

Pterostylis segregata (Orchidaceae), a rare new species from south-west Western Australia

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SHORT COMMUNICATION

Pterostylis sargentii C.R.P.Andrews (1905) is commonly known as the Frog Greenhood due to its distinctive frog-like appearance. Together with the morphologically similar *Pterostylis occulta* G. Brockman & C.J.French (2021), these two species form the Frog Greenhood alliance. A third, distinct, restricted taxon has been found in the higher rainfall area of the south-west corner of Western Australia and is described here as new. This is the only member of the Frog Greenhood alliance known from this region.

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

Type: Whicher Range, Western Australia [precise locality withheld for conservation reasons], 28 July 2021, G. Brockman GBB 4144 (*holo*: PERTH 09489282; *iso*: CANB, PERTH 09489290).

Terrestrial tuberous *herb* to 5–11(–14) cm tall. Plants solitary. *Basal rosette* absent in flowering plants; non-flowering plants forming a rosette of up to 10 spreading petiolate leaves, 12–15 mm long, 4–6 mm wide, lanceolate to broadly lanceolate, dull green with white veining. *Scape* to 90 mm tall, 1–2 mm diameter, dull greenish yellow; stem leaves 3–5, olive green, suberect, sessile, sheathing, 16–23 × *c.* 4 mm when flattened; floral bracts sheathing, acuminate, to 11–15 × 4–5 mm when flattened. *Flowers* 1–2(–3), 11–13 mm long, pale to olive-green with translucent striations, pink suffusions with aging; pedicels 8–10 mm long, *c.* 1 mm diameter, wiry; galea 7–9 mm long, bulbous, verrucose, shallowly curved at the base, mostly flat across the middle and deflexed to a short apex *c.* 1 mm long. *Dorsal sepal* 8–11 mm long including apical point *c.* 1 mm long, decurved, acute. *Lateral sepals* deflexed, conjoined in the upper two thirds, shallowly concave, elliptic when flattened, 6–7 × 2.5–3 mm, tapering abruptly to short lanceolate points 1.5–2 mm long, margins involute and glabrous. *Petals* appressed to the dorsal sepal along the upper margin, obscurely ovate when flattened, 7–9 mm long including short broad reddish apical point 0.5–1 mm long; upper margin with a line of closely spaced, unbranched, thickened, moniliform white trichomes on the internal surface, 0.4–0.7 mm long; lower proximal two thirds of margin extended, deflexed laterally, erose. *Labellum* irritable, on a claw 0.6–0.8 mm wide, upper lobes partially hidden in sinus in set position; laminae tri-lobed, papillate; central lobe triangular, 0.7–1 mm long, apex upturned, yellowish orange; lateral lobes ensiform, incurved, shorter than the central lobe, 0.5–0.7 mm long, yellowish orange; upper lobes arising from the base as erect tubular appendages 1–1.2 mm long, elliptic in cross section, obtuse, yellow to orange at base merging

to black in the distal half, papillate and hispidulous. Basal appendage absent. *Column* 8–9 mm long, erect, yellow to green, winged; wings orbicular, *c.* 2 mm long, incurved, opaque, upper medial surface with fine white cilia. *Ovary* narrowly ovoid, 6–8 × 2–3 mm. *Anther* *c.* 0.5 mm long, bluntly rostrate, yellowish green. *Pollinia* 0.7–1 mm long, yellow. *Stigma* ovate, 1.5 × 3 mm, translucent, yellowish. *Capsule* not seen. (Figure 1)



Figure 1. Comparison of *Pterostylis segregata* to allied species in the Frog Greenhood alliance. A – *P. segregata* flower *in situ* from the type location; B – *P. segregata* labellum; C – *P. sargentii* labellum; D – *P. occulta* labellum. Vouchers: G. Brockman GBB 4144 (A–B), G. Brockman GBB 4010 (C); G. Brockman GBB 4033 (D). Photographs: G. Brockman.

Diagnostic features. *Pterostylis segregata* can be distinguished from all other members of the genus by the following combination of characters: flowering and non-flowering plants dimorphic, flowering plants without a basal rosette of leaves, non-flowering plants with a basal rosette of up to 10 leaves that are lanceolate and dark green with white veining; inflorescence one- to three-flowered; flowers 11–13 mm long; galea with a single opening; synsepalum deflexed; labellum tri-lobed, the upper lobes tubular, elliptic in cross section, papillate and hispidulous, the basal appendage absent; medial petal surfaces with closely spaced, unbranched, thickened, moniliform barrier trichomes.

Other specimens examined. Whicher Range, Western Australia [locality withheld for conservation reasons], 19 July 2022, G. Brockman GBB 4345 (PERTH).

Phenology. Flowering from mid-July to early August.

Distribution and ecology. *Pterostylis segregata* is currently restricted to two geographically close locations in the south-west of Western Australia. It occurs in open patches of low mixed shrubland in jarrah marri forest, on sand over laterite.

Conservation status. To be listed as Priority One under Conservation Codes for Western Australian Flora (Tanya Llorens, pers. comm.). *Pterostylis segregata* is a recently discovered and poorly known species, currently known to comprise fewer than 50 flowering plants. It is conserved in state forest and requires immediate conservation resources.

Etymology. From the Latin *segregatus* (set apart or separated), alluding to the wide geographical separation of this species from other members of the Frog Greenhood alliance.

Common name. Shy Frog Orchid.

Affinities. *Pterostylis segregata* is morphologically similar to *P. occulta*. It is easily distinguished from that species by the erect, papillate, upper lobes of the labellum (reclined, densely ciliate for *P. occulta*). It has smaller flowers (11–13 mm long *cf.* 14–17 mm long in *P. occulta*), shorter sepal free points (1.5–2 mm *cf.* 2–3 mm in *P. occulta*) and extended petal inferior margins erose (entire for *P. occulta*). Basal rosette leaves are dull green with white veining *cf.* light lime-green in *P. occulta*.

Pterostylis segregata is morphologically similar to *P. sargentii*, however it has much smaller flowers (11–13 mm *cf.* 21–24 mm long in *P. sargentii*), much shorter sepal free points (1.5–2 mm *cf.* 4–6 mm in *P. sargentii*), a smaller labellum with tubular papillate upper lobes (bulbous and glabrous in *P. sargentii*), and the extended lower petal margins are erose (dentate in *P. sargentii*). Basal rosette leaves are dull green with white veining *cf.* light lime-green in *P. sargentii*.

The geographically closest collection of either *P. sargentii* or *P. occulta* is approximately 130 km east of the location of *P. segregata* in a dry wandoo woodland, a different habitat to the jarrah forest of the new species.

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