

A Revision of *Rennellia* (Rubiaceae) in the Malay Peninsula

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Abstract

Rennellia (Rubiaceae) is revised for the Malay Peninsula. Four species are recognised, viz., *R. elongata* (K. & G.) Ridl., *R. paniculata* K. & G., *R. speciosa* Hk. f. and a fourth, which resembles, but cannot be matched with certainty to, *R. morindiformis* (Korth.) Ridl. A key to the species and varieties is provided, and the taxa are enumerated with descriptions. *R. paniculata* var. *condensa* Wong is newly described.

Introduction

Rennellia Korth. is a small genus native to SE. Asia, with seven recorded species. In the Malay Peninsula, it is represented by four species. *Rennellia* is most closely related to *Morinda* L.; the two genera belong to the tribe Morindeae and share the following characters: inflorescences terminal in origin; flowers 4-5-merous, connate by their calyx tubes and arranged in non-involucrate heads; corolla aestivation valvate; ovary 2-celled, each cell with one ovule; fruits syncarpous.

In the Malay Peninsula, *Rennellia* can be distinguished from *Morinda* by the following key:

- Shrubs, trees or lianes; flowering heads individually stalked, arranged in clusters of a few or as a pseudoumbel (but never arranged along a main rachis); flowers many (more than 6) in each flowering head; ovules inserted sub-basally in each locule *Morinda* L.
- Shrubs or trees, never lianes; flowering heads sessile or individually stalked, arranged in clusters along a main rachis; flowers few (3-6) in each flowering head; ovules inserted on the septum in each locule *Rennellia* Korth.

Rennellia was first recorded from the Malay Peninsula by Hooker (in Bentham & Hooker, 1873), who recognised that a plant listed by Wallich as *Morinda speciosa* (Wall. Cat. 8436, from Tenasserim in Burma) was identical with a species with several collections from the Malay Peninsula, and that this species in fact belonged to *Rennellia*. Subsequently, Hooker (1880) formally described it as *R. speciosa*, and listed it as occurring in the Malay Peninsula. Later, King & Gamble (1904) described a second species (*R. paniculata* K. & G.) for the Malay Peninsula and Ridley (1939) elevated the status of *R. speciosa* var. *elongata* K. & G. to that of species, *R. elongata* (K. & G.) Ridl.

However, because the keys presented in the accounts of King & Gamble (1904) and Ridley (1923; 1939) rely mainly on the characters of habit and inflorescence structure, the concept of *R. speciosa* came to be based on a mixture of species, and thus the keys were difficult to use.

A fourth species represented by one specimen is here designated only as *Rennellia* sp.; the difficulty in naming it precisely is discussed under the species enumeration.

Characters Useful to the Taxonomy of *Rennellia*

All four species in the Malay Peninsula have a habit ranging from shrub to treelet. There is variation between species in the inflorescence structure, the number of flowers in each flowering head, floral size and leaf venation.

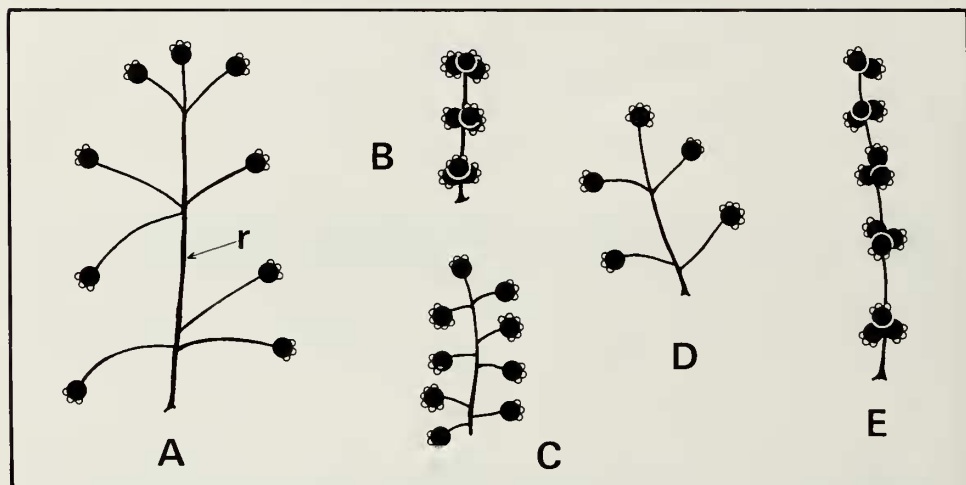


Fig. 1. Inflorescence structure in *Rennellia*.
 A, *R. paniculata* var. *paniculata* (3 flowers per head). B, *R. paniculata* var. *condensa* (3-6 flowers per head). C, *R. speciosa* (3-6 flowers per head). D, *Rennellia* sp. (3-6 flowers per head). E, *R. elongata* (3 flowers per head). r: inflorescence rachis.



Plate 1. *Rennellia elongata* in flower (FRI 32013)

The flowering heads are individually stalked in *R. paniculata* var. *paniculata*, *R. speciosa* and the species here designated as *Rennellia* sp., but are sessile on the rachis in *R. elongata* and *R. paniculata* var. *condensa*. The heads are arranged loosely in clusters, recognizable as tiers along the rachis (Fig. 1).

The number of flowers within each flowering head is consistent, 3 for *R. elongata* and *R. paniculata* var. *paniculata* and 3-6 for *R. paniculata* var. *condensa*, *R. speciosa* and the unnamed *Rennellia* species.

Floral dimensions distinguish the different species reliably. In *R. paniculata* the corolla tube is 6-12 mm long, with lobes 4-9 mm long, while in the unnamed *Rennellia* species the tube is 9-15 mm long with lobes 9-11 mm long. In *R. elongata* and *R. speciosa*, the corolla tube length is 15 mm or longer, the lobes exceeding half its length in *R. elongata* and not half as long in *R. speciosa*.

The species are functionally dioecious. In male flowers, the anthers are normally formed and protrude slightly from the corolla throat while the style is reduced, hardly reaching half the length of the corolla tube. In female flowers, the anthers are smaller, empty, and are completely included within the corolla tube, while the style is slightly exerted from the corolla throat and bears a bifid stigma.

For leaf venation, *R. paniculata* has tertiary veins that are distinctly raised and prominent as a dense network on the leaf undersurface. In *R. elongata*, *R. speciosa* and the unnamed *Rennellia* species, the leaf undersurfaces have sparse tertiary veins that are hardly distinct.

Key to the Species and Varieties of *Rennellia* in the Malay Peninsula

- Leaf undersurfaces with a dense network of prominently raised tertiary veins; secondary veins 11-13 pairs
- Inflorescence rachis 6-9 cm long, flowering heads with stalks 2-3 cm long, with 3 flowers per head, arranged as 2-3 tiers along the inflorescence rachis *Rennellia paniculata* var. *paniculata*
- Inflorescence rachis 1-3 cm long; flowering heads sessile, with 3-6 flowers each, arranged as 1-3 tiers along the inflorescence rachis *Rennellia paniculata* var. *condensa*
- Leaf undersurfaces with sparse, hardly distinct tertiary veins; secondary veins 6-11 pairs
- Inflorescence rachis 1.5-3.5 cm long; flowering heads stalked, with 3-6 flowers each
- Flowering heads with stalks less than 1 cm long, arranged as 1-4 tiers along the inflorescence rachis; corolla with tube 15-23 mm long, the lobes less than half the tube length
..... *Rennellia speciosa*
- Flowering heads with stalks 1-3 cm long, arranged as 2-3 tiers along the inflorescence rachis; corolla with tube 9-15 mm long, the lobes more than half the tube length *Rennellia* sp.
- Inflorescence rachis 8-15 cm long; flowering heads sessile, with 3 flowers each, (flowering heads arranged as 2-12 tiers along the inflorescence rachis) *Rennellia elongata*

Systematic Enumeration of Taxa

In the following enumeration, a list of specimens examined for each taxon is provided wherein male and female specimens are marked ♂ and ♀, respectively and specimens with flowers too immature for sex determination are asterisked.

1. ***Rennellia elongata*** (King & Gamble) Ridley, Kew Bull.: 608 (1939) Plate 1
Basionym: *R. speciosa* var. *elongata* K. & G., J. As. Soc. Beng. 73: 90 (1904);
Ridley, Fl. Malay Pen. 2: 120 (1923).
Synonym: *R. speciosa sensu* Corner, *pro parte*, Wayside Trees of Malaya 1:
558 (1952).

Lectotype (here chosen): *Ridley 5834*, Pahang, Tahan River (SING!).

Distribution & Ecology. Sumatra, Malay Peninsula, Borneo (Sarawak). Lowlands to montane forest above 1200 m alt.

Shrub or treelet to 5 m tall. Leaves obovate to elliptic, (3-14) × (10-32) cm, with 6-10 pairs of secondary veins and sparse, hardly distinct tertiary veins. Inflorescence rachis 8-15 cm long, with 2-12 tiers of sessile flowering heads. Each flowering head with 3 flowers. Mature open flowers with corolla tube 15-19 mm long, and corolla lobes 10-15 mm long.

Specimens examined

PERAK: *Curtis s.n.* 25. xii. 1901, Larut Hill (SING!, ♀); *Sow KEP 47232*, Sg. Penuh (KEP!, ♀). SELANGOR: *Ahmad KEP 94290*, Ulu Gombak (KEP!, K, ♀); *Gadoh & Millard K.L. 494*, Ulu Langat (KEP! ♀); *Gadoh & Millard K.L. 2247*, Ulu Langat* (KEP!); *Hume 8980*, Genting Simpah* (SING!); *Stone 5986*, Fraser Hill (SING!, ♂); *Whitmore FRI 15721*, Ulu Gombak (KEP!, ♀); *Wong FRI 32013*, KEP F.R. grds (KEP!, ♀); *Wong, s.n.*, 4. iii. 1981, Bt. Lagong (KEP!, ♂); *Wyatt-Smith KEP 60635*, Bt. Lagong (KEP! ♂); *Wyatt-Smith KEP 79199*, Ulu Gombak (KEP!, ♂). NEGRİ SEMBILAN: *Everett KEP 104912*, Jelebu (KEP!, K, ♀). KELANTAN: *Whitmore FRI 4081*, Sg. Nenggiri nr Kg. Jenera (KEP!, K, ♀). TRENGGANU: *Moysey & Kiah SFN 33827*, Ulu Brang (SING!, ♀). PAHANG: *Ang FRI 23312*, Taman Negara (KEP!, K, ♀); *Henderson FMS Mus. 10548*, Temerloh, Titi Bungor (SING!, ♀); *Md. Shah MS 1517*, K. Kenyam (KEP!, K, ♂); *Md. Shah & Md. Noor MS 1768*, Ulu Sg. Sat nr Kelepah (KEP!, ♀); *Ng FRI 27272*, Tekam F.R. (KEP!, ♀); *Ng & Beltran FRI 6447*, Jerantut, Ulu Tekam (KEP!, K, ♀); *Ridley 5834*, Tahan River (SING!, ♀); *Ridley, s.n.*, 1891, Tahan (SING!, ♀). JOHORE: *Corner, s.n.* 9. ix. 1934, Mawai (SING!, ♂); *Vethevelu FRI 25287*, Kota Tinggi (KEP!, K, ♀); *Whitmore FRI 8764*, NW. G. Blumut (KEP!, K, ♂).

2(a) *Rennellia paniculata* King & Gamble, var. *paniculata*.

J. As. Soc. Beng. 73: 89 (1904); *Ridley, Fl. Malay Pen.* 2: 119 (1923).

Synonym: *R. speciosa sensu* Corner, *pro parte*, *Wayside Trees of Malaya* 1: 558 (1952).

Lectotype (here chosen): *King's Coll. 2592*, Perak, Larut, 3000-4000 ft. (K!).

Distribution & Ecology. Malay Peninsula (endemic). Montane forest at about 1000-1300 m alt.

Shrub or treelet to 8 m tall. Leaves obovate to elliptic, (4-9) × (10-22) cm, with 11-13 pairs of secondary veins and a dense network of distinctly raised tertiary veins on the undersurface. Inflorescence rachis 6-9 cm long, with 2-3 tiers of stalked flowering heads (the stalks 2-3 cm long). Each flowering head with 3 flowers. In mature open flowers, corolla tube 6-12 mm long, and corolla lobes 4-9 mm long.

Specimens examined

PERAK: *King's Coll. 2164*, Larut, 3000-3500 ft. (K! ♀); *King's Coll. 2592*, Larut, 3000-4000 ft.* (K!); *King's Coll. 5432*, Larut, 3000-3500 ft. (SING! K ♀).

(b) *Rennellia paniculata* var. *condensa* Wong, var. *nov.*

Synonym: *R. speciosa sensu* K. & G., *pro parte*, J. As. Soc. Beng. 73: 89 (1904); *sensu* *Ridley, pro parte, Fl. Malay Pen.* 2: 120 (1923).

Varietas affinis *Rennellia paniculata* var. *paniculata* sed inflorescentia 1-3 cm longis, capitulis floriferis sessilibus, 3-6 floribus, in 1-3-fasciculatis disposita differt.

Holotype: *Curtis, s.n.*, Dec. 1895, Perak, Bujong Malacca (SING!).

Distribution & Ecology. Malay Peninsula (endemic). Lowlands to hill forest at about 300 m alt.

Shrub or treelet to 5 m tall. Leaves obovate to elliptic, (4-10) × (16-32) cm, with 11-13 pairs of secondary veins and a dense network of distinctly raised tertiary

veins on the undersurface. Inflorescence rachis 1-3 cm long, with 1-3 tiers of sessile heads. Each flowering head with 3-6 flowers. Mature open flowers with corolla tube 6-12 mm long, and corolla lobes 4-9 mm long.

Specimens examined

KEDAH, *Kochummen FRI 2021*, G. Inas F.R. (KEP! K, ♀). PENANG, *Abrams s.n.* vi. 1890 (SING! ♀). PERAK, *Curtis 3345*, Ipoh (SING!, ♀); *Curtis s.n.* xii. 1895, Bujong Malacca (SING! ♀); *Haniff & Nur SFN 6985*, Sg. Siput (SING!, ♀); *Hashim KEP 9663*, Ijok F.R. (SING!, ♀); *Ng FRI 6083*, Bubu F.R., Sg. Wang (KEP!, ♀); *Ogata KEP 110224*, Tapah, Changkat Jong F.R.* (KEP!); *Wray 2897* (SING!, ♀); *Wray 4008*, Larut, Relau Tujor (SING! ♂).

3. *Rennellia speciosa* Hk. f., Fl. Brit. Ind. 3: 158 (1880); King & Gamble, *pro parte*, J. As. Soc. Beng. 73: 89 (1904); Ridley, *pro parte*, Fl. Malay Pen. 2: 120 (1923); Corner, *pro parte*, Wayside Trees of Malaya 1: 558 (1952).

Holotype: *Wallich, Cat. 8436*, Burma, Tenasserim, Chappadong Hill (K!).

Distribution & Ecology. Burma, Thailand, Malay Peninsula, Borneo (Sarawak). Lowlands to hill forest at about 500 m alt.

Shrub or treelet to 7 m tall. Leaves obovate to oblanceolate to elliptic, (3-12) × (10-30) cm, with 8-11 pairs of secondary veins and sparse, hardly distinct tertiary veins. Inflorescence rachis 1.5-3.5 cm long, with 1-4 tiers of stalked flowering heads (the stalks less than 1 cm long). Each flowering head with 3-6 flowers. Mature open flowers with corolla tube 15-23 mm long, and corolla lobes 6-7 mm long.

Specimens examined

LOWER THAILAND: *Curtis 3000*, Poongah (SING!, ♀). KELANTAN: *Cockburn FRI 7187*, Ulu Sg. Aring (KEP!, K, ♀); *Cockburn FRI 7462*, Ulu Kelantan, Sg. Jenal (KEP!, K, ♀); *Md. Shah & Ahmad MS 3211*, Machang, Bt. Baka, Sg. Jeram Tinggi* (KEP!, SING!); TRENGGANU: *Corner s.n.*, 31.x.1935, Kemaman, Bt. Kajang (SING!, ♀); *Md. Shah & Samsuri MS 3549*, Jerteh, Bt. Yong, Sg. Tok Barak* (KEP!, SING!); *Md. Shah & Samsuri MS 3805*, path to Bt. Bongkok, via Kg. La* (KEP!, SING!); PAHANG: *Md. Shah MS 1315*, K. Tahan (KEP!, SING!, K, ♀); *Md. Shah MS 1348*, Sg. Teku (KEP!, SING! ♀); *Whitmore FRI 4805*, K. Teku (KEP! K, ♂); *Wong & Wyatt-Smith W 47*, Ascent G. Tahan (KEP!, ♀). MALACA: *Alvins 562** (SING!); *Alvins, 710*, Selandar* (SING!) *Alvins 2038*, Merlimau (SING!, ♀); *Alvins s.n.* 18.iv.1886, Merlimau (SING!, ♀); *Alvins 2101*, Chabau (SING!, ♀); *Alvins s.n.* 9.ii.1886* (SING!); *Hervey s.n.*, 1891 (SING!, ♀); *Ridley s.n.*, 1891, Ayer Panas (SING!, ♀); JOHORE: *Corner SFN 29030*, 14 m. Mawai-Jemaluang Rd (SING!, K, ♀); *Fox s.n.*, 1902, Muar (SING!, ♀); *Hardial & Samsuri H.S. 1008*, Datok Sawah* (SING!); *Kiah SFN 32309*, Sg. Kayu (KEP!, ♀).

4. *Rennellia* sp.

Shrub or treelet to 6 m tall. Leaves obovate to elliptic, (4-9) × (6-22) cm, with 8-10 pairs of secondary veins and sparse, fine tertiary veins. Inflorescence rachis 1.5-3 cm long, with 2-3 tiers of stalked flowering heads (the stalks 1-3 cm long). Each flowering head with 3-6 flowers. Mature open flowers with corolla tube 9-15 mm long and corolla lobes 9-11 mm long.

Specimen examined

PAHANG: *Purseglove P. 4311*, Fraser's Hill, Ring Road, 4000 ft. alt. (K! SING! ♀).

This species, represented only by one specimen in the Malay Peninsula, is possibly the same as *R. morindiformis* (Korth.) Ridl. (Ridley, 1939), typified by the specimen *Korthals, s.n.*, from Mt. Singalang in Sumatra (holotype at Leiden, isotype at Kew).

The Korthals specimen which typifies *R. morindiformis* has flowers represented only in the bud stage and it is not possible to ascertain the dimensions of mature

flowers without further collections of this species from the type locality in Sumatra. The Purseglove specimen from the Malay Peninsula (where it is the only collection of its kind) has mature flowers and matches the Korthals specimen in vegetative and inflorescence structure. One disparity is the labelling of the Purseglove specimen as a treelet and the labelling of the Korthals specimen as "*pseudo-parasiticus*." However, the habit of species of *Rennellia* ranges from shrublets to treelets and I have personally observed *R. elongata* to grow from hollows of tree boles as well as to stand independently as treelets; the habit may therefore be confusing to the collector at times. I am not willing to name the Purseglove specimen as a distinct species as present evidence allows this to be matched to *R. morindiformis*. Still, it is worthy to remember that the structure of mature flowers of *R. morindiformis* can only be elucidated with further collections from its type locality. Purseglove's label on his specimen identifies it as "*R. longiflora* Ridl." but that is an unpublished name.

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