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Caladenia multiplex (Orchidaceae), a new, sexually deceptive species from the south-west of Western Australia

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SHORT COMMUNICATION

Caladenia multiplex A.P.Br. & R.D.Phillips, *sp. nov.*

Type: south of Moora, Western Australia [precise locality withheld for conservation reasons], 26 August 2012, *G. Brockman* GBB 2880 (holo: PERTH 09134999; iso: CANB).

Caladenia sp. Bulbarnet (G. Brockman GBB 2880), Western Australian Herbarium, in *Florabase*, https://florabase.dpaw.wa.gov.au [accessed 8 February 2021].

Plants solitary or in clumps. *Leaf* 5–20 cm long, 6–13 mm wide, linear, erect, incurved in TS, pale green, the basal 1/3 irregularly blotched with red-purple, densely hirsute with patent eglandular trichomes > 5 mm long with expanded barrel-shaped basal cells. *Scape* hirsute 22–40 cm tall with patent eglandular trichomes similar to those on the leaf, erect, wiry, with an erect sheathing, acuminate, externally hirsute cauline bract half way up and a similarly shaped floral bract under each pedicel. *Flowers* 1–3(4), 7–10 cm across, often stiffly held, creamy-white with green to yellowish-green suffusions; floral odour faintly sweet or absent. *Sepals and petals* linear-lanceolate in the basal 1/3 to 2/5 then abruptly narrowing before terminating in a brown to reddish-brown glandular apex. *Dorsal sepal* 4.0–5.5 cm long, 2–3 mm wide, erect and slightly incurved, terminating in a swollen osmophore that is 10–22 mm long and covered in short glandular hairs to 0.1 mm long. *Lateral sepals* 5.5–7.5 cm long, 5–8 mm wide, spreading horizontally near the base and downcurved to pendulous towards the apex, terminating in a swollen osmophore that is 12–25 mm long and covered in short glandular hairs to 0.1 mm long. *Petals* shorter than the sepals, 3.5–4.5 cm long, 3–4 mm wide, spreading horizontally or downcurved, more rarely upcurved, usually lacking an osmophore or, when present, scarcely thickened and 5–8 mm long. *Labellum* obscurely 3-lobed, uniformly creamy-white except the red calli and basal lamina which sometimes has green to yellowish-green suffusions, stiffly articulated on a claw *c*. 2 mm

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wide; lamina 15–22 mm long, 10–13 mm wide, narrowly triangular in outline, erect with entire margins in the basal 1/4 to 1/3, nearly horizontal in middle 1/3 and apical 1/3 with a prominently recurved apex; lateral lobes with forward facing, maroon, sometimes white-tipped, apically thickened marginal calli > 8 mm long that are decrescent towards the midlobe; lamina calli maroon, hockey-stick-shaped, > 1 mm tall, in 4–8 longitudinal rows extending 3/4 to 4/5 the length of the labellum, decrescent towards the apex. *Column* 12–15 mm long, 4–6 mm wide, broadly-winged, opaque, creamy-white, pale yellow and green with pale red markings, sparsely hirsute with short glandular hairs on outer surface. *Anther* 2–3 mm long, 2–3 mm wide, greenish-yellow. *Pollinia* > 2 mm long, kidney-shaped, flat, yellow, mealy. *Stigma* 2.0–2.5 mm long, 2.0–2.5 mm wide. *Capsule* not seen. (Figure 1A, B)

Diagnostic features. *Caladenia multiplex* can be distinguished from all other members of the genus by the following combination of characters: Flowers creamy-white with green to yellowish-green suffusions; lateral sepals spreading horizontally near the base and downcurved to pendulous towards the apex, terminating in a swollen osmophore; petals shorter than the sepals, spreading horizontally or downcurved, more rarely upcurved, usually lacking a terminal osmophore; labellum, including apex, creamy-white, sometimes with green to yellowish-green suffusions; labellum marginal calli maroon, sometimes white-tipped, apically thickened; labellum lamina calli maroon, hockey-stick-shaped, in 4–8 longitudinal rows.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 25 Aug. 2016, *G. Brockman* GBB 3483 (PERTH); 3 Sep. 2018, *R. Phillips* RDP 0475 (PERTH); 3 Sep. 2016, *R. Phillips* RDP 0392 (PERTH); 29 Aug. 2015, *R. Phillips* RDP 0314 (PERTH); 15 Aug. 2015, *R. Phillips* RDP 0305 (PERTH); 5 Sep. 2014, *R. Phillips* RDP 0202 (PERTH); 26 Aug. 2014, *R. Phillips* RDP 0287 (PERTH); 13 Sep. 2019, *R.D. Phillips & A.P. Brown* RDP 0476 (PERTH).

Phenology. Flowering August to mid-September. Fruiting September to early October.

Distribution and habitat. Found over a narrow geographic range between Moora and Gillingarra with an outlying population south-west of Bolgart. The species grows in brown loam in open *Eucalyptus wandoo* woodland with *Acacia acuminata*, *Eucalyptus loxophleba*, *Hakea* and *Daviesia* species. It often occurs low in the landscape on the slopes to seasonal creeklines and around the margins of winter wet depressions (Figure 1C).

Conservation status. To be listed as Priority Two under Conservation Codes for the Western Australian Flora (M. Smith pers. comm.). Although not considered under immediate threat, *Caladenia multiplex* is known from just five extant populations, three in nature reserves and two in rail reserves. One of the nature reserve populations extends onto a road reserve that has been partly cleared since the orchid's discovery.

Etymology. From the Latin *multiplex* (many at once/together, numerous), in reference to the more numerous rows of labellum lamina calli commonly found this species compared to related species.

Vernacular name. Bulbarnet Spider Orchid.

Affinities. *Caladenia multiplex* appears intermediate in morphology between the *C. longicauda* Lindl. and *C. huegelii* Rchb.f. complexes, sharing with members of the *C. longicauda* complex predominantly creamy-white flowers and a creamy-white labellum apex and with members of the *C. huegelii* complex shortened petals and swollen sepaline osmophores.

Figure 1. *Caladenia multiplex*. A – flowering plants *in situ* showing the often stiffly held flowers and shortened petals characteristic of this species; B – flowers showing the more numerous rows of labellum lamina calli and relatively short labellum marginal calli compared to most members of the *Caladenia longicauda* complex; C – habitat of *Caladenia multiplex*. Photographs by A.P. Brown.

Caladenia multiplex can be distinguished from members of the *C. longicauda* complex by its shortened petals and swollen sepaline osmophores. Its petals and lateral sepals are also more stiffly held when compared to most of members of the *C. longicauda* complex and it regularly has more numerous rows of labellum lamina calli. The labellum marginal calli are also somewhat shortened when compared to many members of the *C. longicauda* complex and have thicker apices. The only member of the *C. longicauda* complex to grow with or near *C. multiplex* is *C. longicauda* subsp. *eminens* Hopper & A.P.Br. However, unlike that taxon, which is pollinated by nectar seeking insects, *C. multiplex* is pollinated by a sexually deceived thynnine wasp (an undescribed species of *Thynnoides*; see Phillips *et al*. 2017). Observations of plants in populations at Bulbarnet, Koojan and SW of Bolgart have shown that they all attract sexually deceived males of this pollinator species (Phillips, unpublished data).

From members of the *C. huegelii* complex, *C. multiplex* can be distinguished by its predominantly creamy-white flowers and creamy-white, rather than red, labellum apex.

The creamy-white flowers and the presence of swollen sepaline osmophores places *C. multiplex* with *C. leucochila* A.P.Br. & R.D.Phillips and *C. lodgeana* Hopper & A.P.Br. It can be distinguished from *C. leucochila* by its larger flowers 7–10 cm across (*cf*. 4–6 cm across in *C. leucochila*), less prominently swollen sepaline osmophores, broader labellum 10–13 mm wide (*cf*. 7–9 mm wide in *C. leucochila*, up to eight rows of labellum lamina calli (*cf*. up to four rows in *C. leucochila*). and taller column 12–15 mm long (*cf*. 10–12 mm long in *C. leucochila*). From *C. lodgeana*, *C. multiplex* can be distinguished by its shortened petals 3.5–4.5 cm long (*cf*. 4–6.5 cm long in *C. lodgeana*) and up to eight rows of labellum lamina calli (*cf*. up to six rows in *C. lodgeana*). It is also geographically isolated from these species with *C. leucochila* and *C. lodgeana* respectively occurring 270 km and 380 km south of *C. multiplex*. Each of these three species attracts different species of sexually deceived thynnine wasps as pollinators (Phillips *et al*. 2017).

Notes. *Caladenia multiplex* hybridises with *C. longicauda* subsp. *eminens* producing intermediate forms that, compared with *C. multiplex*, have longer, pendulous lateral sepals which either lack or, where present, have longer, narrower sepaline osmophores, i.e. *R. Phillips* RDP 0393 (PERTH).

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