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Seven miscellaneous new species of *Hibbertia* (Dilleniaceae) from Western Australia

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Abstract

Seven miscellaneous new species in *Hibbertia* subgen. *Hemistemma* (Dilleniaceae) are described from south-western Western Australia: *H. cleistophylla* K.R.Thiele, *H. fortunata* K.R.Thiele, *H. heterandra* K.R.Thiele, *H. lanigera* K.R.Thiele and Hammer, *H. macfarlanei* K.R.Thiele, *H. odontion* K.R.Thiele and *H. sparsa* K.R.Thiele and Hammer. The new species are known from few collections (in some cases from only one), but are sufficiently distinct that they warrant formal naming to encourage further field work and conservation assessments. Most are from relatively remote areas where there is extensive habitat that has been poorly surveyed due to a paucity of tracks and hence limited access; they are likely to be more widepread than is currently known, though some may be localised.

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Introduction

The south-west of Western Australia is a species-rich centre of endemism and diversity for *Hibbertia* (Dilleniaceae), with many new species having been described in recent decades and new species discovered regularly. The present paper deals with a miscellany of new species. All belong in *Hibbertia* subgen. *Hemistemma* (Juss. ex Thouars) J.W.Horn, which in south-west Western Australia is characterised by ericoid leaves and stamens that are usually on one side of two carpels and have a characteristic arrangement like a hand of bananas curving over the carpels and styles.

The new species are probably not closely related to each other within that subgenus, and in many cases do not clearly fall within currently recognised informal species groups. Their precise relationships await the development of a comprehensive phylogeny of the genus in Australia.

Most of the species dealt with here are represented by few collections (some by the type only) and all but one occur in a poorly-collected region of the state – the extensive yellow sandplains on Crown Lands north of the eastern Wheatbelt clearing line. Two major roads, the Hyden-Norseman and Lake King-Norseman roads, traverse this region from east to west, but trackways elsewhere are sparse and hence access is restricted. All species are likely to be more widespread than is currently known, but species turnover on yellow sandplains in Western Australia is very high (Gibson et al. 2017) and

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it is possible that some may be highly localised despite the apparently widespread habitat.

Despite the small number of available specimens, all species described here are highly distinct and are confidently named as new, with the hope that their publication will stimulate further collecting and conservation assessments. All except *H. odontion* have been seen in the field by the author.

Methods

All descriptions are based on material held at the Western Australian Herbarium (PERTH). Some descriptions include the terms *hypopetiole* and *epipetiole*, to deal with an unusual petiole morphology in *Hibbertia*. These terms are introduced, defined and discussed in Thiele & Hammer (2024). In brief, petioles in *Hibbertia* have a basal section (the hypopetiole) and a distal section (the epipetiole), separated by a line of dehiscence. The two sections often have strikingly different indumenta. The hypopetiole remains as a woody peg on the stem after the leaf has fallen.

No field photographs of the species described here are available at the time of publication. High-resolution images of the type specimens will be made available by the Western Australian Herbarium (PERTH) shortly after publication; links to these are provided in the species treatments.

All species described in this paper are included in the key to *Hibbertia* in Australia on KeyBase (https://keybase.rbg.vic.gov.au/keys/13127).

Taxonomy

Hibbertia cleistophylla K.R.Thiele *sp. nov.*

Type: Lake King-Norseman Road 18.1 km E of Ninety Mile Tank, 16 Aug. 2020, *K.R. Thiele* 5624 (holo: PERTH 9261974; iso: AD, CANB).

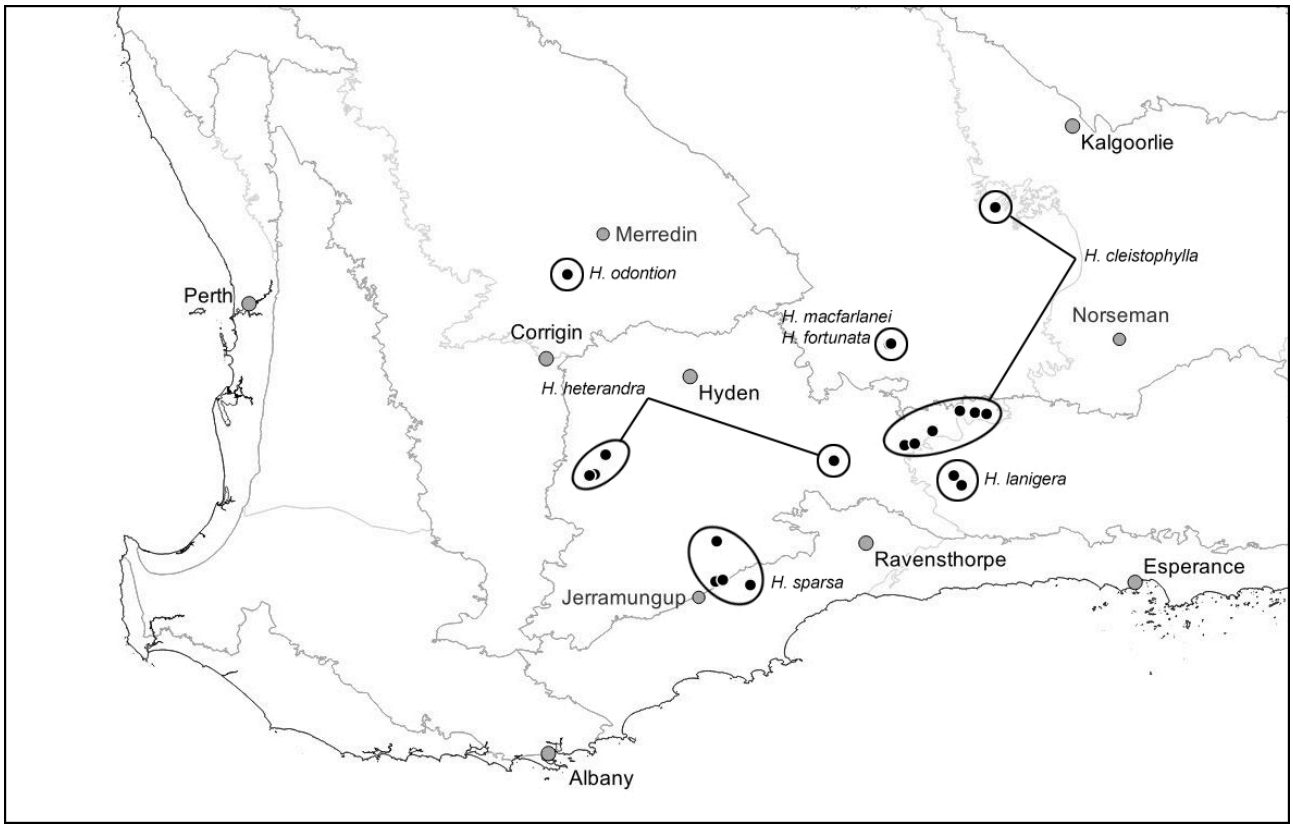
Type image: https://herbarium.dbca.wa.gov.au/PERTH%2009261974.jpg

Erect to spreading robust *shrubs* to 0.5 m high, multi-stemmed from the base and resprouting after fire; young branchlets glabrous or with very sparse, sinuous, spreading, white hairs (and then soon glabrescent). *Leaves* crowded at the branch tips and also scattered, erect at first then spreading, oblong, 5–8(–10) mm long, 1.5–2 mm wide, the margins strongly recurved and closely abutting each other so that the leaf appears cylindrical with a very narrow abaxial suture, the suture sometimes more prominent and recessed, the midrib and abaxial lamina usually completely hidden; petiole *c.* 1 mm long, the hypopetiole glabrous except for a prominent marginal fringe of white hairs, persistent as a woody peg on the stem, the epipetiole very short, hidden by the leaf base, densely pubescent; adaxial lamina smooth to obscurely tuberculate, with sparse, white, crisped, simple hairs when very young, soon glabrous; abaxial lamina (visible only by dissection) densely pubescent, the indumentum competely filling the lacuna; abaxial midrib (when visible) glabrous, when hidden within the leaf pubescent like the lamina; apex obtuse and pungently apiculate, the point straight but slightly excentric. *Flowers* sessile, terminal and terminating short-shoots; flower-subtending bract 1, 4–6 mm long, pale, broadly ovate, obtuse, flattened, with indumentum as for the sepals but shorter. *Sepals* broadly ovate, 6–6.5 mm long, densely pubescent with appressed, pale to brownish, silky hairs; midribs not prominent; outer sepals acute to shortly acuminate; inner sepals similar to the outer but broader and broadly acute to obtuse. *Petals* 5, yellow, broadly obovate, 8–10 mm long, deeply emarginate. *Stamens* 5(–7), all on one side of the gynoecium and curving over it like a hand of bananas; filaments 0.6–0.8 mm long; anthers rectangular, 1.5–2.5 mm long, dehiscing by introrse, longitudinal slits. *Staminodes* 6–10, on either side and behind the stamens, flattened, a few sometimes intermediate in size with the stamens and producing pollen. *Carpels* 2; ovaries compressed-globular, densely pubescent; styles curving excentrically from the carpel apex, 1.8–2.2 mm long. *Ovules* 4 per carpel. *Fruiting carpels* and seeds not seen.

Other specimens examined. SW of Queen Victoria Rocks, 17 Sept. 1966, A.S. George 8047 (PERTH 4435354); 2 km NW of 90 Mile Tank, Norseman - Lake King road,, 12 Nov. 1979, K.R. Newbey 6492 (PERTH 4435281); 42 km NE of Swallow Rock, Frank Hann National Park, c. 83 km NE of Lake King, 1 Aug. 1980, K.R. Newbey 6841 (PERTH 4435311); 90 mile tank on the Lake King Norseman Road, 113 kms north east of Lake King, 14 June 2006, G. Byrne 2061 (PERTH 7759177); Lake King-Norseman Road, c. 38 km SW of Ninety Mile Tank, 16 Aug. 2020, K.R. Thiele 5630 (PERTH 9330135); Lake King-Norseman Road, 10.2 km E of Ninety Mile Tank, 16 Aug. 2020, K.R. Thiele 5627 (PERTH 9330127); Lake King-Norseman Road, 10.2 km E of Ninety Mile Tank, 16 Aug. 2020, K.R. Thiele 5626 (PERTH 9330151); Lake King-Norseman Road, in gravel pit immediately W of Ninety Mile Tank, 14 Sept. 2019, K.R. Thiele 5575 (PERTH 9262016); Lake King-Norseman Road, 23.9 km SW of Ninety Mile Tank, 16 Aug. 2020, K.R. Thiele 5629 (PERTH 9330143); Lake King-Norseman Road, 24.3 km SW of Ninety Mile Tank, 16 Aug. 2020, K.R. Thiele 5628 (PERTH 9330178).

Diagnostic features. May be distinguished from all other species of *Hibbertia* by the apparently cylindrical leaves with the margins recurved to each other with an obscure suture between them (or, if revolute and meeting each other to form a groove, then the midrib scarcely visible and the abaxial lamina, which is only visible by dissection, evenly pubescent).

Phenology. Flowering specimens have been collected in June, August and September. Flowering may be sporadic depending on rainfall.



Map 1. Distributions of new species in this paper in south-western Western Australia. Dark and pale grey lines indicate IBRA bioregion and subregion boundaries respectively.

Distribution & habitat. Most specimens have been collected in Frank Hann National Park, east and south-west of Ninety Mile Tank (Fig. 1). A disjunct collection (*A.S. George* 8047) is from 'SW of Queen Victoria Rocks'; the area between these sites is poorly collected and *H. cleistophylla* may be more widespread than current specimens indicate. Occurs in low, semi-arid heath on pale grey to yellow sandplains over laterite.

Conservation status. Poorly known, but most specimens are from a national park.

Etymology. From the Greek *kleistos* (shut, closed) and *phyllon* (a leaf), in reference to the remarkable leaf morphology of the species.

Notes. In most specimens of *H. cleistophylla* the recurved leaf margins abut very closely and tightly, resulting in a leaf that is cylindrical in cross-section and with the suture scarcely visible as a pale abaxial line. Such leaves are unique in *Hibbertia.* In some specimens, however (*G. Byrne* 2061, *A.S.George* 8047), the margins are inrolled along the abaxial midline so that there is a deep groove, with the midrib sometimes visible though recessed. Some specimens have leaves that are mostly typical with a few that are intermediate between these extremes; the difference may relate to the maturity of the plant or of the branch, with young plants or resprouts having the 'atypical' leaves. For this reason, the specimens with atypical leaves are provisionally included in *H. cleistophylla* as recognised here.

Hibbertia pachyphylla is superficially similar to *H. cleistophylla*, but the leaves are shorter and almost globular, the margins abut a strong midrib, the apical leaf mucro is stronger and distinctly deflexed, and the abaxial leaf lamina is glabrous with hairs restricted to the flanks of the midrib and the leaf margins (this feature visible only on dissection).

Hibbertia fortunata K.R.Thiele, *sp. nov.*

Type: Western Australia: 6.53 km direct line NNW of Hyden-Norseman Road at turnoff to The Breakaways, along old exploration track, 18 Sept. 2021, *K.R. Thiele* 5760 (*holo*: PERTH 9368906; *iso*: AD, CANB)

Type image: https://herbarium.dbca.wa.gov.au/PERTH%2009368906.jpg

Rather openly-branched, erect *shrubs* to 0.3 m, multi-stemmed at the base and clearly resprouting after fire; young branchlets glabrous except for obscure tufts of minute hairs in the leaf axils. *Leaves* scattered, spreading, oblong, (4–)6–8 mm long, 1–1.2 mm wide, the margins strongly recurved to the midrib, obscuring the abaxial lamina; petiole *c*. 1 mm long, glabrous, the hypopetiole persistent as a woody peg on the stem; adaxial lamina with scattered small tubercles, glabrous or very sparsely and retrorsely uncinate-hairy along the margins when young, glabrescent; abaxial lamina (visible only by dissection) densely pubescent, the indumentum filling the lacuna; abaxial midrib glabrous, ± flat and level with the margins; apex tapering to a straight

to declined pungent point. *Flowers* pedicellate, terminal and terminating short-shoots, the pedicels 3–5 mm long, glabrous; primary bract at the apex of the pedicel, ovate, pungent, *c*. 1.5 mm long, glabrous except for minutely ciliate margins; secondary bracts absent but the pedicel often subtended by a few reduced leaves. *Sepals* ovate, *c*. 5 mm long, glabrous except for a minute ciliolate margin towards the apex, reddish with contrasting pale margins; midribs not prominent; outer sepals narrowing to a short, pungent apex; inner sepals similar to the outer but acute rather than pungent, and broader. *Petals* 5, yellow, broadly obovate, *c*. 9 mm long, broadly emarginate. *Stamens* 10, all on one side of the gynoecium and curving over it like a hand of bananas; filaments *c*. 0.3 mm long; anthers rectangular, *c*. 1.8 mm long, dehiscing by introrse, longitudinal slits. *Staminodes* absent. *Carpels* 2; ovaries compressed-globular, glabrous apart from a few sparse hairs along the suture; styles curving excentrically from the carpel apex, *c*. 1.5 mm long. *Ovules* 4 per carpel. *Fruiting carpels* and seeds not seen.

Diagnostic features. May be distinguished from all other species of *Hibbertia* by the combination of pungent-pointed, ericoid leaves with the margins tightly abutting the prominent midrib, glabrous sepals, and stamens on one side of two largely glabrous carpels (with a few hairs along the suture) and curving over them like a hand of bananas.

Phenology. The type specimen was flowering in September.

Distribution & habitat. Only known from one locality on an extensive area of sandplain north of The Breakaways on the Hyden-Norseman Road (Fig. 2). The area has few tracks and is poorly collected, and the species is almost certainly more widely distributed in the region.

Conservation status. Known from a single collection; the conservation status of *H. fortunata* should be assessed through further field work.

Etymology. From the Latin *fortunatus* (fortunate, lucky); the species was discovered by accident while looking for another new species described in this paper, *H. macfarlanei*.

Notes. Hibbertia fortunata is morphologically very different from any other species in the genus (see *Diagnostic features* above). It is not clear what other species it may be related to, pending its inclusion in a molecular phylogeny.

Hibbertia heterandra K.R.Thiele, *sp. nov.*

Type: Western Australia: Gravel pit on Ace Road 0.5 km N of Biddy Cam Road, 2 Sept. 2019, *K.R. Thiele* 5553 (*holo*: PERTH 9261982, *iso*: AD, CANB).

Type image: https://herbarium.dbca.wa.gov.au/PERTH%2009261982.jpg

Low, domed *shrubs* to 0.4 m × 1 m, multi-stemmed at base and probably resprouting after fire; young branchlets glabrous except for prominent, dense hair-tufts in the axils of the leaves. *Leaves* scattered, spreading, oblong, 8–12 mm long, 1.5–2 mm wide, the margins strongly recurved to the midrib and obscuring the abaxial lamina; petiole to 1.5 mm long, the hypopetiole glabrous, swollen, persistent as a woody peg on the stem, the epipetiole glabrous abaxially, shortly pubescent adaxially, more slender than the hypopetiole; adaxial lamina smooth, glabrous; abaxial lamina (visible only by dissection) pubescent with long hairs that fill the lacuna; abaxial midrib glabrous, slightly sunken with respect to the margins, with marginal papillae sometimes visible; apex abruptly tapering to a straight pungent point. *Flowers* very shortly pedicellate (the pedicels densely pubescent and to 2 mm long), terminal and terminating axillary short-shoots; primary bract at the apex of the pedicel, 2–3 mm long, narrowly triangular, scarious-indurate, dark purplish, glabrous except for long-ciliate margins; secondary bracts 2–4 at the base of the pedicel, similar in size and shape to the primary. *Sepals* broadly ovate, 5–6 mm long, dark purplish-brown except at the base, moderately to densely appressed-pubescent, rather rigid and indurate, scarious-margined; midribs not prominent; outer sepals acute; inner sepals similar to the outer but broader and with longer, denser hairs and wider scarious margins. *Petals* 5, yellow, broadly obovate, 8–10 mm long, shallowly emarginate. *Stamens* 5, all on one side of the gynoecium and curving over it like a hand of bananas; filaments *c*. 0.2 mm long; anthers rectangular, *c*. 2 mm long, dehiscing by introrse, longitudinal slits. *Staminodes* 5–8, lateral to and behind the stamens, filiform to flattened. *Carpels* 2; ovaries compressed-globular, densely pubescent; styles excentric from the carpel apex and rather erect, *c*. 2.2 mm long. *Ovules* 2 per carpel. *Fruiting carpels* and seeds not seen.

Other specimens examined. Along western side of Jinarnin Road, approx. 400 m east of Dumbleyung-Lake Grace Road, Tarin Rock Nature Reserve, 18 Aug. 2020, J. Keeble 367 (PERTH 9614958); Approx 10 m south of Jinarnin Road, and 380 m east of Dumbleyung - Lake Grace Road, Tarin Rock Nature Reserve, Kukerin, 19 Aug. 2019, J. Keeble 255 (PERTH 9650806); 250 m east of Rhodes Road and 35 m south of the northern reserve boundary, North Tarin Rock Nature Reserve, 20 Sept. 2020, J. Keeble 383 (PERTH 9614907); 200 m east of Rhodes Road and 50 m south of northern boundary, North Tarin Rock Nature Reserve, 20 Sept. 2020, J. Keeble 382 (PERTH 9614826); Approx 3.4 km west of Tarin Rock South Road, Tarin Rock Nature Reserve, 17 Sept. 2020, J. Keeble 374 (PERTH 9614869).

Diagnostic features. May be distinguished from all other Western Australian species by the combination of oblong, pungent-pointed leaves, flowers with indurate, purplish-brown sepals, five stamens, and staminodes lateral to and behind the stamens.

Phenology. Flowering specimens have been collected in September and October.

Distribution & habitat. Known only from two locations, the type locality north-east of Lake King (Fig. 3), where it was growing in proteaceous and myrtaceous shrub heath on yellow sandplains over laterite, and Tarin Rock and North Tarin Rock Nature Reserves near Tarin Rock.

Conservation status. Poorly known; the conservation status of this species should be assessed.

Etymology. From the Greek *heteros* (other, different) and *andros* (a male) in reference to the prominent staminodes that are behind the stamens and approximately half their length.

Notes. The locations from which *Hibbertia heterandra* is known (the type locality narth-east of Lake King, and near Tarin Rock) are rather widely disjunct. The plants from Tarin Rock differ slightly in details of leaf micromorphology from the type: in the former, the lacunae formed between the leaf margins and midrib are tightly stuffed with crisped, cotton-wool-like hairs and the leaf margins and midrib have small and rather obscure papillae, while in the type the lacunae are less tightly filled with hairs (which are straighter), and the leaf margins and edge of the midrib have stronger tubercles. Fine details of abaxial leaf micromorphology are critical characters in ericoid-leaved *Hibbertia* species. Given the disjunction and these differences, the Tarin Rock plants may be separable in future as a distinct species, but they are provisionally included in *H. heterandra* until more collections can be made, especially from the vicinity of the type locality.

A *Hibbertia* specimen from east of Forrestania (*J.M. Brown* 210, PERTH 04435303) is also superficially very similar to *H. heterandra*, and shares with it five stamens with staminodes behind the stamens. However, the abaxial leaf surface in that specimen is glabrous except for long, curled hair tufts from the margins and the edge of the midrib. The Forrestania specimen likely represents an undescribed species, but more material is needed before it can be dealt with.

Hibbertia stowardii is superficially similar to *H. heterandra* in leaf shape and abaxial indumentum, but has ten stamens and glabrous sepals.

Hibbertia lanigera K.R.Thiele & Hammer, *sp. nov.*

Type: Western Australia: 2.8 km along Lake Tay Road from Cascades Road then 9.9 km along unmarked [un-named] track bearing NW, 15 Sept. 2021, *K.R.Thiele* 5744 (*holo*: PERTH 9368817; *iso*: AD, CANB).

Type image: https://herbarium.dbca.wa.gov.au/PERTH%2009368817.jpg

Erect to spreading *shrubs* to 0.4 m high with many robust, erect stems from the multi-stemmed base, resprouting after fire; young branchlets densely white-woolly. *Leaves* scattered, erect at first then spreading, oblong, (5–)8–10(–12) mm long, *c.* 2 mm wide, the margins strongly recurved to each other and obscuring the weak midrib and the abaxial lamina; petiole 0.5–1 mm long, densely white-woolly, the hypopetiole persistent as a densely pubescent peg on the stem; adaxial lamina densely and finely tuberculate, with moderately dense, white, finely crisped hairs when young, glabrescent; abaxial lamina (visible only by dissection) glabrous, papillate towards the margins; abaxial midrib densely white-woolly; apex obtuse and pungently apiculate. *Flowers* sessile, terminal, closely subtended by crowded leaves; flower-subtending bract 1, 7–8 mm long, pale, leaf-like including in indumentum (but more flattened than the leaves), pungent-pointed. *Sepals* broadly ovate, 7–8 mm long, densely woolly with finely crisped, white hairs; midribs prominent; outer sepals pungent; inner sepals similar to the outer but broader and with scarious margins. *Petals* 5, yellow, broadly obovate, 10–12 mm long, deeply emarginate. *Stamens* 5, all on one side of the gynoecium and curving over it like a hand of bananas; filaments *c.* 0.1 mm long; anthers rectangular, appearing sessile, *c*. 3.5 mm long, dehiscing by introrse, longitudinal slits. *Staminodes* four either side of the stamens, flattened. *Carpels* 2; ovaries compressed-globular, densely pubescent; styles curving excentrically from the carpel apex, *c*. 2 mm long. *Ovules* 4 per carpel. *Fruiting carpels* and seeds not seen.

Other specimens examined. 3.5 km N along track from the junction of Cascades Road, 16 Oct. 2020, R. Davis 13905 (PERTH 9252150); 39.25 km NNE of Muckinwobert Rock, 6 Sept. 1983, M.A. Burgman & S. McNee 2193 (PERTH 4435362).

Diagnostic features. Hibbertia lanigera is unique amongst Western Australian *Hibbertia* species in having densely white-woolly young leaves and sepals, pungent leaves that are usually 8–10 mm long, 5 stamens with four flattened staminodes either side of the stamens, and 4-ovulate carpels.

Phenology. Flowering specimens have been collected in September and October.

Distribution & habitat. Known only from a few sites south of Lake Tay (Fig. 4), in open mallee on white to pale brown sandplains with proteaceous and myrtaceous shrub-heath understorey.

Conservation status. Poorly known; the conservation status of this species should be assessed.

Etymology. From the Latin *lanigerus* (bearing wool), in reference to the abundantly white-woolly young leaves, stems, and sepals.

Notes. Hibbertia lanigera is a highly distinctive species, with its robust habit and abundantly white-woolly young leaves at branch tips and crowded around the flowers. The flowers are equally distinctive, with pungent, abundantly white-woolly sepals, five fertile stamens and eight flattened staminodes (four on either side of the sta-

mens). *Hibbertia axillibarba* J.R.Wheeler, *H. arenaricola* K.R.Thiele*, H. erioclada* K.R.Thiele and some members of the *H. mucronata* (Turcz.) Benth. species group also have an abundant white indumentum at the branch tips (though the hairs are shorter and less prominent than in *H. lanigera*), but all these lack staminodes. The former three species share 4-ovulate carpels with *H. lanigera* but have ten stamens and lack staminodes, while members of the *H. mucronata* species group may also have five stamens but have two ovules per carpel. An understanding of the taxonomic position of the very distinctive *H. lanigera* awaits the assembly of a comprehensive phylogeny for the genus.

Hibbertia macfarlanei K.R.Thiele, *sp. nov.*

Type: Western Australia: 6.5 km NW of Hyden-Norseman Road, along a track, approximately 51 km E of Forrestania Crossroads, 6 Nov. 1988, *T.D.Macfarlane* 1871 (holo: PERTH 4760611; iso: AD).

Type image: https://herbarium.dbca.wa.gov.au/PERTH%2004760611.jpg

Low, erect, rather dense *shrubs* to 0.3 m, multi-stemmed at base and resprouting after fire; young branchlets sparsely and minutely stellate-pubescent, glabrescent. *Leaves* scattered, spreading, oblong, 3–5 mm long, 1–1.3 mm wide, the margins strongly recurved to the prominent midrib, obscuring the abaxial lamina; petiole 0.5–0.6 mm long, the hypopetiole glabrous, pale-coloured, persistent as a woody peg on the stem, the epipetiole extremely short (± hidden between the hypopetiole and the lamina), minutely densely woolly; adaxial lamina not tuberculate or with scattered tubercles especially along the lower margin, sparsely uncinate-hairy when young, glabrescent; abaxial lamina (visible only by dissection) glabrous except for densely pubescent margins where they meet the midrib; abaxial midrib glabrous, ± flat and level with the margins, with a broad, pale, sclerenchymatous central stripe bordered on either side by narrow strips of chlorenchyma; apex tapering to a straight pungent point. *Flowers* pedicellate, terminal and terminating short-shoots, the pedicels 3–5 mm long, with indumentum as for the young stems; primary bracts at the apex of the pedicel, 2–3 mm long, leaf-like (with margins recurved to a prominent midrib and pungent). *Sepals* narrowly ovate-attenuate, *c*. 5.5 mm long, densely pubescent with hooked hairs; midribs prominent on the outer sepals in the upper half; outer sepals pungently long-acuminate; inner sepals similar to the outer but slightly less acuminate and broader. *Petals* 5, yellow, broadly obovate, *c*. 5 mm long, shallowly emarginate. *Stamens* 10, all on one side of the gynoecium and curving over it like a hand of bananas; filaments *c*. 0.5 mm long; anthers rectangular, *c*. 2 mm long, dehiscing by introrse, longitudinal slits. *Staminodes* absent. *Carpels* 2; ovaries compressed-globular, densely pubescent; styles curving excentrically from the carpel apex, *c*. 1.5 mm long. *Ovules* 4 per carpel. *Fruiting carpels* and seeds not seen.

Other specimen examined. 6.53 km direct line NNW of Hyden-Norseman Road at turnoff to The Breakaways, along old exploration track, 18 Sept. 2021, K.R. Thiele 5763 (PERTH 9369139).

Diagnostic features. Hibbertia macfarlanei can be discriminated from all other Western Australian species in subgenus *Hemistemma* by the combination of straight-pungent leaves, sepals densely covered with hooked hairs, and four ovules per carpel.

Phenology. The only known flowering specimen was collected in early November, in 1988. During field work in the spring and early summer of 2021, plants formed young buds but these aborted and the population failed to flower, despite an average season; other *Hibbertia* species in the vicinity flowered well.

Distribution & habitat. Known only from the type locality north of The Breakaways on the Hyden-Norseman road (Fig. 5), where it occurs in low open mallee-heath on a pale yellowish-brown sandplain with very low dunes.

Conservation status. Currently know from a single population. The yellow sandplains where *H. macfarlanei* occurs are widespread in the region, but extensive searching during spring 2021 failed to locate other populations in apparently similar habitat. Given the very high turnover in the semi-arid yellow sandplains of south-western Western Australia (Gibson *et al.* 2017), the species may be highly localised.

Etymology. Named in honour of Terry Macfarlane (1953–), a botanist at the Western Australian Herbarium and significant contributor to our knowledge of the flora of Australia. Terry collected the type specimen and at time of publication is the only person to have seen the species in flower.

Notes. Hibbertia macfarlanei is not obviously close to any other Western Australian species. It shares with *H. ancistrotricha* a dense indumentum of hooked hairs on the sepals, and four-ovulate carpels, but that species has non-pungent leaves and sepals.

Hibbertia odontion K.R.Thiele, *sp. nov.*

Type: Comitun Dam Nature Reserve, along Eujinyn Rd 1.6 km N of McCarthy Rd then 130 m into the reserve, 18 September 2025, *K.R Thiele* 5899 & G. Cockerton (holo: PERTH 9950982; iso: AD).

Type image: https://herbarium.dbca.wa.gov.au/PERTH%2009950982.jpg

Rather openly-branched *shrubs* to 0.5 m, single-stemmed at base and obligately reseeding after fire; young branchlets glabrous except for obscure tufts of minute hairs in the leaf axils, or with few minute stellate hairs and glabrescent**.** *Leaves* scattered, spreading, oblong to slightly obovate, 4–6 mm long, *c*. 1 mm wide, the margins recurved but not quite meeting the midrib below (so that the abaxial lamina is partially exposed); petiole *c*. 1 mm long, glabrous, the hypopetiole per-

sistent as a woody peg on the stem, the epipetiole glabrous abaxially, minutely pubescent adaxially; adaxial lamina smooth, glabrous or with few uncinate hairs along the margins when young, glabrescent; abaxial lamina where visible glabrous, papillate; abaxial midrib glabrous, ± level with the margins, with prominent papillae or tubercles along the lateral flank opposing similar tubercles on the lamina margins; apex tapering to a strongly deflexed to recurved pungent point. *Flowers* pedicellate, terminal and terminating short-shoots, the pedicels 3–5 mm long, glabrous or minutely and sparsely stellate-hairy; primary bract at the apex of the pedicel, *c*. 1.5 mm long, triangular, pungent, glabrous except for densely ciliate margins; secondary bracts absent but the pedicel often subtended by a few reduced leaves. *Sepals* ovate, 4–5 mm long, with sparse, minute hooked hairs, the inner ones also with minute stellate hairs where covered by the outer in bud, the distal margins minutely ciliolate; midribs not prominent; outer sepals narrowing to a short, pungent apex; inner sepals similar to the outer but broader. *Petals* 5, yellow, broadly obovate, *c*. 5 mm long, broadly emarginate. *Stamens* 10, all on one side of the gynoecium; filaments 0.5–0.8 mm long; anthers rectangular, 1.6–2 mm long, dehiscing by introrse, longitudinal slits. *Staminodes* absent. *Carpels* 2; ovaries compressed-globular, densely pubescent; styles curving excentrically from the carpel apex, *c*. 1.5 mm long. *Ovules* 4 per carpel. *Fruiting carpels* and seeds not seen.

Other specimen examined: On E side of Eujinyn Rd, 1.4 km N of McCarthy Rd, Comitun Dam Nature Reserve (Res 30431), c. 37 km ESE of Kellerberrin. [Plot - KL06], 1 Oct. 1997, Keighery & Gibson 3733 (PERTH 7618999).

Diagnostic features. May be distinguished from all other Western Australian species of *Hibbertia* by the combination of short (4–6 mm long) recurved-pungent leaves with the margins recurved but not meeting the midribs and with a line of distinct tubercles along the flanks of the midribs and the opposing leaf margins, and ten stamens all on one side of two pubescent, 4-ovulate carpels.

Phenology. Flowers in September and October.

Distribution & habitat. Currently known only from the type locality of Comitun Dam Nature Reserve ESE of Kellerberrin (Fig. 6), where it grows in *Eucalyptus burracoppinensis* open shrub mallee on a yellow sandplain.

Conservation status. Likely to be rare, given that the region of the Wheatbelt where it occurs has been extensively cleared. Vegetation at the type location is rather moribund following a long period without fire. Very few plants were located in 2025, almost certainly because the site is long-unburnt and the species is an obligate reseeder. Targeted surveys should be conducted, especially in any recently-burnt areas nearby, and the conservation status of *H. odontion* urgently assessed.

Etymology. From the Greek diminutive of *odontos* (a tooth), used as a noun in apposition in reference to the tooth-like tubercles on the flanks of the abaxial leaf midrib and margins, the leaf thus having a fanciful resemblance to a tiny toothed mouth.

Notes. The type specimen of *Hibbertia odontion* was determined by J.R. Wheeler as *H. ancistrophylla*. That species differs in having the leaf margins tightly appressed to a prominent, bulging midrib and without tubercles on the margins or midribs, sessile to subsessile flowers subtended by usually several prominent, pungent bracts, and glabrous outer sepals (the inner sepals with minute stellate hairs where covered by the outer in bud). In leaves of *H. odontion*, the margins are clearly revolute, so the true margin is scarcely or not visible and with a groove either side of the midrib. In young leaves of *H. ancistrophylla*, by contrast, the margins are recurved to the midrib, the true margin is visible as a thin, whitish strip either side of the midrib, and there is no groove between margin and midrib. Older leaves may become somewhat grooved and the thin, whitish true margin less obvious. Such leaf characters as the presence or absence of tubercles or papillae and the disposition of the true margin with respect to the midrib are critical taxonomic characters among ericoid-leaved species of *Hibbertia*.

Typical specimens of *H. ancistrophylla* have been collected within 8 km of the type locality of *H. odontion*.

Hibbertia sparsa K.R.Thiele & Hammer, *sp. nov.*

Type: Western Australia: Brook Road 3.2 km N of Rabbit Proof Fence Road, NE of Jerramungup, 13 Sept. 2021, *K.R. Thiele* 5732 (*holo*: PERTH 9368973; *iso*: AD, CANB).

Type image: https://herbarium.dbca.wa.gov.au/PERTH%2009368973.jpg

Rather weak, very openly branched *shrubs* to 0.3 m, often tangled amongst other shrubs; young branchlets glabrous to minutely and sparsely to densely stellate-pubescent, soon glabrescent. *Leaves* scattered, spreading, oblong, (4–)5–8(–10) mm long, *c*. 1 mm wide, the margins strongly recurved to a prominent midrib and obscuring the abaxial lamina, adaxially ± flat, abaxially convex, with a sharp angle between the adaxial and abaxial surfaces, the angle ciliolate; petiole 1–1.5 mm long, the hypopetiole glabrous, persistent as a woody peg on the stem, the epipetiole glabrous and yellowish; adaxial lamina not tuberculate except for minute cilia-bearing tubercles on the margins, otherwise glabrous; abaxial lamina (visible only by dissection) pubescent, the hairs filling the lacuna; abaxial midrib glabrous, level with to protruding beyond the level of the margins; true lamina margins visible as a pale, membranous strip either side of the midrib; apex acute to sub-obtuse. *Flowers* sessile, terminal and terminating short-shoots in the axils of upper leaves; bracts 2–5, narrowly ovate-acute, glabrous except for minutely ciliolate margins; primary bract 5–6 mm long; secondary bracts grading to the leaves. *Sepals* narrowly ovate, 5–6 mm long, green

to reddish with contrasting pale margins; midribs not prominent; outer sepals glabrous except for minutely woolly-ciliate margins, attenuate; inner sepals similar to the outer but sparsely to moderately minutely pubescent with sub-stellate hairs where covered by the outer in bud, and slightly less attenuate and broader. *Petals* 5, yellow, broadly obovate, 8–10 mm long, shallowly emarginate. *Stamens* 10, all on one side of the gynoecium; filaments *c*. 0.8 mm long; anthers rectangular, 1.5–1.8 mm long, dehiscing by introrse, longitudinal slits. *Staminodes* 2 or 3 either side of the stamens. *Carpels* 2; ovaries compressed-globular, densely pubescent; styles curving excentrically from the carpel apex, 1.2–1.8 mm long. *Ovules* 2 per carpel. *Fruiting carpels* and seeds not seen.

Other specimens examined. Both sides of Brook Road, 3.2 km NE of its junction with Rabbit Proof Fence Road, 16 Sept. 2001, J.W. Horn 4086 (PERTH 6232795); Lake Magenta Nature Reserve, approx. 16 km E of W boundary on N fuel reduction strip, 29 Aug. 2002, G. Woodman & C. Godden FR 0205-17 (PERTH 6480993); 14 miles W of Jacup on Fitzgerald River, Aug. 1957, D.M. Churchill 12953 (PERTH 4395484).

Diagnostic features. May be discriminated from all other species in *Hibbertia* by the unique leaf shape in transverse section, with a flattened top, sharp lateral angles, and the lamina margins thin-textured, whitish and closely pressed against the prominent midrib, the whole leaf ± triangular in transverse section.

Phenology. Flowers in August and September.

Distribution & habitat. Known from a relatively small area north-east and east of Jerramungup and south of Lake Magenta (Fig. 7), where it grows in open mallee shrubland on pale grey to brown clayey sandy to loamy soils.

Conservation status. Sparsely distributed in the area where it occurs; the conservation status of *H. sparsa* should be assessed with more field work.

Etymology. From the Latin *sparsus* (sparse, spare) in reference to both the loose, open habit of the plant and its apparent sparseness in the landscape where is is found.

Notes. As outlined under *Diagnostic features*, the leaf cross-section of *H. sparsa* is unique in the genus. The thin-textured, whitish true lamina margins visible as pale strips either side of the midrib is reminiscent of species in the *Hibbertia lineata* Steud. species group (Thiele 2017), as are the sepals with contrasting pale margins. However, all members of that group have pedicellate flowers, while in *H. sparsa* the flowers are sessile. The relationships of *H. sparsa* are unclear pending a comprehensive phylogeny of the genus.

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