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Microcorys elatoides (Lamiaceae), a new species from the Coolgardie bioregion of Western Australia

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SHORT COMMUNICATION

The district of Mount Holland, immediately to the north of Forrestania, lies to the east of the Western Australian wheatbelt in the far south-west of the Coolgardie bioregion. Recent botanical surveys associated with a large mining project in this area have led to the recognition of six new plant species, of which *Acacia lachnocarpa* R.W.Davis & Hislop was recently published (Davis & Hislop 2020). Another, a species from the tribe Westringieae Bartl. (Lamiaceae), is described below as *Microcorys elatoides* T.C.Wilson & Hislop. That so many new taxa have been discovered in a restricted part of Mount Holland is indicative that the flora in this district remains poorly known.

Microcorys elatoides has a 5-lobed calyx, two 1-loculate adaxial anthers and two abaxial staminodes, which unequivocally places it in the genus *Microcorys* R.Br. (Wilson *et al.* 2012). Our description adopts terminology from past taxonomic research on Westringieae (Conn 1984; Guerin 2008, 2013, 2015; Thiele & Guerin 2016; Wilson *et al.* 2019; Wege & Guerin 2020) and the landmark inflorescence study of Briggs and Johnson (1979). Although its leaves and flowers are morphologically distinct, the new species appears most like *M. macredieana* F.Muell.due to its multi-stemmed, shrubby habit, long and narrow leaves (relative to most other species of *Microcorys*) that are inserted in whorls of three, and the shape of its flowers.

Microcorys elatoides T.C.Wilson & Hislop, *sp. nov.*

Type: Mount Holland district, Western Australia [precise locality withheld for conservation reasons], 10 October 2018, *R. Davis & M. Hislop* RD 12946 (*holo*: PERTH 09054146; *iso*: AD, CANB, MEL, NSW 1057139).

Microcorys sp. Mt Holland (D. Angus DA 2397), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 16 July 2019].

Erect, compact *shrub* to *c.* 1.5 m tall and to *c.* 1.5 m diam., multi-stemmed at ground level from a fire-resistant rootstock. *Branchlets* green but becoming reddish brown then developing greyish brown bark with age, terete, 0.5–1.5 mm wide, with retrorse to spreading, 0.02–0.08 mm long trichomes densely

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distributed (30–80 trichomes/mm^2) and restricted to 3 narrow channels extending between the nodes. *Leaves* in whorls of 3, rather obscurely petiolate; petiole to *c.* 1.0 mm long, densely hairy adaxially with trichomes 0.02–0.10 mm long (30–80 trichomes/mm^2); lamina 5–22 mm long, (0.8–)1.0–1.4 mm wide, terete or subterete, linear to very narrowly obovate (7–20 length to width ratio) in outline, ± rugose, glabrous except for hairs near leaf base, dark green usually becoming yellowish towards the tip, venation inconspicuous; base attenuate; apex acute to apiculate. *Inflorescence* of 3–6(–9) flowering nodes in a frondose racemiform conflorescence; uniflorescence single-flowered, 3 at each node (i.e. one in the axil of each leaf of a flowering branchlet), pherophylls not observed. *Podium* 1.0–1.8 mm long, with sparse or moderately dense, 0.05–0.20 mm long trichomes mostly in the basal half, or ± glabrous. *Prophylls* persistent, inserted in the upper half of the pedicel (a^1 axis to anthopodium ratio 3–7), oblong to narrowly ovate, 0.4–0.7 mm long, 0.2–0.3 mm wide (1.8–2.4 length to width ratio), adaxial side strongly concave; abaxial surface glabrous, adaxial surface and margin densely covered with 0.05–0.20 mm long trichomes (30–80 trichomes/mm^2). *Calyx* ± actinomorphic, not accrescent; *tube* 2.0–2.6 mm long, 1.5–2.0 mm wide, urceolate, external surface glabrous, green, often with purple tinges, internal surface with sparse, antrorsely appressed, 0.02–0.08 mm long trichomes (to 40 trichomes/mm^2); *lobes* 5(6), *c.* equal, triangular or broadly triangular (0.5–1 length to width ratio), 0.7–1.2 mm long, 0.9–1.4 mm wide, acute or subacute, rarely the adaxial lobe obtuse, margins entire, external surface glabrous, internal surface and margins with sparse or moderately dense, 0.02–0.08 mm long trichomes. *Corolla* 9–12 mm long, mostly pale mauve or ± white with a very pale wash of mauve, the internal surface of the adaxial median lobe-pair either with purple speckling only (caused by purple-pigmented hairs, refer below) or entirely suffused purple with darker speckling (refer below); external surface (except for the base of the tube) entirely covered with an indumentum of curled and spreading trichomes 0.05–0.10 mm long (30–40 trichomes/mm^2), these longer on the tube than the lobes; *tube* 5.2–6.1 mm long, much longer than the calyx lobes, ± cylindrical for most of its length and 1.6–2.0 mm wide, expanding to 2.8–3.6 mm wide at the apex, internal surface glabrous in the basal half, hairy in the upper half with a dense or moderately dense (*c.* 20–80 trichomes/mm^2) indumentum of trichomes 0.05–0.40 mm long that extend onto the expanded portion and towards or onto the base of the abaxial median lobe in a longitudinal band, short glandular hairs also present on the expanded portion of the tube; *abaxial median lobe* spathulate, 3.5–5.5 mm long, 4.6–5.7 mm wide (1.7–2.6 mm wide at base), emarginate (sinus 0.7–1.3 mm long), margins ± undulate, crenate to erose, internal surface glabrous or with a few trichomes at the base and sometimes a few scattered, flattened trichomes; *lateral lobes* obovate or sometimes ± elliptic, 3.2–5.0 mm long, 2.8–3.4 mm wide (1–1.3 length to width ratio), shallowly emarginate, margins irregularly crenate, internal surfaces glabrous or sometimes with a few scattered, flattened trichomes; *adaxial median lobe-pair* broadly elliptic, broadly obovate to ± square in outline, galeate, 3.5–4.0 mm long, 3.6–4.2 mm wide (0.7–1 length to width ratio), emarginate (sinus 0.8–1.4 mm long), margins of lobe-pair ± recurved, internal surface with distinctly flattened (when dry), often purple trichomes and shorter glandular trichomes (*c.* 20 trichomes/mm^2). *Stamens* 2, adaxial, inserted 3.5–4.5 from corolla base; *filament* 1.0–1.8 mm long, 0.2–0.4 mm wide, with trichomes at base; *anther* 1.7–2.3 mm wide (from outer edge of fertile pollen locule to outer edge of sterile locule); *fertile locule* abaxial, 0.7–1.0 mm long, connective 0.35–0.45 mm long; *sterile locule* (adaxial) and connective fused into a clavate structure, 0.6–0.8 mm long, densely covered at the apex by distinctly flattened (when dry) trichomes *c.* 0.2 mm long. *Staminodes* 2, abaxial, inserted 4.2–4.5 mm above corolla base; *filament* 1.2–1.4 mm long, 0.2–0.3 mm wide, with trichomes at base; *anther* 1.0–1.4 mm wide (from outer edges of the two sterile locules), *sterile locule* (abaxial) 0.45–0.53 mm long, abaxial connective *c.* 0.25 mm long, *sterile locule* (adaxial) 0.25–0.45 mm long, adaxial connective *c.* 0.25 mm long. *Style* 3.8–7.0 mm long, 0.2–0.3 mm wide, glabrous, stigma lobes 0.2–0.3 mm long. *Ovary* depressed-globose, 0.7–1.0 mm long, 0.9–1.3 mm wide, glabrous, ovarian lobes extending to 0.2–0.3 mm past point of style insertion; *disc c.* 0.3–0.7 mm long. *Mericarps* 1.8–2.4 mm long, 1.0–1.2 mm wide, with raised reticulation and a papillose texture. (Figures 1, 2)

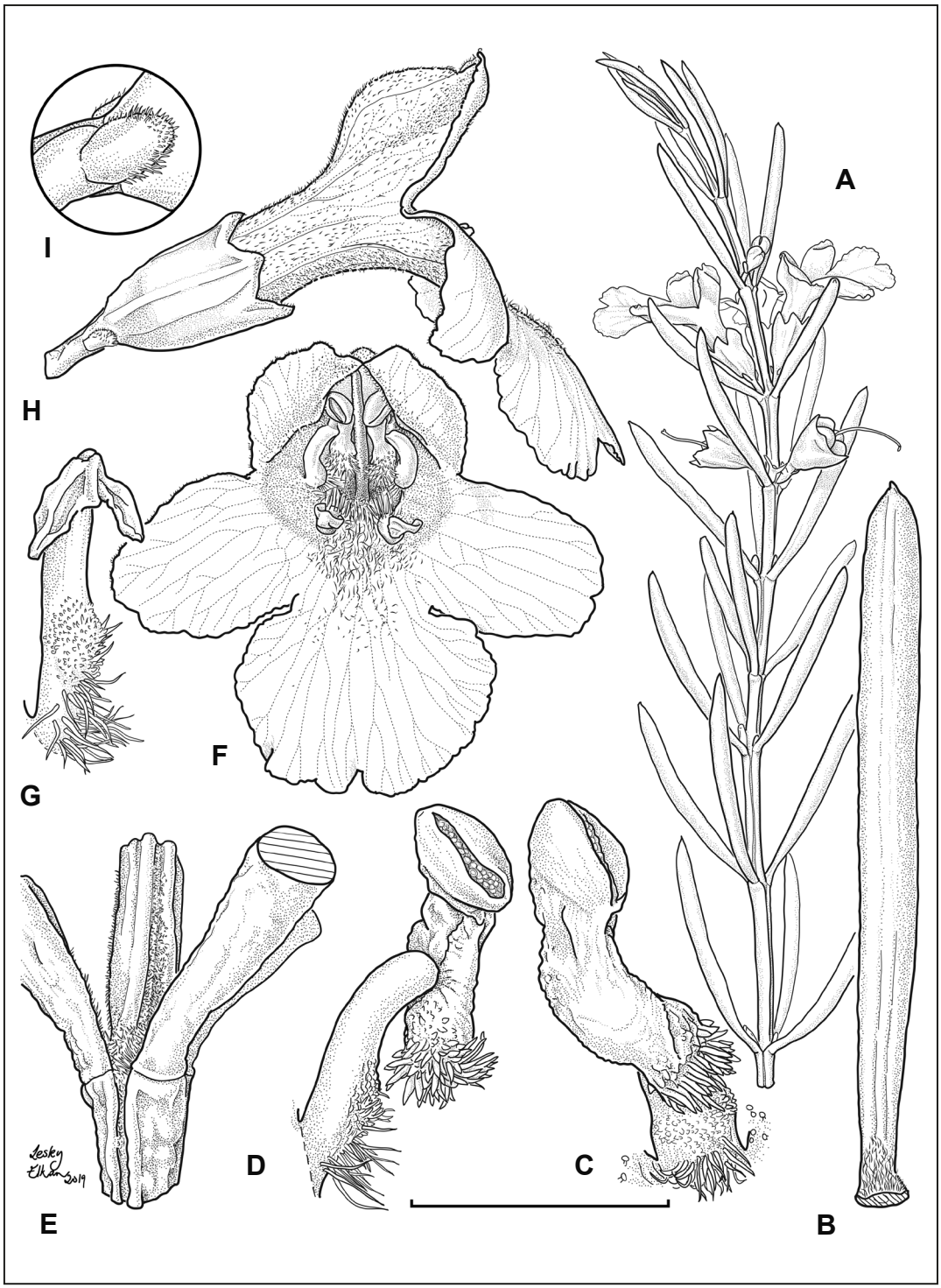

Figure 1. *Microcorys elatoides*. A – flowering branchlet; B – leaf, adaxial view; C – stamen, adaxial view; D – stamen, abaxial view; E – stem node showing insertion point of the three leaves; F – flower front view showing stamens, style and stigma; G – staminode, abaxial view; H – flower profile view showing calyx, prophylls, stamens (partially); I – magnified view of prophylls on the pedicel. Scale bar = 15 mm (A); 5 mm (B, F, H); 2.5 mm (E); 1.6 mm (C, D, G, I). Illustration by Lesley Elkan from *R. Davis & M. Hislop* RD 12946 (NSW 1057139).

Figure 2. *Microcorys elatoides* from Mt Holland. A – multi-stemmed habit; B – single flower; C – group of flowers. *Microcorys macredieana* from south of Ilkurlka, Great Victorian Desert. D – group of flowers. Photographs by Rob Davis from *R. Davis & M. Hislop* RD 12946 (A–C) and *R. Davis & J. Jackson* RD 11691 (D).

Diagnostic characters. *Microcorys elatoides* can be recognised by the following combination of features: leaves arranged in whorls of 3, lacking an adaxial groove; calyx lobes up to half the length of calyx tube; corolla 9–12 mm long; adaxial median corolla lobe-pair galeate and with more or less recurved margins; 2 abaxial staminodes and 2 adaxial stamens, the latter with an elongated anther connective and single fertile pollen locule; papillose, reticulate mericarps.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 25 Oct. 2016, *D. Angus* DA 2393 (PERTH); 26 Oct. 2016, *D. Angus* DA 2397 (PERTH); 26 Oct. 2016, *A. Barrett* AB 077 (PERTH); 22 Aug. 1995, *G. Barrett s.n.* (PERTH).

Distribution and habitat. *Microcorys elatoides* is only known from the Mount Holland district, in the Coolgardie bioregion of Western Australia. The plant occurs in species-rich communities of open mallee woodland over dense shrubs in sandy loam soils, sometimes with lateritic pebbles at the surface. Associated species include *Eucalyptus burracoppinensis*, *E. incrassata, Allocasuarina acutivalvis, A. spinosissima, Grevillea cagiana, Hakea erecta, Phebalium megaphyllum, Melaleuca pungens, M. laxiflora* and *Gompholobium hendersonii*.

Phenology. This species appears to have an extended flowering period during the winter-spring months (August to October) and is probably responsive to the locally intermittent rainfall across that period. The specimen *G. Barrett s.n.* was collected in the third week of August and has buds, flowers and mature fruit present, as does the type material collected in the second week of October.

Etymology. From the Greek *elate* (fir, spruce) and *-oides* (resembling), a reference to the habit of the branchlets resembling spruce (*Picea* Mill.: Pinaceae).

Vernacular name. Mount Holland Microcorys.

Conservation status. *Microcorys elatoides* is listed as Priority One under Conservation Codes for Western Australian Flora (Smith & Jones 2018), under the name *M*. sp. Mt Holland (D. Angus DA 2397). It is locally common in a restricted area of the Mount Holland district, within and around an active mining lease. The natural vegetation in this part of the State is, however, largely intact and so the chances of finding new populations away from that immediate area appear likely.

Affinities. In an unpublished review of *Microcorys* produced in the late 1990s, Western Australian Herbarium taxonomist Barbara Rye included the then only-known specimen of *M. elatoides* (*G. Barrett s.n.*) under *M. macredieana*, but considered it to be atypical. This placement is understandable since the two taxa share many similarities, such as having more or less terete leaves in whorls of three, and a corolla with a galeate adaxial median lobe-pair and external surfaces (apart from the base of the tube) that are uniformly covered by short non-glandular trichomes.

Microcorys elatoides differs from *M. macredieana* in the following characters: generally broader, more wrinkled leaves, (0.8–)1.0–1.4 mm wide (*cf.* 0.5–0.8 mm) that lack an adaxial groove (*cf.* with a distinctive adaxial groove); calyx lobes that are up to half the length of the tube (*cf.* longer than half the length of the tube); a longer corolla (9–12 mm long *cf.* <7.5 mm long); a spathulate abaxial median corolla lobe (*cf.* oblong to narrowly ovate); and papillose mericarps (*cf.* with trichomes towards the apex; these may be spreading, non-glandular and to *c.* 0.2 mm long, more or less sessile and glandular, or a mixture of both types). Other differences include the relatively broader calyx lobes of *M. elatoides* (triangular or broadly triangular *cf.* narrowly triangular), its usually shorter prophylls (0.4–0.7 mm long *cf.* 0.7–1.8 mm), and its dark green aspect as compared to the bright green appearance of *M. macredieana*.

Microcorys macredieana grows on sand dunes in the deserts of inland Australia. The nearest it has been recorded to the Mount Holland distribution of *M. elatoides* is about 430 km to the north-east in the Great Victoria Desert.

Notes. Pollinators have not been observed on *M. elatoides*, although based on previous studies of Australian Lamiaceae pollinators and corolla morphologies (Guerin 2005; Wilson *et al.* 2017), it is likely that it is visited by a great diversity of insects, predominately bees and flies. Anthers on the adaxial stamen pair are fixed onto the filament such that they are versatile (Figure 1D). By pushing the sterile end (the bearded adaxial connective), a pollinator such as a bee or fly would cause the fertile end (abaxial connective and associated pollen locule) to swing onto its dorsal side. If bees and flies access the corolla, they would do so by foraging past the sterile ends, causing nototribic placement of pollen.

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