313120!, W!); Swan River [Western Australia, 1841], *J. Drummond* [1:] 546 (BM 0001041316!, BM 00104139!, G 00358838!, G 00358841!, K 000355289!, K 000355290!, MEL 2295041!, OXF!, P 00313121!, W!) = *Stylidium* sp. Bindoon (K.F. Kenneally 11405), Western Australian Herbarium, in *FloraBase*, http://florabase.dpaw.wa.gov.au/ [accessed 13 July 2015].

Typification. Sonder cites three collections in his protologue, two of which (*Preiss* 2278 and *Drummond* 543) are comparable, possessing an eglandular indumentum on the scapes, pedicels, hypanthia and calyx lobes. The third (*Drummond* 546) represents a distinct taxon, differing most obviously from the former collections in having a mixture of glandular and eglandular hairs on the scapes and pedicels, and has been informally recognised as *S.* sp. Bindoon (K.F. Kenneally 11405) in Western Australia for many years (Western Australian Herbarium 1998–; Paczkowska & Chapman 2000). Lectotypification is therefore necessary to fix the application of the name *S. pubigerum*. *Drummond* 546 does not conform to Sonder's description of *S. pubigerum* in which the scape and inflorescence indumentum are described as eglandular and is therefore excluded from consideration. Interestingly, the sheets of this gathering that were viewed by Sonder (BM 00104139 and MEL 2295041) are both annotated by him as *S. pubigerum* 'β', suggesting that he believed the specimens to be atypical. *Stylidium* sp. Bindoon is to be formally described by A. Lowrie and K.F. Kenneally in a forthcoming account of the *S. piliferum* complex.

There are three sheets of *Preiss* 2278 in Sonder's personal herbarium at MEL plus numerous duplicates at other institutions, including a specimen at LD which has also been annotated by Sonder. There are no specimens of *Drummond* 543 in Sonder's herbarium at MEL or at LD; however, BM 001041318 is annotated by Sonder on a rectangular pink slip. The designated lectotype (a Preiss gathering from Sonder's herbarium) is in agreement with the protologue, is annotated by Sonder with diagnostic information, and includes a packet containing dissected floral material that was used by him to compile his description. The right hand individual on the isolectotype at TCD bears a label in Preiss's script with a collection number of 651 but with a locality statement and collection date consistent with *Preiss* 2278 (the left hand individual). This individual is comparable to the duplicates of *Preiss* 2278 and is treated herein as an isolectotype. McGillivray (1975) noted that Proteaceae collections at TCD may be numbered according to Preiss's original collection series rather than by the *Plantae Preissianae* number and I have recorded this for several species of *Stylidium* (Wege 2011, 2012).

Stylidium rupestre Sond., in Lehm., *Pl. Preiss.* 1(3): 375 (1845). *Candollea rupestris* (Sond.) F.Muell., *Syst. Census Austral. Pl.*: 86 (1882), *nom. illeg. non* Steud., in Lehm., *Pl. Preiss.* 1(2): 275 (1845). *Type*: 'In rupestribus promontorii Cape Riche' [Western Australia], 20 November 1840, *L. Preiss* 2262 (*lectotype, here designated*: MEL 2069474!; *isolectotypes*: G 00358855!, G00358856!, LD 1731731!, P 00712424!).

Stylidium glaucum var. [published as 'ß?'] *brownei* DC., *Prodr.* 7(2): 334 (1839). *Type citation*: 'In Novae Holland. orâ merid. S. glaucum Brown prod. 569.' *Type specimen*: Bay 1 [Lucky Bay, Western Australia,] January 1802, *R. Brown* Bennett No. 2586 (*lectotype, here designated*: BM 000797695!;

isolectotypes: BM 000797694!, K 000060693!, K 000060694!, MEL 293304!).

Stylidium rupestre f. *abbreviatum* Mildbr., in Engl., *Pflanzenr.* IV. 278 (Heft 35): 60 (1908). *Type citation*: 'West-Australien: Ohne Standort (Drummond Ser. V. no. 352!); Distr. Stirling; Plantegenet [*sic*], Südfuss des Toolbrunup, zwischen Gebüsch auf kiesigem, leicht humösem Sand (blühend im Oktober 1901 – Diels n. 4614!).' *Type specimens*: Swan River, [Western Australia, 1847–1849,] *J. Drummond* 5: 352 (*lectotype, here designated*: W!; *isolectotypes*: BM 000894092!, FI 006827!, G 00358857!, G 00358858!, K 000060692!, K 000060695!, MEL 293345!, TCD!). *Paralectotype* [*residual syntype*]: Distr. Stirling; Plantegenet [*sic*], Südfuss des Toolbrunup, October 1901, *L. Diels* 4614 (B *n.v.*, destroyed in WWII).

Stylidium rupestre f. *congestum* Mildbr., in Engl., *Pflanzenr.* IV. 278 (Heft 35): 60 (1908). *Type citation*: 'West-Australien: Distr. Eyre (Maxwell); Cape Riche (A. Moir n. 76)' (*syntypes*: B *n.v.*, destroyed in WWII).

Stylidium rupestre f. *uniflorum* Mildbr., in Engl., *Pflanzenr.* IV. 278 (Heft 35): 60 (1908). *Type citation*: 'West-Australien: Distr. Eyre (Maxwell).' (B *n.v.*, destroyed in WWII).

[*Stylidium glaucum auct. non* (Labill.) Labill.: R.Br., *Prodr. Fl. Nov. Holland.*: 569 (1810).]

Compact, spreading or slender perennial herb 6–25(–45) cm high with *stems* shortly to moderately elongated and a little swollen at the nodes, branched or occasionally unbranched; internodes 0.5–8 cm long, glandular-hairy; stilt roots present. *Glandular trichomes* 0.1–0.3 mm long, with translucent to yellowish stalks and yellow or reddish black turbinoid or discoid heads. *Leaves* in erect to spreading tufts at stem apex and scattered below, narrowly oblanceolate to oblanceolate or spathulate, 0.5–2 cm long, 0.6–4 mm wide, subacute to acute and bearing a small, blunt callus, entire, densely glandular-hairy. *Scapes* 3–22 cm high, 0.3–1 mm wide, glandular-hairy throughout or with hairs restricted to the basal portion, more rarely completely glabrous; sterile bracts absent. *Inflorescence* racemiform, 1–7-flowered; bracts ovate to narrowly ovate, 1–2.5 mm long, acute to obtuse, the margin entire and finely hyaline, the surface glandular-hairy or glabrous; prophylls similar to bracts but smaller; pedicels 3.5–20 mm long, glandular-hairy or glabrous. *Hypanthium* oblong to clavate in outline, *c.* ellipsoid in TS and a little contricted between the locules, 1.3–4 mm long, 0.8–1.7 mm wide, without or with faint longitudinal ridges, glandular-hairy or glabrous. *Calyx lobes* free, *c.* equal in length but with 2 very slightly broader than the remaining 3, 1.8–3.5 mm long, 0.7–1.2 mm wide, subacute to obtuse, the margin entire and finely hyaline, the surface and margin glandular-hairy or glabrous. *Corolla* tube 0.7–1.5 mm long; lobes pale yellow with small red to reddish maroon throat markings, a dark yellow throat and reddish maroon markings on the reverse, paired laterally, glabrous; anterior lobes elliptic to narrowly ovate, somewhat arcuate on anterior side, a little larger than the posterior pair, 3.5–8.5 mm long, 2–4.5 mm wide; posterior lobes elliptic to narrowly ovate, 3.2–8 mm long, 2–3.8 mm wide. *Labellum* reflexed and angled across the calyx, ovate, 0.5–1 mm long with a terminal appendage 0.4–2 mm long and lateral appendages 0.1–0.2 mm long (sometimes reduced to 1 or 2 glandular hairs), labellum otherwise glabrous or with marginal glandular hairs. *Throat appendages* (6)8 (the anterior-most protuberances reduced in size, more rarely absent), arranged in 2 groups of (3)4 separated by a swollen mound, dark golden yellow, irregular and a little swollen at base with the apices subacute to acute, bi- or tri-furcate or more rarely truncate, 0.1–0.7 mm high, tipped with minute glandular hairs. *Column* 9–12.5 mm long, straight when extended but angled at the tip (such that the anthers are oblique or perpendicular to the column axis), glabrous; subtending anther hairs absent; stigma sessile or shortly stalked, entire, globose. *Capsules* clavoid to obloid, 4–5 mm long excluding calyx lobes. *Seeds* brown, 0.4–0.6 mm long, 0.2–0.3 mm wide, surface somewhat rugulose.

Diagnostic features. *Stylidium rupestre* can be distinguished from all other species in the genus by the following combination of characters: a stilted, perennial habit with short, glandular-hairy stems that often branch at the nodes; narrowly oblanceolate to oblanceolate or spathulate leaves which are 0.5–2 cm long and glandular-hairy; a few-flowered, unbranched inflorescence; pale yellow, laterally paired corolla lobes with red or reddish maroon throat markings and reddish maroon markings on the reverse; 6 or 8 irregular throat appendages tipped with minute glandular hairs.

Selected specimens. WESTERN AUSTRALIA: 3 km N of Hopetoun, 16 Sep. 1993, *K. Bremer & M. Gustafsson* 147 (PERTH, UPS); Cape Arid National Park, E of Esperance, 29 Nov. 1971, *R.D. Royce* 9866 (PERTH); Mason Bay Rd, just N of coastal camping ground, SE of Ravensthorpe, 11 Oct. 2007, *J.A. Wege & R. Butcher* JAW 1424 (PERTH); near picnic area, W end of Lucky Bay, Cape Le Grand National Park, 21 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 1000 (CANB, MEL, PERTH); *c.* 200 m from camping area at inlet, Stokes Inlet Rd, Stokes Inlet National Park, 23 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 1008 (MEL, PERTH); just W of Dalyup River crossing on Esperance - Ravensthorpe Rd, 23 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 1003 (MEL, PERTH); 4 km N of Nightwell Rd on Toompup South Rd, S of Ongerup, 28 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 1041 (MEL, PERTH); *c.* 8 km S along Sandalwood Rd from Hassell Hwy, S of Wellstead, 28 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 1046 (CANB, PERTH); S slope of Mt Melville, at lookout near S end of Sandalwood Rd, Cape Riche vicinity, 28 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 1047 (MEL, PERTH); 18 km E on Chillinup Rd from Chester Pass Rd, South Stirling Nature Reserve, 31 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 1066 (CANB, MEL, PERTH); old refuse site off Sandalwood Rd, NW of Cape Riche, 12 Oct. 2011, *J.A. Wege & C. Wilkins* JAW 1865 (CANB, MEL, PERTH); 4.3 km N of Gibson East Rd on Campbell Rd, NE of Gibson, 9 Oct. 2011, *J.A. Wege, C. Wilkins & K.A. Shepherd* JAW 1858 (AD, CANB, MEL, PERTH).

Phenology. Flowers have been recorded from September to December, with peak flowering in October.

Distribution and habitat. *Stylidium rupestre* is restricted to the Esperance Plains bioregion, occurring from Cape Arid National Park to Stirling Range National Park. It grows in sandy clay or clayey loam over granite, sandstone or laterite, on plains, rocky hillsides and headlands, or adjacent to swamps. Associated vegetation is usually mallee woodland, shrubland or heath, or coastal scrub or heath. This species is a disturbance opportunist that can form striking roadside displays.

Conservation status. Reasonably widespread and well represented within the conservation estate.

Chromosome number. James (1979) recorded a count of n = 14 from a population near Esperance (PERTH 03312879).

Common name. Rock Triggerplant (Erickson 1958).

Typification. Sonder (1845) described *S. rupestre* from material gathered by Preiss from Cape Riche. Several duplicates of this collection have been located, of which LD 1731731 and MEL 2069474 were viewed by Sonder. The label on LD 1731731 is written in an unfamiliar script, with the exception of the epithet *rupestre* and the author abbreviation 'S.' which are in Sonder's hand. MEL 2069474, which is from Sonder's personal herbarium, has been annotated by Sonder with diagnostic information and includes a packet containing his dissected floral material; I therefore select this sheet as an appropriate lectotype.

Robert Brown made the first collection of *S. rupestre* from Lucky Bay in 1802 and although he coined the manuscript name *S. annotinum*, he ultimately assigned his collection to *S. glaucum* (Labill.) Labill. This error was detected by de Candolle (1839) who, unlike Brown, had access to type material of *S. glaucum*; however, he did not view Brown's gathering and therefore rather uncertainly placed it under a new name, *S. glaucum* β? *Brownei*. BM 000797695, which bears Brown's field label and annotations, has been designated as a suitable lectotype for de Candolle's name.

Mildbraed (1908) named three infraspecific taxa within *S. rupestre* (f. *abbreviatum*, f. *uniflorum* and f. *congestum*) which were recognised by Erickson (1958), and included in the key to *Stylidium* in Grieve and Blackall (1982), but not formalised on Western Australia's plant census (Western Australian Herbarium 1998–; Paczkowska & Chapman 2000). They are based on characters that are variable both within and between populations of *S. rupestre* and are formally synonymised herein. Two collections are cited by Mildbraed under *S. rupestre* f. *abbreviatum*, one by Drummond and the other by Diels. The latter collection, from the southern foot of Mt Toolbrunup, is no longer extant (Botanical Museum Berlin-Dahlem 2015). I have located numerous duplicates of *J. Drummond* 352, collected as part of his fifth series which included travels from the Stirling Range to Fitzgerald River National Park (George 2009). The specimens are sparingly glandular-hairy along the scape, hypanthium and calyx lobes and are comparable to collections of *S. rupestre* from Cape Riche to the Stirling Range. The duplicate at W has been annotated by Mildbraed and is therefore designated as an appropriate lectotype.

A single Maxwell collection from the Eyre District is cited by Mildbraed under *S. rupestre* f. *uniflorum* and I have not located material that has been annotated by him. Similarly, I have not located annotated material of *S. rupestre* f. *congestum*, which is based on collections by both Maxwell (Eyre District) and Moir. Moir's material is only known from B (George 2009) and is no longer extant (Botanical Museum Berlin-Dahlem 2015). His collection was from the Cape Riche area and it is likely to be referable to the typical form of *S. rupestre*. I have located the following Maxwell collections of *S. rupestre*: K 000355094 (Cape Arid and Cape Paisley), MEL 2259469, MEL 2259470 and MEL 293343 (SW Australia), MEL 2259471, MEL 2259472 and MEL 2259483 (Cape Arid), MEL 293344 (Cape Paisley), and MEL 2259476 and BM (Salt River). It is likely that some of these collections are type material; however, I cannot confidently assign any of them to either of Mildbraed's forms.

Affinities. *Stylidium rupestre* is most likely to be confused with *S. lithophilum* Wege and *S. spathulatum* R.Br. subsp. *meridionale* Wege: refer to Wege (2014) and Wege (2010) respectively for comparative comments.

Notes. Corolla morphology in *S. rupestre* is comparable across its range; however, the habit can be variable both within and between populations depending on the length of the stems and the degree to which they branch, the height of the scapes and the flower number, and the size and shape of the leaves. This variation, which can result in individuals of contrasting appearance, is influenced, in part, by the age of an individual, the microhabitat (e.g. whether growing in the open or under dense shrubbery) and seasonal conditions, and is not taxonomically significant.

The distribution of glandular hairs on the scapes and floral structures is also variable within *S. rupestre*. In the typical form (populations from the Cape Riche area and Boxwood Hill area), glandular hairs are present throughout the length of the scapes and on the pedicels, floral bracts, prophylls, hypanthia and calyx lobes. Populations in the Stirling Range vicinity are similar to the typical form but the hairs on the calyx are restricted to the margins of the lobes and are absent on the hypanthia. In contrast, the hairs in populations east of Esperance are restricted to the base of the scapes or are absent, absent (rarely present) on the pedicels, and absent from the bracts and prophylls, hypanthia and calyx lobes.

In populations between Cape Riche and Esperance, the hairs are restricted to the lower portion of the scape, whilst the pedicels, bracts, prophylls, hypanthia and calyx lobes are either glabrous or sparsely glandular-hairy, with some subtle intra-population variation evident. I am unable to partition this indumentum variation into meaningful taxa and therefore maintain a broad species concept. Mildbraed (1908) named a number of formas of *S. rupestre* which are formally synonymised herein.

Stylidium uniflorum Sond., in Lehm., *Pl. Preiss.* 1(3): 381 (1845). *Candollea uniflora* (Sond.) F.Muell., *Syst. Census Austral. Pl.*: 86 (1882). *Type*: In glareosis sterilibus districtus Hay [Western Australia], 6 November 1840, *L. Preiss* 2253 (*lectotype, here designated*: MEL 293414!; *isolectotypes*: FI!, G 00358893!, G 00358894!, LD 1746583!, MEL 293415!, MEL 293416!, P 00712436!, W!).

Prostrate, stoloniferous perennial herb 3–12 cm high with *stems* compact, nodiferous and shallowly or partially buried, more rarely elongated between the nodes and above ground, glabrous; stilt roots usually absent (rarely present). *Glandular trichomes* absent; eglandular trichomes multicellular, biseriate, 0.2–1.5 mm long. *Leaves* in basal tufts or in tufts and scattered on the stem, linear, 0.8–9 cm long, 0.4–1.2 mm wide, with an apical mucro 0.1–0.6 mm long, the margin hyaline and serrate or erose (sometimes scarcely so or only toward the base), the surface glabrous (rarely minutely papillose). *Inflorescence* 1(rarely 2)-flowered; bracts and prophylls linear, *c.* 0.3–0.5 mm long, mucronate, hyaline and serrate, pilose; pedicels (scapes) 1–8 cm long, 0.3–0.6 mm wide, pilose. *Hypanthium* linear to oblong in outline, sometimes falcate, subelliptic in TS and slightly contricted between the locules, 4.5–15 mm long, 0.7–2 mm wide, without longitudinal ridges, pilose. *Calyx lobes* free, ±equal, 2–4.2 mm long, 1–1.5 mm wide, obtuse, the margin hyaline and serrate or erose, the surface glabrous or pilose toward the base. *Corolla* tube 2–3 mm long; lobes pale to deep salmon pink or apricot-pink with strong reddish pink throat markings and a cream or yellow throat, paired laterally, glabrous or with a few eglandular hairs on the undersurface; anterior lobes elliptic to obovate, somewhat arcuate on anterior side, shorter than the posterior pair, 4.5–6 mm long, 2.4–3.2 mm wide; posterior lobes oblong and falcate, 6.5–10.5 mm long, 2.2–3.5 mm wide. *Labellum* reflexed, orbicular to ovate, 0.6–1.1 mm long with a thin papillose border and minutely papillose lateral appendages 0.3–0.6 mm long, otherwise glabrous. *Throat appendages* absent. *Column* 9–12 mm long, slightly laterally curved distally and sharply angled at the tip (such that the anthers are perpendicular to the column axis), glabrous throughout length; subtending anther hairs present; stigma sessile, entire. *Capsules* obloid to cylindrical, sometimes falcate, 10–18 mm long excluding calyx lobes. *Seeds* brown to almost black, 0.5–0.8 mm long, 0.25–0.5 mm wide, surface with longitudinal ridges. (Figure 1)

Diagnostic features. The following combination of features differentiates *S. uniflorum* from all other members of the genus: a perennial, stoloniferous habit; uni-flowered (rarely 2-flowered) inflorescences; pilose pedicels (scapes) and hypanthia (this species lacks glandular hairs which is unusual in *Stylidium*). Other useful spotting characters are linear leaves, and salmon pink or apricot-pink corolla lobes that are laterally paired, unequal in size and lack throat appendages.

Typification. Lowrie *et al.* (1999: 153) cite the holotype of *S. uniflorum* as being at LD; however, there is additional material in Sonder's personal herbarium at MEL, necessitating this lectotypification. All specimens conform to the protologue. While Sonder is likely to have viewed the material at LD (Crisp 1983; Short & Sinkora 1988), MEL 293414 has been selected as an appropriate lectotype since it is annotated by Sonder, has a packet containing a dissected flower used by him to compile his description, and is a better quality specimen than that at LD.

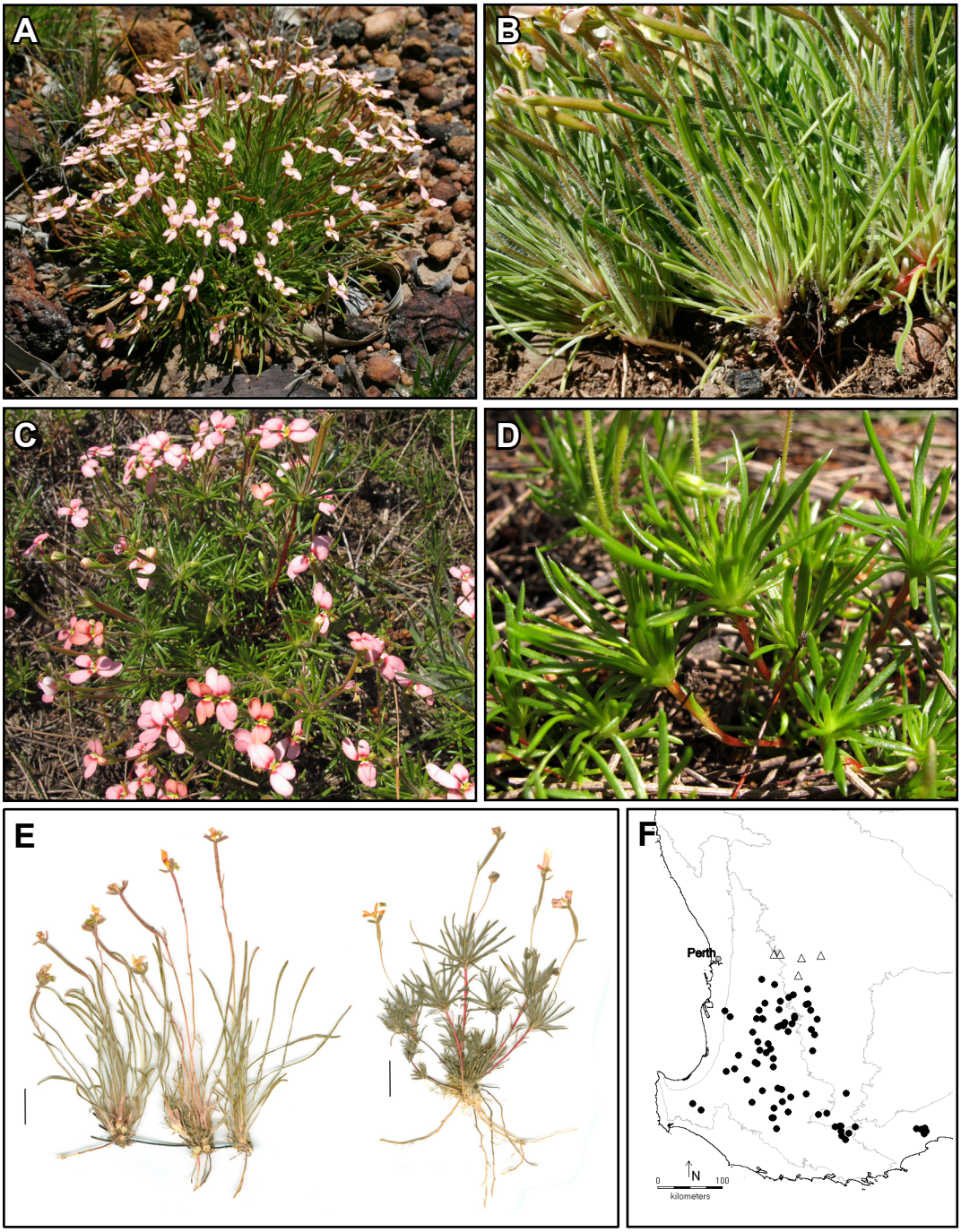

Figure 1. *Stylidium uniflorum*. A, B – compact habit of subsp. *uniflorum*, with compact stem nodes that are partially buried and connected by short, wiry, horizontal stolons (red and fleshy when initially formed; see B, lower right) and long leaves; C, D – subsp. *extensum*, with erect or ascending, red stems; E – pressed specimens of subsp. *uniflorum* (left) and subsp. *extensum* (right; note the shorter leaves and erect or ascending stems); F – distribution of subsp. *uniflorum* (●) and subsp. *extensum* (△) based on PERTH specimen data and all cited specimens respectively, with IBRA regions (Department of the Environment 2013) indicated in grey. Scale bar = 1cm (E). Photographs © J. Wege from *J.A. Wege* 1962 (subsp. *uniflorum*) and *J.A. Wege*1878 (subsp. *extensum*).

Notes. The vegetative component of *S. uniflorum* typically comprises a basal tuft of leaves attached to stem tissue that is condensed into a nodular, basal, stem stock which is shallowly or partially buried. Short, mostly horizotonal stolons are produced from the basal node, which give rise to new basal nodes bearing tufts of leaves. This pattern of growth can produce densely formed individuals up to 20 cm or more in diameter. Specimens in the northern part of the range are atypical in that they seasonally produce elongated leafy stems from the basal stem node and tend to have shorter leaves (see Figure 1E). These northern populations were not considered by Lowrie *et al.* (1999) who suggested the northern extent of *S. uniflorum* was near Dale, to the south-east of Perth. They represent a range extension for *S. uniflorum* and warrant subspecific status.

a. Stylidium uniflorum subsp. **uniflorum**

Illustrations. R. Erickson, *Triggerplants* p. 149, Plate 44, Figures 1–8 (1958); B.J. Grieve & W.E. Blackall, *How to Know W. Austral. Wildfl.* 4: 745, n. 50 (1982); A. Lowrie, A.H. Burbidge & K.F. Kenneally, *Nuytsia* 13(1): 154, Figure 23 (1999); J. Wheeler, N. Marchant & M. Lewington, *Fl. South West* 2: 915 (2002).

Habit usually compact, with *stems* nodiferous and shallowly buried, producing straw-coloured or red horizontal (rarely suberect) stolons/stems and rooting at the nodes; stilt roots absent. *Leaves* in basal tufts, rarely scattered on stolons/stems, (2–)3–9 cm long.

Selected specimens. WESTERN AUSTRALIA: 23.5 km E of Collie, 30 Oct. 1997, *R.J. Cranfield* 11525 (PERTH); Bowelling – Duranillin road near Gibbs Rd junction, 3 Nov. 1995, *V. Crowley* 939 (PERTH); Nature Reserve, Frankland Rd, W of Albany Hwy, 21 Oct. 1997, *E.J. Croxford* 7908 (PERTH); Broomehill, *s. dat.*, *R. Erickson s.n.* (PERTH); Alamo Rd, 500 m S of Quindanning Rd, Bell State Forest Block, 28 Oct. 1980, *D. Halford* 801061 (PERTH); Meelon Nature Reserve, E Pinjarra, 28 Nov. 1994, *G.J. Keighery* 12953 (PERTH); Robins Rd off Marradong Rd, Boddington, 14 Oct. 1993, *K.F. Kenneally* 11397 (CANB, PERTH); *c.* 19 km N of Lake Muir, *c.* 7 km SW of Tonebridge, 11 Dec. 1974, *R. Pullen* 9968 (CANB, PERTH); Reserve A21064 located *c.* 15 km directly NE of Arthur River townsite, 28 Oct. 1998, *L.W. Sage & F. Obbens* LWS 1078 (PERTH); Harris River Rd, *c.* 2.3 km N of Mornington Road, N of Collie, 13 Nov. 2003, *J.A. Wege* 1118 (PERTH); *c.* 22 km E of Williams – Collie road on Coalfields Rd, 1 Nov. 2004, *J.A. Wege* 1248 (PERTH); *c.* 2 km W of Bartram Rd on Brookton Hwy, Brookton Nature Reserve, 15 Oct. 2014, *J.A. Wege* 1962 (CANB, MEL, PERTH); Tomingley Rd, just W of Baaluc Rd, SW of Dryandra Village, Dryandra State Forest, 3 Nov. 2009, *J.A. Wege & W.S. Armbruster* 1737 (K, MEL, PERTH); N of Brookton Hwy, *c.* 550 m E of Edison Mill Rd, 28 Oct. 2004, *J.A. Wege & D. Wege* JAW 1240 A (PERTH); W side of Pallinup River Crossing on South Coast Hwy, 28 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 1042 (MEL, PERTH).

Phenology. Flowering from October to early December.

Distribution and habitat. *Stylidium uniflorum* is widely distributed in the Jarrah Forest and adjacent Avon Wheatbelt bioregions, with a single record from the eastern margin of the Swan Coastal Plain near Pinjarra, and an outlying group of populations in the Fitzgerald subregion to the north-east of Wellstead (Figure 1F). It grows in sandy loam or clay loam with lateritic gravel or granite outcropping, on hillslopes or flats or in drainage lines or gullies. It is commonly recorded in woodland or forested habitats including *Eucalyptus wandoo* or *E. occidentalis* woodland, *E. salmonophloia* and *E. wandoo* woodland, *E. marginata* and *Corymbia calophylla* forest, and *Melaleuca viminea*, *M. rhaphiophylla* and *E. rudis* woodland. There is an occasional record from low heath, or *Allocasuarina* and *Acacia* shrubland.

Conservation status. Widespread and locally abundant at a number of sites including in nature reserves.

Chromosome number. James (1979) recorded chromosome counts of n = 28 from Cranbrook (PERTH 03171159) and 2n = 28 from the Brookton Highway (PERTH 03171302) and suggested that the northern populations were all diploid and the southern populations all tetraploid; however, no additional voucher specimens have been located.

Common name. Pincushion Triggerplant (Erickson 1958).

Notes. Hybrids between *S. uniflorum* subsp. *uniflorum* and *S. leptophyllum* DC. are known from Dryandra State Forest, north-west of Narrogin (PERTH 03168751, PERTH 03511065, PERTH 03168743 and PERTH 08541981). Both taxa are fairly common in this region, where they overlap in flowering time and occasionally grow in sympatry. The two taxa are morphologically allied, with *S. leptophyllum* differing in having a branched, multi-flowered inflorescence (*cf.* with one or two flowers) that is densely glandular-hairy (*cf.* with eglandular hairs), and pink, subequal corolla lobes (*cf.* salmon pink or apricot-pink, with the anterior pair noticeably smaller than the posterior ones). The hybrid individuals are morphological intermediates between the two taxa. For example, the specimens on PERTH 08541981 have a mixture of glandular and eglandular hairs on the inflorescences, three or four flowers per inflorescence, and an intermediate corolla morphology.

Stylidium uniflorum susbp. **extensum** Wege, *subsp. nov.*

Type: west of York, Western Australia [precise locality withheld for conservation reasons], 21 October 2011, *J.A. Wege* 1878 (*holo*: PERTH 08541957; *iso*: CANB, K, MEL).

Habit somewhat lax, the *stems* with a partially or shallowly buried basal node and red, leafy internodes 3–8 cm long; stilt roots absent or occasionally forming from the apex of the elongated stems. *Leaves* in a rosette at the apex of the elongated stems and scattered on the internodes, sometimes also in a basal tuft, 0.8–2.5 cm long.

Specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 16 Oct. 1996, *N. Casson & A. Harris* MP 2.15 (PERTH); 20 Sep. 1988, *D. Coates* 1888/3 (PERTH); 16 Oct. 1996, *K.E. Fitzgerald* 3 (PERTH); 19 Oct. 1913, *O.H. Sargent* 746 (BM); 1916, *F. Stoward* 596 (BM); 27 Sep. 1979, *J. Taylor, M.D. Crisp & R. Jackson* JT 914 (CANB, MEL, PERTH); 19 Oct. 2003, *T. Watson* 504 (PERTH); 13 Oct. 2003, *J.A. Wege & C. Wilkins* JAW 945 (CANB, MEL, PERTH).

Phenology. Flowering material has been collected in late September and October.

Distribution and habit. *Stylidium uniflorum* susbp. *extensum* is known from the eastern margin of the Northern Jarrah Forest and in the adjacent Avon Wheatbelt, from west of York to north-west of Quairading and north of Brookton (Figure 1F). It grows in clayey sand or clayey loam on gentle hillslopes in open *E. wandoo* woodland, dense *Allocasuarina* woodland, or *E. salmonophloia* and *E. longicornis* woodland, sometimes in association with granite outcropping.

Conservation status. To be listed as Priority Three under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (A. Jones pers. comm.).

Etymology. The subspecific epithet is taken from the Latin *extensus* (extended), in reference to both the elongated stems of this taxon and the fact that the populations referred to this subspecies have extended the previously documented range of *S. uniflorum*.

Common name. Red-stemmed Triggerplant (here designated).

Notes. Putative hybrids between this taxon and *S. leptophyllum* have been observed at a site west of York (PERTH 08541973). The hybrid individuals are morphological intermediates, having an eglandular inflorescence indumentum on the one hand, and multi-flowered infloresences, hairy calyx lobes, and candy pink corolla lobes on the other.

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