

## *Stylidium shepherdianum* (Stylidiaceae), a new Boomerang Triggerplant from Western Australia's Mallee bioregion

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### SHORT COMMUNICATION

I chanced upon the new triggerplant described below during a brief sojourn in Dragon Rocks Nature Reserve in 2017, on the final day of a broad-ranging field expedition in south-western Australia with my long-time colleague and confidant Dr Kelly Shepherd. As we enthusiastically made a collection of what I believed to be a novel discovery, I began to vaguely recall a collection from this area at the Western Australian Herbarium (PERTH) that I had previously been unable to assign to a known species. This suspicion was confirmed upon my return to the Herbarium, where I was able to match my discovery to material collected by Anne Rick (nee Coates) in 1991 during a flora and vegetation survey of the same reserve (Coates 1992, then as *S. breviscapum* R.Br.: *A. Coates* 3234 and 3378). This new rarity is allied to the 'Boomerang Triggerplants' (see *Affinities* below) and is named for Kelly, who has been steadfast in her support of my Stylidiaceae research program over the past 25 years.

*Stylidium shepherdianum* Wege, *sp. nov.*

*Type*: Dragon Rocks Nature Reserve, north-west of Lake King, Western Australia [precise locality withheld for conservation reasons], 8 November 2017, *J.A. Wege & K.A. Shepherd* JAW 2054 (*holo*: PERTH 09082646; *iso*: AD, CANB, K, MEL).

*Stylidium* sp. Dragon Rocks (*J.A. Wege & K.A. Shepherd* JAW 2054), Western Australian Herbarium, in *FloraBase*, <https://florabase.dpaw.wa.gov.au/> [accessed 13 May 2019].

Compact or spreading *perennial herb* 5–15 cm high. *Glandular trichomes* 0.2–c. 1.5 mm long, with a discoid to subglobular head, the shorter hairs with straight stalks and a red to reddish black head, the longer hairs with wavy or curled stalks and a pale yellowish head. *Stem* branching at swollen nodes; internodes 0.7–3 cm long, longitudinally ridged, glabrous; stilt roots present. *Leaves* rosetted at stem apex and scattered on internodes, mostly linear or oblong tending narrowly ovate near base of internodes, sometimes slightly incurved, terete, (1.5–)3–10 mm long, 0.8–1 mm wide, glabrous; margin mostly entire, hyaline basally; apex white-tipped, obtuse or subacute, often with a short apiculus to 0.2 mm long. *Scapes* 1–2.5 cm long including inflorescence, 0.3–0.6 mm wide, with both long and short glandular hairs (rarely with the longer hairs apparently eglandular). *Inflorescence* determinate, thyrsoid, 5–17-flowered; bracts and prophylls oblong or linear, terete, 1–4 mm long,

white-tipped, obtuse or sometimes apiculate, entire, glabrous or with a few glandular hairs near the base; pedicels 0.5–2 mm long, glandular-hairy; buds pendulous. *Hypanthium* oblong to narrowly elliptic in outline, constricted between the locules, 1.5–5.5 mm long, 0.7–1.7 mm wide, sparsely to moderately glandular-hairy. *Calyx lobes* free, *c.* equal in length, 1–1.6 mm long, entire, with sparse glandular hairs mostly in lower half; apex somewhat fleshy and incurved, white, subacute to obtuse. *Corolla* white with reddish pink throat markings and a dark yellowish throat, with reddish markings abaxially toward the base of the lobes, buds yellowish; lobes paired laterally, sparsely glandular-hairy abaxially; anterior lobes elliptic to narrowly obovate with a somewhat arcuate anterior margin, smaller than the posterior pair, 1.5–2.5 mm long, 1–1.8 mm wide; posterior lobes elliptic to oblong, arcuate on posterior margin, 2.5–3.7 mm long, 1.4–2.2 mm wide; tube pinkish red, 1–1.6 mm long, *c.* equal to or just longer than the calyx lobes, glabrous. *Labellum* red, orbicular to ovate, 0.4–0.5 mm long, with a fine papillose fringe; lateral appendages yellow, slender, (0.05–)0.2–0.5 mm long, papillose. *Throat appendages* absent. *Column* yellow basally, reddish and with a slight lateral curve distally, 5–6.5 mm long, glabrous; anther locules 0.5–0.6 mm long, with translucent subtending hairs *c.* 0.1 mm long, pollen yellow; stigma sessile, entire. *Fruiting* material not seen. (Figure 1)

*Diagnostic features.* This species can be distinguished from its congeners by the following combination of characters: a stilt plant habit with small, terete leaves; prominently white-tipped leaves, bracts and calyx lobes; scapes with long and short glandular hairs, the former with wavy or curled stalks; calyx lobes with sparse glandular hairs mostly in the lower half; white, laterally paired corolla lobes with reddish pink throat markings and a red corolla tube; and a labellum with lateral appendages and a fine papillose margin.

*Other specimens examined.* WESTERN AUSTRALIA: [localities withheld for conservation reasons] 15 Oct. 1991, *A.M. Coates* 3234 (PERTH); 28 Oct. 1991, *A.M. Coates* 3378 (PERTH); 7 Nov. 2018, *J.A. Wege* 2081 (PERTH); 7 Nov. 2018, *J.A. Wege* 2082 (PERTH).

*Flowering period.* Flowering from October to mid-November.

*Distribution and habitat.* *Styloidium shepherdianum* occurs in a small area south-east of Hyden in Western Australia's Mallee bioregion where it has been recorded growing in white sand, orange-brown clayey sand and gravel soils in mallee shrubland with *Melaleuca*, *Grevillea*, *Verticordia* and *Styloidium* spp., low Myrtaceous shrubland with *Calytrix*, *Verticordia*, *Regelia* or *Eremaea*, and *Allocasuarina acutivalvis* thicket. A poor quality specimen collected in 1974 from near Ongerup (*D.J.E. Whibley* 5275, PERTH: without habitat information) is possibly also referable to this species.

*Conservation status.* Recently listed as Priority Two under Conservation Codes for Western Australian Flora, under the name *S. sp.* Dragon Rocks (*J.A. Wege & K.A. Shepherd* JAW 2054) (Western Australian Herbarium 1998–). While this species is currently known from populations in Dragon Rocks Nature Reserve and a nearby reserve (*E. Wajon* pers. comm.), the geographic extent and size of these populations has not been established. Surveys should be conducted from mid-October to early November in good seasonal conditions: this species is difficult to locate and accurately identify when sterile, and plants may not flower if rainfall is insufficient (see *Notes* below).

*Etymology.* This species honours Dr Kelly Anne Shepherd (1970–) and her significant contribution to Australian botany, which has included the description of 51 novel taxa (including nine in this celebratory issue of *Nuytsia*) and led to a vastly improved understanding of evolutionary relationships and generic boundaries in Goodeniaceae and Chenopodiaceae (subfamily Salicornioideae Ulbr.). She



Figure 1. *Stylidium shepherdianum*. A – compact, stilted habit with linear, terete leaves; B – flowers, showing the unequal, laterally paired corolla lobes and colourful markings; C – shrubland habitat. Photographs © J. Wege from *J.A. Wege & K.A. Shepherd* JAW 2054 (A, C) and *J.A. Wege* 2082 (B).

has been delightful company during our numerous joint field expeditions and witnessed the discovery of the triggerplant that now bears her name.

*Vernacular name.* Shepherd's Boomerang Triggerplant.

*Affinities.* The whimsical common name 'Boomerang Triggerplant' was created by Rica Erickson for a broadly circumscribed *S. breviscapum* R.Br. (Erickson 1958: 82–84) and refers to the shape and curvature of the larger (posterior) pair of corolla lobes. Her concept of *S. breviscapum* included three distinct species (Lowrie *et al.* 1999; Wege 2010), of which *S. eriopodum* DC. and *S. involucreatum* F.Muell. have the most pronounced posterior corolla lobe curvature. *Stylidium shepherdianum* is morphologically akin to these three species, sharing a range of features such as a low, branching and stilted habit, terete leaves, wavy or curled hairs on the scapes, and flowers with laterally paired, unequal corolla lobes and a bare throat.



*Stylidium shepherdianum* is most similar to *S. breviscapum* although has a distinct corolla and labellum morphology. Its posterior (larger) corolla lobes are elliptic to oblong and discretely narrower and usually shorter than the obovate lobes of *S. breviscapum* (2.5–3.7 × 1.4–2.2 mm *cf.* 3.5–7.5 × 3–4.5 mm). The anterior corolla lobes are a similar shape in both species but also tend to be smaller in *S. shepherdianum* (1.5–2.5 × 1–1.8 mm *cf.* 2.5–5 × 1.7–2.5 mm), with the corolla tube similarly shorter (1–1.6 mm long *cf.* 2–3 mm). The labellum in *S. shepherdianum* is orbicular to ovate, 0.4–0.5 mm long and has a fine papillose margin but in *S. breviscapum* it is elliptic to narrowly ovate and 0.6–1 mm long with a 0.2–0.5 mm papillose beard. The two species also display a significant difference in column morphology: in *S. shepherdianum* the column has a slight lateral curve in the distal portion (i.e. above the hinge) whereas in *S. breviscapum* it is mostly straight but sharply angled below the tip (a feature that can be discerned on pressed material, particularly in male-phase flowers). The column also tends to be shorter in *S. shepherdianum* (5–6.5 mm long *cf.* 6.5–8 mm) and has smaller anther locules (0.5–0.6 mm long at anthesis *cf.* 0.7–1 mm) with inconspicuous subtending hairs (*c.* 0.1 mm long *cf.* to 0.4 mm long). Pressed material of the two species can be separated using calyx lobe morphology: the lobes are shorter in *S. shepherdianum* (1–1.6 mm long *cf.* 1.8–3 mm), prominently white-tipped (not or faintly so in *S. breviscapum*), and the glandular hairs are mostly restricted to the lower half (*cf.* sparsely glandular-hairy throughout). *Stylidium breviscapum* has a more southerly distribution than *S. shepherdianum* and is mostly confined to the Esperance bioregion, extending from the eastern portion of Fitzgerald River National Park to Cape Arid National Park (Western Australian Herbarium 1998–).

*Stylidium eriopodum* is widespread in south-western Australia including the Mallee bioregion (Western Australian Herbarium 1998–) and co-occurs with *S. shepherdianum* at the type locality (*J.A. Wege & K.A. Shepherd* JAW 2054 and 2055). *Stylidium shepherdianum* can be separated from this species by its thyrsoid inflorescences (*cf.* flowers arranged in verticils), mostly glandular-hairy scapes (*cf.* mostly eglandular-hairy scapes), entire calyx lobes (*cf.* membranous and often incised), sparsely but evenly glandular-hairy hypanthium (*cf.* glandular-hairy distally and glabrous or with eglandular hairs basally), and labellum appendages (*cf.* labellum simple). The two species can be further distinguished by their corolla and column morphology: in *S. shepherdianum* the anterior corolla lobes are approximately three quarters of the length of the posterior pair (*cf.* up to about half the length) and the posterior pair have a less pronounced curvature, and the column has a slight lateral curve in the distal portion (*cf.* with a lateral curve in the basal portion).

*Stylidium involucreatum* has a distribution centred on the Mallee bioregion and is also recorded for Dragon Rocks Nature Reserve (Western Australian Herbarium 1998–). *Stylidium shepherdianum* can be distinguished from this species by its calyx lobes, which are roughly equal in size, prominently white-tipped, and glandular-hairy in the lower portion (*cf.* noticeably unequal in size, without or with relatively faint white tips, and glandular-hairy throughout). Like *S. eriopodum*, *S. involucreatum* can be further separated from *S. shepherdianum* by its simple labellum and basally curved column, and by the shape and relative size of its corolla lobes. It also has a longer corolla tube (1.8–3 mm long *cf.* 1–1.6 mm in *S. shepherdianum*).

*Notes.* The type population of *S. shepherdianum* was in full flower in 2017 following above average rainfall in August and September; however, plants at this site failed to bloom in 2018 following an extremely dry September (it was unclear whether they had died or were dormant). A small number of flowering plants were found in another area of the reserve some 17 km away suggesting that rainfall may have been patchy across the landscape.

### Acknowledgements

This research was supported by the Australian Government's Australian Biological Resources Study National Taxonomy Research Grant Programme for the project 'Time to pull the trigger – an eFlora account of Stylidiaceae', with field work funded by a DBCA Science Project Support grant. I thank my colleagues at the Western Australian Herbarium for their ongoing support of my *Stylidium* research program and this special issue of *Nuytsia*, particularly Kelly Shepherd who assisted with the type gathering in sweltering conditions and provided editorial advice, Allan Burbidge for his comments on the manuscript, and Eddy Wajon for bringing a new population to my attention.

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