Nuytsia The journal of the Western Australian Herbarium

31: 41–45 Published online 25 February 2020

The Golden-goo Hibiscus (*Hibiscus chrysinocolla*, Malvaceae), a new species from Katjarra, Western Australia

Todd G.B. McLay[1] and Steven J. Dillon[2]

[1]Centre for Australian National Biodiversity Research, CSIRO,
GPO Box 1700, Canberra, Australian Capital Territory 2601
[2] Western Australian Herbarium, Biodiversity and Conservation Science,
Department of Biodiversity, Conservation and Attractions,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
[1]Corresponding author, email: Todd.Mclay@rbg.vic.gov.au

SHORT COMMUNICATION

A new species of *Hibiscus* L. (Malvaceae) is described below as part of a large revision of the Australian components of *H.* sect. *Bombicella* DC. Restricted to Katjarra (the Carnarvon Range), part of the Birriliburu Indigenous Protected Area some 160 km north-north-west of Wiluna, this species was first collected in 1998 but only recognised as distinctive in 2012 when it was added to Western Australia's vascular plant census under the name *H.* sp. Carnarvon (S. van Leeuwen 5110) by Johan Hurter (Parker & Biggs 2013). It was subsequently recollected during regional surveys in August 2012 and May 2013 by Gibson *et al*. (2014), who astutely collected ample herbarium samples along with detailed habitat notes and photographs. Examination of this material, along with specimens from all Australian members of sect. *Bombicella*, has confirmed that it is morphologically distinct, with its novel status further supported by a preliminary molecular phylogeny of the Australian *Hibiscus* (McLay, in prep.).

Hibiscus chrysinocolla McLay & S.J.Dillon, *sp. nov.*

*Typ*e: Carnarvon Range, Western Australia [precise locality withheld for conservation reasons], 10 August 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6535 (*holo*: PERTH 08953937; *iso*: CANB, MEL).

Hibiscus sp. Carnarvon (S. van Leeuwen 5110), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/browse/profile/40601 [accessed 14 March 2019].

Woody *shrub* to 2 m tall. *Branchlets* densely covered with fine, white to yellow stellate hairs 0.8–1.7 mm diam. with rays up to 1.1 mm long, often ferruginous in upper portion of stem, sparsely interspersed with glandular hairs to 0.85 mm long, small golden droplets of a resin-like exudate present on hairs. *Stipules* ± persistent or late caducous, filiform or linear, 3.5–11 mm long, with an indumentum of stellate and glandular hairs. *Leaves* simple, with an indumentum similar to the branchlets, hair density similar on both surfaces; *petiole* 10–80 mm long; lamina concolorous, ovate or broadly ovate to orbicular, 25–85 mm long, 20–75 mm wide, base cordate or rounded, margins crenulate to dentate, apex obtuse to rounded. *Flowers* solitary in leaf axils; flowering stalk usually pedunculate or sometimes lacking an

https://florabase.dpaw.wa.gov.au/nuytsia/
ISSN 2200-2790 (Online)
ISSN 0085-4417 (Print)

obvious articulation and appearing pedicellate, indumentum similar to branchlets, peduncle 10–65 mm (when present), pedicel 2–12 mm long if peduncle present or up to 65 mm long if articulation absent. *Epicalyx* usually 8- but sometimes 7- or 9-segmented; segments free at the base, narrowly obovate to narrowly oblanceolate, shorter than the calyx, 5–14 mm long, 1.4–2.4 mm wide, straight. *Calyx* at anthesis 14–26 mm long; sepals narrowly triangular, 11–17 mm long, 3.5–4.5 mm wide, with a central nerve and 2 lateral nerves that become more obvious in fruit, indumentum similar to the branchlets, the inner surface with fine, sinuous, simple hairs towards the apex. *Corolla* 25–37 mm long, pale mauve to purple without a petal spot, outer surface sparsely to moderately glandular-hairy. *Staminal column* 12–16 mm long, 5-lobed apically, lobes mauve; stamens inserted in pairs (twinned) along the entire length of the column or in two distinct clusters (one at the base and one closer to the style), filaments 1–1.75 mm long, anthers pink to red, pollen red or dark orange (or becoming dark orange to yellow when dry). *Style* exserted 2–4 mm beyond the apex of the staminal column; style branches 5, 2–3.3 mm long; stigma capitate, 0.7–1.2 mm wide including stigmatic hairs, the hairs 0.25–0.5 mm long. *Fruit* a chartaceous capsule, ovoid, 11.5–16 mm long with a beak 1–3 mm long, with sparse, simple and glandular hairs (sometimes only in the distal portion). *Seeds* subreniform, 2.3–3 mm long, densely covered with white to pale brown simple hairs 1–1.3 mm long. (Figure 1)

Diagnostic features. *Hibiscus chrysinocolla* can be distinguished from other species in the genus by the following combination of characters: golden droplets of resin-like exudate on the leaves and stems (Figure 1D); densely hairy, narrowly obovate epicalyx segments to 14 mm long and 1.4–2.4 mm wide (Figure 1B); a corolla with sparse to moderately dense glandular hairs on the outer surface and no petal spot (Figure 1C); and stamens inserted in pairs (twinned, Figure 1C) and distributed throughout the length of the staminal column or in distinct clusters at the base and the apex of the staminal column. Other useful diagnostic features are ovate or broadly ovate to orbicular leaves, red pollen (Figure 1C), and white to pale brown seed hairs 1–1.3 mm long (Figure 1F).

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 31 Aug. 1998, *B. & B. Backhouse, D.J. Edinger, G. Marsh, B. & R. Johnson* BEMJ 194 (PERTH); 20 Aug. 2000, *D.J. Edinger* 2240 (PERTH); 8 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6828 (PERTH); 8 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6829 (PERTH); 8 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6830 (PERTH); 9 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6831 (PERTH); 10 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6535 (PERTH); 10 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6826 (PERTH); 10 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6827 (PERTH); 12 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6832 (PERTH); 16 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6536 (PERTH); 16 Aug. 2012, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 6537 (PERTH); 14 May 2013, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 7304 (PERTH); 14 May 2013, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 7305 (PERTH); 17 May 2013, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 7303 (PERTH); 17 May 2013, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 7306 (PERTH); 17 May 2013, *N. Gibson, S. van Leeuwen, M.A. Langley & K. Brown* NG 7307 (PERTH); 4 Aug. 2001, *K.F. Kenneally & D.J. Edinger* K 12152 E 2616 (PERTH).

Phenology. Buds, flowers, and fruits have been recorded from specimens collected in May, August and September. Flowering is likely associated with seasonal rain.

Distribution and habitat. *Hibiscus chrysinocolla* is only known from Katjarra (the Carnarvon Range), within the Birriliburu Indigenous Protected Area in the Little Sandy Desert bioregion. It grows in

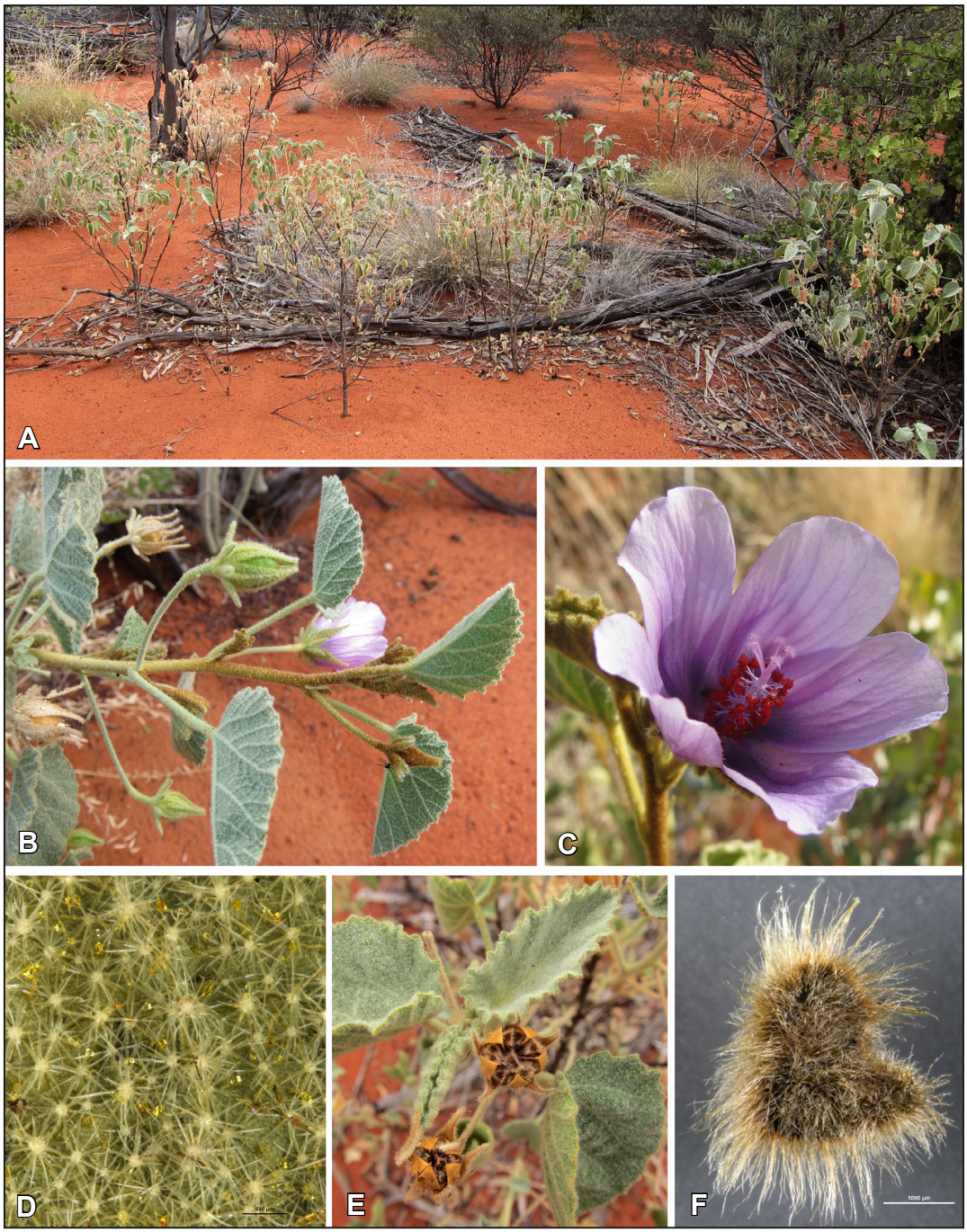

Figure 1. *Hibiscus chrysinocolla*. A – habit in red sandy loam; B – flowering branchlet showing ferruginous hairs and epicalyx; C – flower lacking petal spot, with red pollen; D – leaf surface showing stellate hairs and the golden, resin-like substance; E – fruits with seeds; F – seed with hairs. Vouchers: PERTH 08782237 (D), PERTH 08953996 (F). Scale bars = 0.5 mm (D); 1 mm (F). Photos by Kate Brown and Margaret Langley (A–C, E), T. McLay (D) and Brook Clinton (F).

red-brown sand or rocky red loam over sandstone (Figure 1A), often in or near creek lines. Associated species include *Eucalyptus camaldulensis*, *Corymbia deserticola*, *Acacia ayersiana*, *Acacia sibirica*, *Dodonaea* spp. and *Triodia* spp.

Conservation status. *Hibiscus chrysinocolla* is listed as Priority One under Conservation Codes for Western Australian Flora (Smith & Jones 2018), as *H.* sp. Carnarvon (S. van Leeuwen 5110). The species is restricted to Katjarra but is widespread throughout the area (Gibson *et al*. 2014).

Etymology. The epithet is Greek, combining *chrysinos* (of gold, golden) and *kolla* (glue), and refers to the golden droplets of resin-like exudate found on the leaves and stems.

Vernacular name. Golden-goo Hibiscus.

Affinities. Preliminary molecular evidence indicates *H. chrysinocolla* is closely related to the following taxa endemic to or with distributions centred on the Pilbara bioregion: *H. coatesii* F.Muell., *H. campanulatus* A.J.Perkins, *H.* sp. Mt Robinson (G. Byrne 3537), *H.* sp. Gurinbiddy Range (M.E. Trudgen MET 15708) and *H.* sp. Mt Brockman (E. Thoma ET 1354). *Hibiscus coatesii* is an extremely variable species that is currently undergoing taxonomic treatment. It lacks the golden droplets on the leaves and stems that characterise *H. chrysinocolla*, and its vegetative parts usually have a denser indumentum of stellate hairs. It also has mostly narrower epicalyx segments (to 1.4 mm wide *cf.* 1.4–2.4 mm), a mostly shorter corolla (to 26 mm long *cf.* 25–37 mm), a dark purple spot at the base of each petal (absent in *H. chrysinocolla*), an outer corolla surface that is glabrous or sparsely stellate-hairy on the upper margins (*cf.* glandular-hairy), and seeds with longer hairs (to 3.75 mm long *cf.* 1–1.3 mm).

The stipules of *H. campanulatus* are generally longer (10–20 mm long *cf.* 3.5–11 mm long), the epicalyx is lanceolate to elliptic, broader (2.6–5 mm wide *cf.* 1.4–2.4 mm wide) and occasionally connate at the base (*cf.* obovate and always free), and the corolla has sparse, fine stellate hairs on the upper margin (*cf*. sparse to moderate glandular hairs on the outer face) (Perkins 2017).

Hibiscus sp. Mt Robinson differs from *H. chrysinocolla* in having stellate hairs with rays 3–5(–7) mm long (*cf.* to 1.1 mm long), an obviously flattened pedicel with long white stellate hairs (*cf.* with both stellate and glandular hairs), flowers with a red petal spot (absent in *H. chrysinocolla*), and shorter seed hairs (to 0.2 mm long *cf.* 1–1.3 mm).

Ongoing taxonomic work suggests that *H.* sp. Mt Brockman and *H.* sp. Gurinbiddy Range potentially represent the same taxon. Specimens assigned to these names differ from *H. chrysinocolla* in having subulate-linear stipules (*cf.* filiform or linear), narrowly ensiform to narrowly oblanceolate epicalyx lobes 0.3–1.3 mm wide (*cf.* narrowly obovate 1.4–2.4 mm wide), longer sepals 17–33 mm long (*cf.* 11–17 mm long), a corolla bearing a purple proximal spot (spot absent in *H. chrysinocolla*), the corolla glabrous or with very sparse glandular hairs on the margins (*cf.* sparse to moderately dense glandular hairs on the outer face).

Hibiscus sp. Gardneri (A.L. Payne PRP 1435) also occurs at Katjarra (Gibson *et al.* 2014), although is quite distinct from *H. chrysinocolla* given its characteristically flattened branchlets (especially at the base of the peduncle), smaller stellate hairs on the stems (0.2–0.5(–0.7) mm diam. *cf.* 0.8–1.7 mm diam.) and sparser, shorter glandular hairs (*c.* 0.1 mm long *cf.* to 0.85 mm long), leaves with stellate hairs sparsely distributed on the adaxial surface and predominantly on the veins on the abaxial surface

(*cf.* indumentum similarly dense on both surfaces), and longer seed hairs (to 5 mm long *cf.* 1–1.3 mm).

Other, more distantly related taxa that occur in the region are varieties in the *H. sturtii* Hook. complex (*H. sturtii* var. *truncatus* Fryxell, *H. sturtii* var. *grandiflorus* Benth.), which are readily distinguished from *H. chrysinocolla* by their fused epicalyx segments. Two informally named taxa that occur within Beard's Eremaean Province and are represented by a single herbarium specimen were also compared to *H. chrysinocolla*. *Hibiscus* sp. Durba Hills (R. Davis 11193) occurs in the Little Sandy Desert bioregion, but *c.* 300 km north-west of Katjarra, and *H.* sp. Wonganoo Station (K. Boladeras 125) occurs in the Murchison bioregion, *c.* 250 km south of Katjarra. Based on the limited material it appears that these taxa are distinct from *H. chrysinocolla* and one another: *H.* sp. Durba Hills has a petal spot (*cf.* no petal spot) while *H.* sp. Wonganoo Station has glabrous petals (*cf.* sparsely to moderately glandular-hairy). More collections of these phrase name entities are required.

Acknowledgements

The Martu people of the Birriliburu Indigenous Protected Area are acknowledged for their support of survey efforts at Katjarra. A special thanks to Neil Gibson, Stephen van Leeuwen, Kate Brown and Margaret Langley for their extensive collections, notes and photographs. Thank you to the National Seed Bank at the Australian National Botanic Gardens for access to imaging facilities, and Brook Clinton for photographing the seeds. Juliet Wege is thanked for advice and comments on an early draft of the manuscript. Brendan Lepschi and Peter Wilson are thanked for helping with the orthography of the specific epithet. We also thank staff at the Western Australian Herbarium for curatorial assistance. This research was funded through the Australian Government's Australian Biological Resources Study National Taxonomy Research Grant Programme for the project 'An eFlora treatment for Australian *Hibiscus* and novel genomic markers for addressing taxonomic challenges in Malvaceae sensu lato', and in part by Rio Tinto through their support of an Identification Botanist position at the Western Australia Herbarium.

References

Gibson, N., Langley, M.A., van Leeuwen, S. & Brown, K. (2014). *Vascular flora of Katjarra in the Birriliburu Indigenous Protected Area*. Report to the Birriliburu Native Title Claimants and Central Desert Native Title Services. Western Australian Department of Parks and Wildlife. https://library.dbca.wa.gov.au/static/FullTextFiles/072223.pdf[accessed 7 June 2019].

Parker, C.M. & Biggs, L.J. (2013). Updates to Western Australia's vascular plant census for 2012. *Nuytsia* 23: 503–526.

Perkins, A.J. (2017). *Hibiscus campanulatus* (Malvaceae), a new and rare species from the Pilbara bioregion, Western Australia. *Nuytsia* 28: 135–138.

Smith, M.G. & Jones, A. (2018). *Threatened and Priority Flora list 5 December 2018*. Department of Biodiversity, Conservation and Attractions. https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants [accessed 14 March 2019].

Western Australian Herbarium (1998–). *FloraBase—the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions. https://florabase.dpaw.wa.gov.au/ [accessed 14 March 2019].