

Taxonomic notes on some Western Australian species of *Hibbertia* (Dilleniaceae)

J. R. Wheeler

Western Australian Herbarium, George Street, South Perth, Western Australia 6151

Abstract

Wheeler, J. R. Taxonomic notes on some Western Australian species of *Hibbertia* (Dilleniaceae). Nuytsia 5(1): 31-42 (1984). One new species, *H. ferruginea* and one new subspecies, *H. spicata* subsp. *leptotheca*, are described and illustrated. Taxonomic notes are provided on *H. montana* Steudel and its allies. *Hibbertia commutata* Steudel and *H. ovata* Steudel are reinstated as distinct species.

Introduction

The genus *Hibbertia* Andr. has between 60 and 70 species in Western Australia, most of which are endemic to the south west of the State. The purpose of this paper is to validate two new names so that they may be included in a treatment of the genus for the forthcoming "Flora of the Perth Region" and also to explain the reinstatement of two names which have been relegated to synonymy since Bentham's treatment (1863). The Perth Region as defined by Marchant & Perry (1981), contains 30 species of *Hibbertia*. Firstly the new taxa are described and secondly notes are provided on *H. montana* and its allies. This paper highlights the need for further research in the genus *Hibbertia*. Throughout the paper the sectional classification which I have followed is that of Gilg and Werdermann (1925). However further studies are necessary on the sectional and subsectional boundaries to establish their accuracy.

1. *Hibbertia ferruginea* J. R. Wheeler, sp. nov. (Figure 1)

Frutex tenuis, 0.2-0.5 m altus. Folia linearia, alterna vel subfasciculata. Flores sessiles, solitarii vel glomerati, flos quisque bracteis 3-7, latis, rigidis, ciliatis, 4-6.5 mm longis suffultus. Sepala quam bractee paulo longiora, pilis ferrugineis dense sericea. Stamina in fasciculos 5 tristaminatos disposita; filamenta connata. Ovarium carpellis 5 glabris compositum.

Typus: Yoongarillup, near Busselton, Western Australia. "Sandy soil." 17 October 1952, R. D. Royce 3891 (holo: PERTH; iso: CANB, MEL).

Erect shrubs 0.2-0.5 m high. Stems slender with long internodes. Leaves alternate or in few-leaved fascicles, sessile, linear, (7)15-30(50) × 1-1.5 mm, bluntly mucronate, glabrous to sparsely hairy with fine, often curled hairs, more densely hairy at the slightly dilated and ciliate base, margins closely revolute. Flowers terminal and axillary, sessile, solitary or several together, mostly 10-15 mm in diameter, surrounded by 3-7 bracts. Bracts broad, imbricate, concave, rigid, oblong to circular or broadly obovate, sometimes almost as long as and partly concealing the sepals, 4-6.5 × 3-7 mm, obtuse or minutely apiculate, the outermost bracts somewhat smaller and terminating in a small leaf-like projection; inner surface glabrous; outer surface



Figure 1. *Hibbertia ferruginea* A—Habit. B—Leaf. C—Flower. D—Flower with sepals and petals removed, showing the arrangement of stamens and carpels. E—Staminal bundle. F—Anther. G—Carpels.

From A. T. Hotchkiss, Ludlow, 4 Sept. 1953.

glabrous at the base but sparsely to densely sericeous towards the centre and apex with white or ferruginous hairs; margins membranous and ciliate with white curled hairs. *Sepals* 5, shortly united at the base, narrowly ovate or narrowly oblong to ovate or oblong, 5-7.5 × 2-3.5 mm, acute or subacute; the inner surface sparsely hairy towards the apex, otherwise glabrous; the outer surface densely sericeous with ferruginous hairs; margins becoming glabrous, entire or minutely ciliate. *Petals* 5, free, obovate, emarginate to obcordate, sometimes rather obliquely so, 6-10 × 3-

6.5 mm. *Stamens* 15, in 5 fascicles, each of 3 stamens with fused filaments, 2 of the 3 anthers of each fascicle sessile, the filament of the third innermost stamen is continued and swollen just below the anther; *anthers* 2-celled, oblong to elliptic, 1-1.75 mm long, opening by longitudinal slits; *staminodes* absent. *Carpels* 5, glabrous; *styles* arising from the adaxial side of the carpel and radiating; *ovules* 1 per carpel.

Other specimens examined (all PERTH): Ludlow, 4 Sept. 1953, A. T. Hotchkiss s.n.; Collie Basin, J. M. Koch CJK592; Sabina Road, 0.8 km west of Nannup to Busselton Road, B. R. Maslin 2819; 8 miles [12.9 km] from Nannup, towards Northcliffe, M. E. Phillips 2557; Capel-Donnybrook Road, R. D. Royce 2307; Yoongarillup, R. D. Royce 3163; Yoongarillup, R. D. Royce 3891; Capel, R. D. Royce 4375; Yoongarillup, Busselton District, R. D. Royce 4544; Hithergreen, Busselton district, R. D. Royce 5752; Yoongarillup, R. D. Royce 5760; Wilcock Forestry Plantation, near Curtis Siding, 150 miles [241 km] S of Perth, C. L. Wilson 861.

Habitat. Sandy soils, in Jarrah or *Banksia* woodland, or on sandy heathlands.

Distribution. (Figure 3) South-west of Western Australia, from near Capel (c. 26 km S of Bunbury) and Collie (c. 55 km E of Bunbury) southwards to near Busselton and Nannup.

Flowering period. August to November.

Etymology. The specific epithet refers to the colour of the hairs on the sepals.

Hibbertia ferruginea belongs to section *Candollea* (Labill.) Gilg. and is part of a species aggregate, which includes *H. depressa* Steudel, *H. desmophylla* (Benth.) F. Muell. and *H. helianthemoides* (Turcz.) F. Muell., in which species boundaries are unclear. Bentham (1863) and later workers have placed much emphasis on the number of carpels as a character for discriminating species. This character is variable in some species; however, it appears to be a reliable diagnostic character when distinguishing between the species in this particular complex.

Table 1. The critical differences between *Hibbertia ferruginea*, *Hibbertia depressa*, *Hibbertia helianthemoides* and *Hibbertia desmophylla*

	<i>H. ferruginea</i>	<i>H. depressa</i>	<i>H. helianthemoides</i>	<i>H. desmophylla</i>
Carpel Number	5	5	3	3
Staminal Arrangement	5 x 3	5 x 3	3 x (3-4) + 2 x (1-2)	3 x (3-4) + 2 x (1-2)
Bracts	Rigid, broad, conspicuous	Membranous, inconspicuous	Membranous or rigid and narrow, mostly inconspicuous	Membranous, inconspicuous
Sepals	Subacute, densely hairy	Subacute, mostly sparsely hairy	Subacute to acute, glabrous or sparsely hairy	Obtuse, glabrous
Leaves	Few, alternate or clustered. Almost glabrous to sparsely hairy	In dense clusters. Densely hairy	In dense clusters. Sparsely to densely hairy	In dense clusters. Sparsely to densely hairy
Leaf length	Mostly 15-30 mm	Mostly 6-15 mm	Mostly 8-15 mm	Mostly 8-20 mm

Hibbertia ferruginea is similar to *H. depressa* in the number and arrangement of carpels and stamens. Both have 5 carpels and have their stamens in 5 fascicles of three stamens with none free. *Hibbertia ferruginea* is also close to *H. desmophylla* and *H. helianthemoides* but the latter two species have only 3 carpels with stamens arranged in 5 fascicles of which 3 have three or four stamens and 2 have either two or one stamen.

The principal diagnostic characteristics of *H. ferruginea* and its allies are shown in Table 1. *Hibbertia ferruginea* differs from the other species in this complex in the presence of conspicuous, broad, rigid bracts closely surrounding the flowers and densely ferruginous appressed hairs on the sepals. It also differs in its more slender habit with narrower, less hairy and less clustered leaves. Although *H. depressa*, *H. helianthemoides* and *H. desmophylla* may each show some variation in shape and texture of both bracts and sepals, none of their variants come close to *H. ferruginea*, which itself shows very little variation.

2. *Hibbertia spicata* F. Muell., Fragm. Phyt. Austral. 2:1-2(1860). Type citation: "Ad portum Gregorii. Walcott et Oldfield" (holo: K; iso: MEL).

Hemistephus linearis J. Drumm. ex Harvey, Hooker's J. Bot. Kew Gard. Misc. 7:52(1855). Type citation: "Northern districts. J. Drummond", s.n. (type not located at K). Non *Hibbertia linearis* R. Br. (1817).

A low, erect or spreading *shrub*, 0.2-0.5 m high, rarely to 0.7 m. *Leaves* linear, rarely very narrowly oblong, (7)9-30(39) mm long, obtuse to shortly mucronate; upper surface glabrous, tuberculate or smooth, rarely sparsely scabrous; lower surface densely and minutely stellate; margins revolute. *Inflorescence* a 2-5(9)-flowered pedunculate spike. *Flowers* 5-15(20) mm in diameter, all but the lowest subtended by 2, often dimorphic, bracts; *bracts* narrowly elliptic to narrowly ovate, rarely broadly ovate, 2-5(8) mm long, margins sometimes ciliate. *Sepals* 5, 3.5-8 mm long; the outer 2 sepals narrowly ovate to narrowly elliptic, rarely narrowly obovate or ovate, mostly acute with a prominent midrib, glabrous or with minute stellate hairs, usually also with a few simple, uncinata hairs and rarely a few straight hairs, margins sometimes ciliate; the inner 3 sepals scarious, broadly elliptic, obtuse, with a less prominent or scarcely any midrib, minutely stellate hairy and also sometimes with a few simple, uncinata hairs towards the base, margins minutely ciliate. *Stamens* 6-12(15), all on one side of the carpels; *filaments* sometimes united towards the base; *anthers* narrowly oblong and 1-1.5 mm long, or linear and 1.5-3 mm long; *staminodes* variable, either on both sides of the stamens only, or on both sides and opposite the stamens, or continued around to form a complete ring with the stamens, or forming a complete ring outside the stamens, or behind the stamens only, or absent. *Carpels* 2, densely hairy; *ovules* 2 per carpel.

Both *H. spicata* F. Muell. and *H. polystachya* Benth. (1863) belong to section *Hemipleurandra* Benth. subsection *Spicatae* Gilg, in which the stamens are all on one side of the carpels and in which staminodia are usually present. Their inflorescence is a one-sided spike of 2 or more flowers.

Hibbertia spicata is characterised by an almost glabrous upper leaf surface and sepals which mostly have only uncinata and/or minute stellate hairs. *H. polystachya* is characterised by long, simple, spreading hairs on the upper leaf surface and sepals which are densely hairy with long straight simple and minutely stellate hairs. However some specimens are intermediate in respect to these characters. Bentham (1863)

also used differences in staminodes to separate the two species, but these differences have been found to be unreliable. Specimens considered to be *H. polystachya* on the basis of leaf and sepal characters were found to have staminodes which were similar in both number and arrangement to specimens considered, on the basis of leaf and sepal characters, to be *H. spicata*. Therefore it seems that the status of *H. polystachya* is uncertain. Further studies are necessary to clarify the position. *Hibbertia polystachya* and *H. spicata* are extremely closely related and may even be conspecific.

Key to subspecies

1. Anthers narrowly oblong, 1-1.5 mm long, staminodes several. Outer 2 sepals hairy with simple, uncinata and/or minute stellate hairssubsp. *spicata*
1. Anthers linear, 1.5-3 mm long, staminodes few or absent. Outer 2 sepals glabrous, or almost sosubsp. *leptotheca*

2a. subsp. *spicata*

Low erect or spreading *shrub*, 0.2-0.7 m high. *Leaves* 7-39 mm long, obtuse to shortly mucronate; upper surface glabrous, smooth or tuberculate, rarely minutely scabrous. *Flowers* 8-15(20) mm in diameter. *Outer sepals* mostly narrowly ovate or narrowly elliptic, 4-7 mm long, acute with simple, uncinata and/or minute stellate hairs, rarely narrowly obovate, obtuse, with straight uncinata and stellate hairs, or rarely ovate, ciliate and with only a few straight and uncinata hairs. *Inner sepals* 5-6 mm long, minutely stellate with often a few simple, uncinata hairs towards the base. *Stamens* 6-12; *anthers* narrowly oblong, 1-1.5 × 0.2-0.4 mm; *staminodes* variable in number and position, always present.

Selected specimens examined (all PERTH): Wagin, C. A. Gardner 1003; Cockleshell Gully, C. A. Gardner 8430; 9 km S of Eneabba, E. A. Griffin 1006; Avondale Research Station, 6 km W of Beverley, R. Hnatiuk 790181; Vearnlea, 11 km N of Cockleshell Gully, R. D. Hoogland 11962; near the turnoff from the Geraldton to Mullewa road to the Casuarinas, c. 36 miles [57.9 km] E of Geraldton, R. D. Hoogland 11978; Great Northern Highway, N of Pearce at 32 mile peg [51.5 km] from Perth, R. D. Hoogland 12014; 31.7 miles [51 km] E of Geraldton airport towards Mullewa, F. Lullfitz 5701; Glen Forrest, 18 Nov. 1899. A Morrison s.n.; Red Hill, 22 Sept. 1944, R. D. Royce s.n.

Distribution. (Figure 3) Widespread in Western Australia. Occurs in the Eremaean Botanical Province, in the area of North West Cape, and in the Irwin, Avon and Darling Botanical Districts from Kalbarri southwards to Wagin and just north of Katanning.

Habitat. Found on a variety of soils including limestone soils of North West Cape, sands of the northern heathlands and lateritic soils of the Darling Range.

Flowering period. July to November.

Variants of subsp. *spicata* from North West Cape and from Tammin have slightly larger flowers 15-20 mm across, lack uncinata hairs and have very dense stellate hairs on the slightly broader and darker coloured sepals.

2b. subsp. *leptotheca* J. R. Wheeler, subsp. nov. (Figure 2)

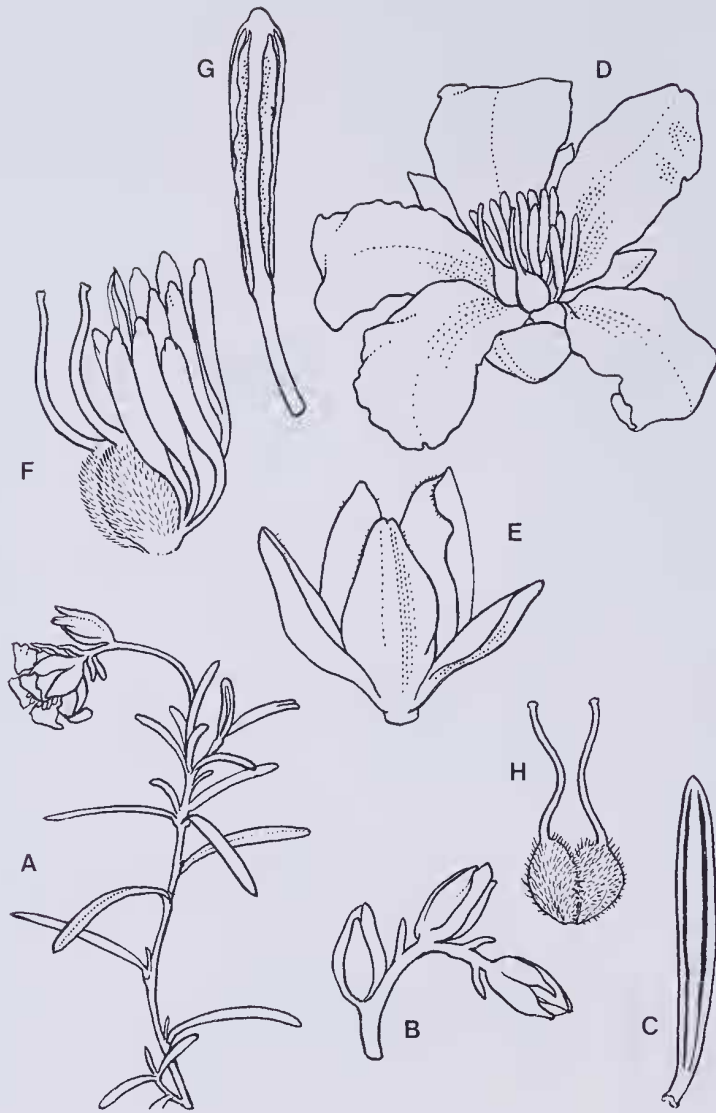


Figure 2. *Hibbertia spicata* subsp. *leptotheca* A—Habit. B—Buds. C—Leaf. D—Flower. E—Sepals. F—Flower with sepals and petals removed, showing the arrangement of stamens and carpels. G—Stamen. H—Carpels.

From J. R. Wheeler 2040.

Differt a *H. spicata* subsp. *spicata* antheris longioribus linearibus, staminodiis paucis vel nullis, sepalis exterioribus subglabris, interioribus minute tantum stellatis.

Typus: Yaigorup National Park, between the N end of Lake Preston and Martin's Tank Lake, Western Australia, 31°51'30"S, 114°40'20"E. "Diffuse shrub to 45 cm tall. Abundant in *Dryandra sessilis* and *Hakea undulata* and low closed shrubland on limestone soils." 17 September 1981, N. G. Marchant 81/76 (holo: PERTH; iso: CANB, MEL).

Low erect or spreading *shrub*, 0.2-0.3 m high with slender *stems*, glabrous or almost so, often viscid. *Leaves* (8)12-25(30) mm long, acute; upper surface smooth or sparsely tuberculate, glabrous with rarely a few minute scabrous hairs towards the base. *Flowers* 5-10 mm in diameter. *Outer sepals* narrowly ovate to narrowly elliptic, 3.5-5 mm long, acute, glabrous or almost so. *Inner sepals* 4.5-6.5 mm long, hairy with minute stellate hairs. *Stamens* 8-15; *filaments* relatively short, free to the base; *anthers* linear, 1.5-3 × 0.25-0.65 mm, the connective dark when dry; *staminodes* absent or rarely 1-2 present, either side of, or behind the stamens.

Other specimens examined (all PERTH): Perry's Lime-kilns, Subiaco, Aug. 1919, W. B. Alexander s.n.; Blackwall Reach, Applecross, along Swan River, Sept. 1904, C. Andrews s.n.; Swan River below Perth, C. Andrews 2nd Coll. no. 2, Sept. 1904; 10 km N of Lancelin, S. R. Chambers & T. Tapper 8; Reservoir Hill, H. Demarz D.5661; Fremantle, Sept. 1897. R. Helms s.n.; Mouth of the Swan River, 1 Sept. 1897, R. Helms s.n.; Fremantle, 1 Sept. 1897, R. Helms s.n.; Cottesloe, mouth of Swan River, 3 Oct. 1900, A. Morrison s.n.; Yalgorup National Park, S. Paust 1354; Lancelin, F. G. Smith 1936; Bold Park, Perth, J. R. Wheeler 2040; 10 miles [16.1 km] from Yanchep turnoff on way to mouth of Moore River, C. L. Wilson 870.

Distribution. (Figure 3) Western Australia, the coastal plain from Lancelin to Yalgorup National Park.

Habitat. Near-coastal limestone.

Flowering period. June to October.

Etymology. The specific epithet refers to the narrow anthers.

Hibbertia spicata subsp. *leptotheca* is geographically separated from subsp. *spicata*; subsp. *leptotheca* occurs only on the coastal plain between Lancelin and Yalgorup National Park, whereas subsp. *spicata* ranges from North West Cape south to Wagin and near Katanning, but is absent from the coastal plain in the Perth Region. Also subsp. *leptotheca* has a different habitat preference from most populations of subsp. *spicata*, occurring on near-coastal limestone.

Notes on *Hibbertia montana* Steudel and its allies.

3. *Hibbertia montana* Steudel, in Lehm., Pl. Preiss. 1:270 (1845). Type citation: "In limosis lapidosis cacuminis montis Bakewell, ditionis York, 5. Febr. 1839. Herb. Preiss. No. 2135." (iso: MEL).

Hibbertia sargentii S. Moore, J. Bot. 47:338 (1909). Type citation: "Foot of Mount Bakewell, in black humus with granite and quartz subsoil; O. H. Sargent, 517" (holo: BM).

There has been much confusion surrounding *H. montana* Steudel. Bentham (1863) misapplied the name *H. montana*, placing *H. commutata* Steudel and *H. discolor* Steudel in synonymy, at the same time relegating *H. confertifolia* Steudel to a variety of *H. montana*. Later workers have all followed Bentham's misapplication of the name *H. montana*. The description of *H. montana* given by Bentham (1863) relates to *H. commutata* and *H. discolor*, both of which have 3 glabrous carpels. *Hibbertia montana*, however, is a species with velutinous carpels. *H. montana* occurs near York, where it still flourishes at the type locality, Mt Bakewell, and may extend as far south as Boyagin.

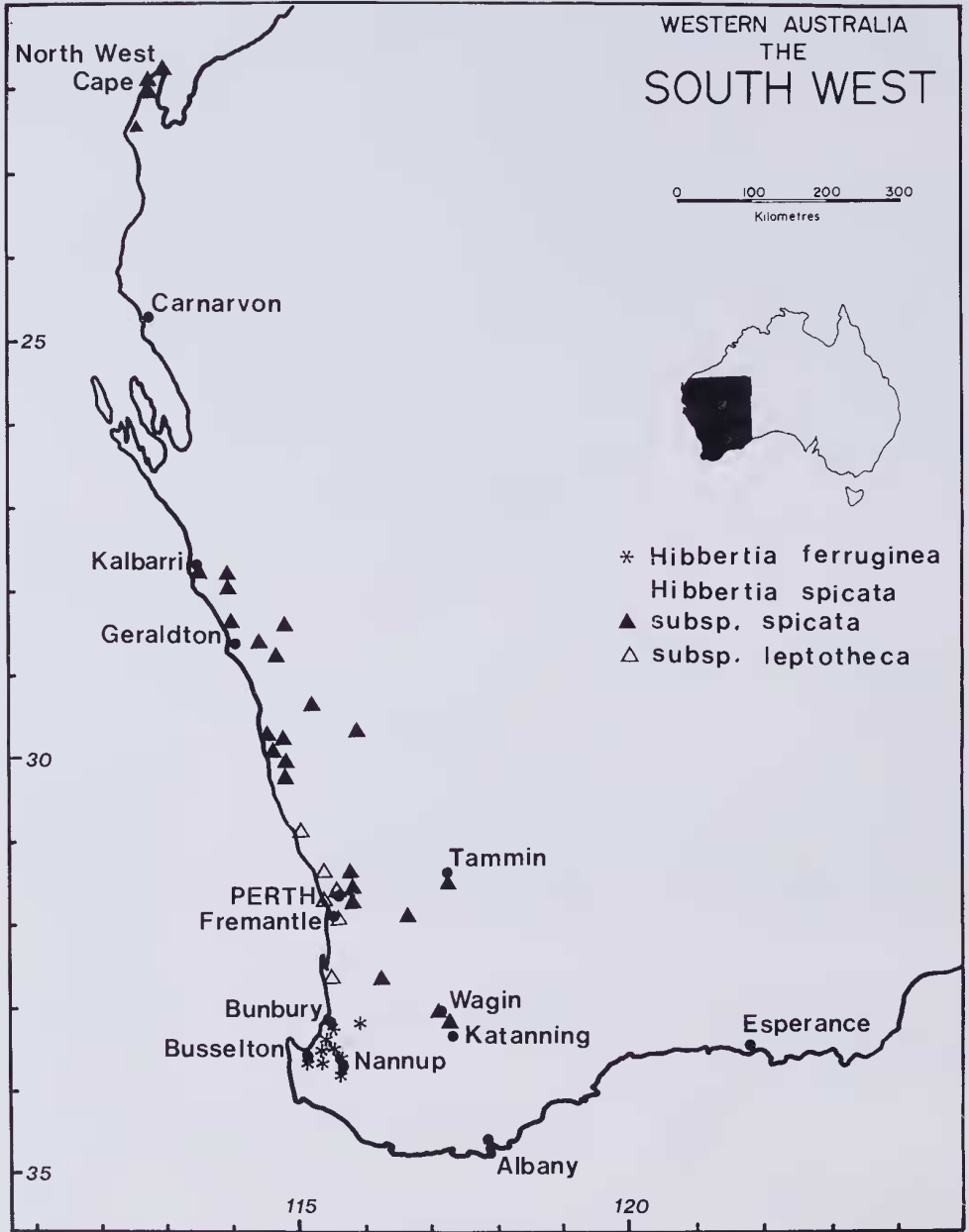


Figure 3. Distribution of *Hibbertia ferruginea*, *H. spicata* subsp. *spicata* and *H. spicata* subsp. *leptotheca*.

Hibbertia sargentii S. Moore, from the description, I consider to be a synonym of *H. montana* Steudel. As may be seen from the following quotation, S. Moore (1909) followed Bentham's misapplication of *H. montana*, when he says of *H. sargentii* "On first view it might be mistaken for *H. montana*, to which Mr Sargent tells me, some

authorities whom he has consulted would refer it; but I cannot accept this opinion, for *H. montana*, besides having glabrous carpels, a matter of some systematic importance in this genus, belongs to another subsection of *Euhibbertia*, of which one of the features is the absence of staminodes."

The diagnostic characters of *H. montana* are given in Table 2. *Hibbertia montana* is closely related to both *H. ovata* Steudel and *H. lasiopus* Benth., all having 3-5 hairy carpels. The close relationship of *H. montana*, *H. ovata* and *H. lasiopus* is also evident on examination of their stamens. The stamens of *H. montana*, *H. ovata* and *H. lasiopus* are very similar, numerous and arranged all around the carpels. The filaments in the young flowers curve, closely hugging the carpels at the base and spreading only in the upper half. Several staminodes are present amongst the outer stamens. *Hibbertia lasiopus*, with its much larger flowers has many more stamens than *H. ovata* and *H. montana*.

4. ***Hibbertia commutata*** Steudel, in Lehm., Pl. Preiss. 1:267 (1845). Type citation: "In saxosis vallis cataractae ad caput fluvii Cygnorum, 26. Jul. 1839. Herb. Preiss. No. 2136" (iso: MEL).

Hibbertia discolor Steudel, in Lehm., Pl. Preiss. 1:267 (1845). Type citation: "In limosis ad fluvium Canning, 22. Jul. 1839. Herb. Preiss. No. 2137" (iso: MEL).

Hibbertia confertifolia Steudel, in Lehm. Pl. Preiss. 1:267 (1845). Type citation: "In subarenosis districtus Plantagenet, Nov. 1840. Herb. Preiss. 2143" (iso: MEL).

The confusion between this species and *H. montana*, which arose from Bentham's treatment (1863) is discussed above. After examining isotypes (MEL) of both *H. commutata* and *H. discolor* and visiting the type locality of *H. commutata*, the waterfalls of the Susannah Brook, a tributary of the Swan River, I have no hesitation in reinstating *H. commutata* Steudel and placing *H. discolor* Steudel as a synonym. The diagnostic characters of *H. commutata* are shown in Table 2. *Hibbertia commutata* is a widespread species in the Darling Range, from New Norcia southwards to the Stirling Range.

H. confertifolia Steudel I consider to be a small-leaved variant of the variable *H. commutata*.

Hibbertia commutata is closely related to *H. serrata* Hotchkiss, both having 3 glabrous carpels. The stamens of *H. commutata* and *H. serrata* are fewer than those of *H. montana*, *H. ovata* and *H. lasiopus*. They tend to alternate with the carpels rather than evenly surround them. The filaments are almost straight, spreading from the base. Staminodes are absent in *H. commutata* and rare to frequent in *H. serrata*. The larger flowers of *H. serrata* from the Darling Scarp have many more stamens than either *H. commutata* or the *H. serrata* from the karri forest.

5. ***Hibbertia pilosa*** Steudel, in Lehm., Pl. Preiss. 1:272 (1845). Type citation: "In densis umbrosis montis Darling's-range, ditionis Perth, Sept. 1841. Herb. Preiss. No. 2130." (iso: MEL).

I have been unable to match any material with the original description of *H. pilosa*. According to the original description the leaves of this species are sparsely pilose and the carpels 1-2 with dense, long, pilose hairs. The status of *H. pilosa* therefore is uncertain.

Table 2. Diagnostic characters of *Hibbertia montana* Steudel and its allies

	<i>Hibbertia lasiopus</i>	<i>Hibbertia montana</i>	<i>Hibbertia ovata</i>	<i>Hibbertia commutata</i>	<i>Hibbertia serrata</i> (Darling Range variant)	<i>Hibbertia serrata</i> (sensu stricto)
Habit	Prostrate, rarely erect hairy shrub	Prostrate to erect densely hairy shrub	Low, erect many-stemmed, hairy shrub	Low, erect many-stemmed, sparsely hairy shrub	Tall, erect, single-stemmed, sparsely hairy shrub	Tall, erect, single-stemmed, sparsely hairy to glabrous shrub
Leaves	Obovate to elliptic, 20-60 x 10-30 mm, hairy with very short and longer spreading hairs	Narrowly oblong, 15-23 x 4-7 mm, very densely hairy with spreading hairs	Narrowly elliptic to elliptic or narrowly obovate to obovate, 8-32 x 3.5-12 mm, hairy with very short and longer spreading hairs	Narrowly oblong to narrowly obovate, 6-40 x 2-11 mm, hairy with simple hairs	Narrowly elliptic to elliptic or narrowly obovate to obovate, 30-75 x 8-30 mm, softly hairy with simple hairs	Narrowly elliptic to 90 x 12-27 mm glabrous or sparsely hairy with simple hairs.
Leaf margin	Crenate	Sparsely crenate	Sparsely crenate	Entire or sometimes sparsely crenate	Crenate	Serrate
Flowers	Pedunculate, up to 65 mm across	Most pedunculate, 20-35 mm across	Sessile, 15-25 mm across	Sessile, 10-20 mm across	Sessile, 25-40 mm across	Sessile, 10-20 mm across
Sepals	Densely silky hairy	Densely silky hairy	Closely appressed hairy, but long ciliate on margins towards the base	Silky hairy	Silky hairy	Sparsely silky hairy
Stamens	Numerous, over 50, all around the carpels, staminodes always present	Numerous, 30-60, all around the carpels, staminodes always present	Numerous, 30-55, all around the carpels, staminodes always present	Fewer, 15-30, staminodes absent	Numerous, 40-50, staminodes rare	Fewer, c. 20, staminodes frequently present
Carpels	5, villous	4-5, velutinous	3-4, velutinous	3, glabrous	3, glabrous	2-3, glabrous

6. *Hibbertia ovata* Steudel, in Lehm., Pl. Preiss. 1:270 (1845). Type citation: "In limoso-calculosis fruticosis prope Mahogany-creek, ditionis Darling's-range, 12. Sept. 1839. Herb. Preiss. No. 2134." (iso: MEL).

Hibbertia montana var. *major* Benth., Fl. Austral. 1:35 (1863). p. pte as to the Preiss syntype. Type citation: "Swan River, *Drummond*" s.n. (holo: K not found); "Darling Range, *Preiss* n. 2134." (iso: MEL).

Bentham included *H. ovata* as a synonym of *H. montana* var. *major*. *Hibbertia ovata*, however, is a species with velutinous carpels, sessile flowers and distinctive sepals. The diagnostic characters of *H. ovata* are shown in Table 2, and on the basis of the differences between it and its allies, shown in Table 2, I reinstate *H. ovata* Steudel as a species quite distinct from both *H. serrata* and *H. montana*. *Hibbertia ovata* is most closely related to *H. montana* and *H. lasiopus* (see above under 3. *Hibbertia montana*).

Hibbertia montana var. *major* Benth. was possibly based on mixed material since Bentham's description does not entirely agree with the Preiss syntype, which is also the type of *H. ovata*. Domin (1923) recognised that two taxa were involved as he appears to have excluded the Preiss syntype from his concept of the variety, lectotypifying, by implication, *H. montana* var. *major* by the Drummond collection. However, since he does not cite either collection, there is no evidence that he saw the Drummond specimen. An attempt by R. Filson to locate the Drummond specimen at Kew has been unsuccessful. Thus the application of the name *H. montana* var. *major*, in the sense of the presumed lectotype, is still in doubt. This name was applied by the W.A. Herbarium and by Blackall and Grieve (1956) to the plant I recognise as *H. serrata* Hotchkiss sensu lato.

7. *Hibbertia serrata* Hotchkiss, Proc. Linn. Soc. N.S.Wales 79:29-33 (1954). Type citation: "Pemberton, W.A., A.T. Hotchkiss, September 2, 1953" (holo: NSW)

? *Hibbertia montana* var. *major* Benth., Fl. Austral. 1:35 (1863) p. pte as to the Drummond syntype. Type citation: "Swan River, *Drummond*" s.n. (holo: K not found).

Hibbertia serrata sensu lato includes the Darling Range variant, previously recognised as *H. montana* var. *major*. Further fieldwork is necessary to see if this variant is sufficiently distinct to be recognised at the varietal or subspecific level, or whether indeed *H. serrata* is one variable taxon. The diagnostic characters of *H. serrata* are shown in Table 2 under *H. serrata* (sensu stricto) and *H. serrata* (Darling Range variant). *Hibbertia serrata* is most closely related to *H. commutata* (see above under 4. *Hibbertia commutata*).

The relationships of H. montana and its allies. It has become evident that *H. montana* and *H. ovata* are more closely related in many ways to *H. lasiopus* than to *H. commutata* and *H. serrata*. *Hibbertia commutata* and *H. serrata* belong in section *Hibbertia* subsection *Bracteatae* Benth., whereas I would place *H. montana* and *H. ovata* with *H. lasiopus* in section *Hibbertia* subsection *Hemihibbertiae* Benth., despite the sessile flowers of *H. ovata* which are not characteristic of that subsection. The boundaries of the subsections within section *Hibbertia* perhaps need re-examination in the light of the occasional staminodes found in *H. serrata* and the sessile flowers of *H. ovata*.

Acknowledgements

I wish to thank Dr Neville Marchant for his help and encouragement, for examining types at Melbourne, and for commenting on the manuscript. I am grateful to Dr John Green and Mr Paul Wilson for critically reading the manuscript and making suggestions for improvement. I would also like to thank Margaret A. Menadue for preparing the illustrations, Cheryl Lynch for preparing Figure 3, Professor K. H. Rechinger for preparing the Latin diagnoses, Dr R. D. Hoogland for his helpful comments and Mr R. Filson for searching for types at Kew.

References

- Bentham, G. (1863). "Flora Australiensis," vol. 1. (Reeve: London.)
- Blackall, W. E. & Grieve, B. J. (1956). "How to Know Western Australian Wildflowers." Part 2: 379 (University of Western Australia Press: Perth.)
- Diels, L. & Pritzel, E. (1904). *Fragmenta Phytographiae Australiae Occidentalis*. Bot. Jahrb. 35: 382-387.
- Domin, K. (1923). New additions to the Flora of Western Australia. *Vestn. Kral. Ceske Spolecn. Nauk, Tr. Mat.-Prir.* 2: 70, "1921-22".
- Gilg, E. & Werdermann, E. (1925). In: A. Engler's "Die natürlichen Pflanzenfamilien" ed 2, 21: 21-30 (Duncker & Humblot: Berlin.)
- Hotchkiss, A. T. (1954). A new species of *Hibbertia* Andr. from Western Australia. *Proc. Linn. Soc. N.S.Wales* 79: 29-33.
- Marchant, N. G. & Perry, G. (1981). A checklist of the vascular plants of the Perth Region, Western Australia. *W. Austral. Herb. Res. Notes* 5: 111-134.
- Moore, S. (1909). A new *Hibbertia* from Western Australia. *J. Bot. (Lond.)* 47: 338-339.
- Mueller, F. von (1860). "Fragmenta Phytographiae Australiae." vol. 2: 1. (Government Printer: Melbourne.)
- Stuedel, E.T. (1845). In: C. Lehmann, "Plantae Preissianae." vol. 1. (Meissner: Hamburg.)