

***Pterostylis occulta* (Orchidaceae), a new species from the south-west of Western Australia**

Garry Brockman¹ and Christopher French

Western Australian Herbarium, Biodiversity and Conservation Science,
Department of Biodiversity, Conservation and Attractions,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983

¹Corresponding author, email: garry.brockman@bigpond.com

SHORT COMMUNICATION

Pterostylis sargentii C.R.P. Andrews was described in 1905 from specimens collected by Oswald Sargent near York (Andrews 1905) and subsequently recorded from sites across south-western Australia, with the exception of the high rainfall zone (Nicholls 1969; Western Australian Herbarium 1998–; Brown *et al.* 2013; Hoffman *et al.* 2019). Our studies of both living material and preserved specimens have revealed that a second, widely distributed taxon has been included within *P. sargentii*. First collected and painted by Rica Erickson from Bolgart in 1936, it is described below as *P. occulta*.

Pterostylis occulta G. Brockman & C. J. French, *sp. nov.*

Type: Luptons Nature Reserve [Lupton Conservation Park], 2.9 km south of Woods Loop, south of Brookton Highway, Western Australia, 13 October 2005, *G. Brockman* GBB 1662 (*holo:* PERTH 07287690).

Illustrations. R. Erickson, Frog Greenhood (*Pterostylis sargentii*), Bolgart, 18 September 1936, original artwork available at <https://slwa.wa.gov.au/erickson/pages/32.html> [accessed 11 March 2021]; W. Nicholls, *Orchids of Australia: the complete edition* p. 335, figures d, h (1969), as *P. sargentii*; N. Hoffman, A.P. Brown & J. Brown, *Orchids of south-west Australia*, 4th edn. p. 429 (2019), as *P. sargentii*.

Terrestrial, tuberous *herb* 3.5–18 cm high. *Tuber* ellipsoid, 10–15 × 8–12 mm, white, replaced annually. *Basal rosette* absent in flowering plants; sterile plants with a rosette of 5–12 spreading, petiolate leaves 6–25 mm × 4–10 mm. *Scape* to 18 cm high, *c.* 1 mm diam., dull greenish yellow; leaves 3–7, olive green, sessile, spreading, 4–45 mm × 1–5 mm when flattened; floral bracts sheathing, to 25 × 5 mm when flattened, acuminate; pedicels 10–20 mm long, *c.* 1 mm diam., wiry. *Flowers* 1–3(4), 14–17 mm long, pale to dark olive green with translucent white striations; galea 10–13 mm long, bulbous, glabrous, shallowly curved at base, mostly flat across middle then deflexed with a 1–3 mm long apical point. *Dorsal sepal* 11–13 mm long including apical point, decurved, acute. *Lateral sepals* deflexed, connate in upper 2/3, shallowly concave, elliptic when flattened, 8–11 × 3–4 mm, glabrous, tapering abruptly to free points 2–3 mm long; margins infolded throughout length. *Petals* ± ovate when flattened, 8–10 mm long including a broad, reddish apical point 0.5–1 mm long; upper marginal line of dense trichomes

to 1 mm long on internal surface; lower proximal 2/3 of margin extended, deflexed laterally, entire. *Labellum* on a broad claw 1–1.5 mm wide; upper lobes arising basally, partially hidden in sinus in set position, reclined with the distal third further mildly recurved, linear, 1.5–2 mm long, obtuse, dark grey to black, densely hairy; laminae tri-lobed, ciliate, central lobe triangular, 1–1.5 mm long and with an upturned apex, lateral lobes narrowly triangular, shorter than central lobe (*c.* 1 mm long) and incurved. *Column* 9–11 mm long, down-curved, green with translucent striations, winged; wings orbicular, 2 mm long, incurved, opaque, with barrier trichomes. *Ovary* narrowly ovoid, 6–8 mm × 1.5–2 mm. *Capsule* elliptic, 5–6 × 3–6 mm, glabrous. *Anther* 1–1.5 mm long, yellowish green. *Pollinia* 1–1.5 mm long, yellow. *Stigma* ovate, 1 × 2 mm, dull yellow. (Figure 1A (right hand flower), C)

Diagnostic features. *Pterostylis occulta* can be distinguished from all other members of the genus by the following combination of characters: sterile and fertile plants dimorphic; inflorescence multi-flowered; galea with a single opening; synsepalum deflexed; labellum 3-lobed, upper lobes linear and hairy, basal appendages absent; column wings with barrier trichomes.

Selected specimens. WESTERN AUSTRALIA: Trainers Rock, 2.3 km N of edge of Lake Barlee, 5 Sep. 1999, *A.P. Brown* 3629 B (PERTH); Bolgart, 18 Sep. 1936, *R. Erickson s.n.* (PERTH 04875834); Mount Short, N of Ravensthorpe, 30 Aug. 1963, *A.S. George* 5728 (PERTH); 171.5 miles, Great Eastern Highway, 12 Sep. 1965, *A.S. George* 6806 (PERTH); South Tammin Reserve, 12 Sep. 1967, *A.S. George* 9199 (PERTH); 1 mile W of Highbury, 21 Sep. 1957, *A.S. George s.n.* (PERTH 04875842); *c.* 25 m NE of South Ironcap Trig. (Plot - STHC01), 7 Sep. 1996, *N. Gibson & K. Brown* 3035 (PERTH); Site 231. E of Rasmussen Rd, E of intersection with Chinocup Rd, N of Pingrup. 24 Sep. 2008, *M. Hislop & H. Mills* WW 231-35 (PERTH); *c.* 15 km S of the Bodallin Townsite, 8 Sep. 1998, *C. Keating et al.* BBOD5/21 (PERTH); 19 km SSW of Queen Victoria Rock, 24 Sep. 1993, *G.J. Keighery* 13920 (PERTH).

Phenology. Flowering from late August to mid-October. Fruiting October to November.

Distribution and habitat. *Pterostylis occulta* is widely distributed in Western Australia in the wheatbelt and adjacent inland semi-arid goldfields from Northampton to Mt Ragged, growing in scrubland or mallee woodland on stony breakaways and granite outcrops.

Conservation status. Widely distributed and conserved in nature reserves.

Etymology. The specific epithet, from the Latin *occultus* (hidden), alludes to herbarium collections of this species, which have remained hidden under *P. sargentii* for more than eighty years.

Common Name. Little Frog Orchid.

Affinities. The new species is similar to *P. sargentii*. It is easily distinguished from that species by the upper lobes of the labellum, which are linear, reclined and densely hairy (Figure 1C) rather than bulbous, glabrous and erect (Figure 1B). It also has smaller flowers (14–17 mm *cf.* 21–24 mm long in *P. sargentii*) that are more widely spaced and have a shorter free point on the sepals (1–3 mm *cf.* 4–6 mm in *P. sargentii*) and extended petal inferior margins that are entire (*cf.* dentate in *P. sargentii*). *Pterostylis occulta* and *P. sargentii* have broadly overlapping distributions and are often found growing in close proximity. Generally, the new species commences flowering four to six weeks later; however, where they are found together, *P. sargentii* is sometimes in late flower or fruit while *P. occulta* is in bud or early flower.

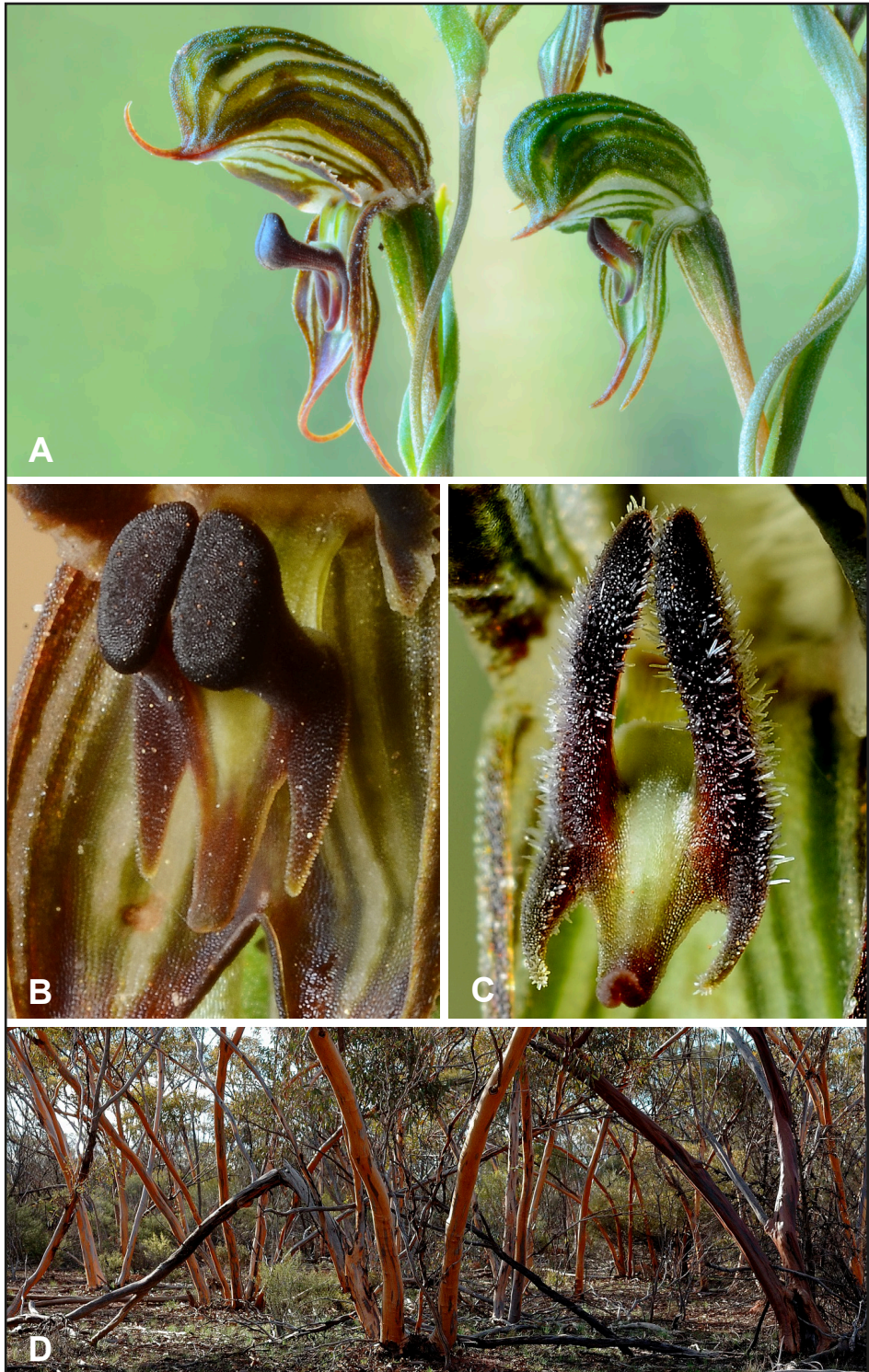


Figure 1. A – *Pterostylis sargentii* (L) from Boyagin Nature Reserve and *P. occulta* (R) from Horne Nature Reserve, showing relative flower size; B – labellum of *P. sargentii* with bulbous, glabrous and erect upper lobes; C – labellum of *P. occulta* with linear, obtuse, reclined and densely hairy upper lobes; D – characteristic habitat of *P. occulta* at a site off Brookton Highway. Photographs by Garry Brockman.

Notes. This species, and the similar *P. sargentii*, have not been observed or collected in the high rainfall zone in the south-west of the state. A small, as yet unvouchered population of plants has recently been discovered inland from Busselton. These plants have similar flower size and labellum features to *P. occulta*, but also have dentate petal margins, similar to *P. sargentii*. Further research is needed to determine the status of this population.

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