



Three new species and several typifications of *Breynia* (*Phyllanthaceae*) from Malesia

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Key words

Breynia
lectotype
Malesia
neotype
Phyllanthaceae

Abstract Three new species of *Breynia* are described for Malesia, *B. longistyla* from Borneo, *B. papillosa* from New Guinea, and *B. suborbicularis* from Sulawesi. They are primarily distinguished by characters of indumentum, leaves, and styles. Ten lectotypes and one neotype are designated, and one new synonym is proposed.

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INTRODUCTION

Breynia J.R.Forst. & G.Forst. is an Austral-Asian genus of *Phyllanthaceae* Martinov. In the past it was restricted to c. 30 very similar species with a turbinate, mostly fused calyx, mostly small, erect stigmas and drupaceous fruits (Radcliffe-Smith 2001, Van Welzen & Esser 2005, Webster 2014). Recent phylogenetic studies lead to the fusion with *Sauropus* Blume (Pruesapan et al. 2012, Van Welzen et al. 2014, Chakrabarty & Balakrishnan 2018, Bouman et al. 2022), now including also species with a flat fused calyx, dehiscent, dry fruits and larger spreading and lobed stigmas. In this circumscription *Breynia* includes c. 90 species, distributed from the Himalayas and East Asia throughout Malesia to Australia and the Pacific Islands, and within the *Phyllanthaceae* Dumort. characterized by, e.g., staminate flowers often with sepal scales and connate filaments and smooth seeds. *Breynia* is now subdivided into two subgenera and one subgenus divided into two sections, with the former *Breynia* s.str. maintained as *Breynia* subg. *Breynia* sect. *Breynia* (Bouman et al. 2022).

In the course of taxonomic studies of *Breynia* subg. *Breynia* sect. *Breynia* for Flora Malesiana (Esser & Stuppy in prep.), new Malesian species were recognized that are described here. In addition, lectotypes and one neotype are designated.

TAXONOMY

1. *Breynia longistyla* Welzen & Esser, sp. nov. — Fig. 1

Typical is the well-developed style splitting into 3 infolding stigmas on top. Staminate flowers with coriaceous sepals, scales present and stamens vertically united. — Type: SAN (*J.B. Sugau, S. Dauni, L. Kuntil, S. Lideh*) 149532 (holo L [L 0784438]), Malaysia, Sabah, Pensiangan, Sapulut F.R., Gunong Maliat, N4°23' E116°57', alt. 1437 m, 21 Nov. 2006.

Small tree, c. 5 m high, monoecious. *Indumentum* of simple hairs and asperities (hard papillae). *Stem* with asperities. *Stipules* triangular, 4–5 mm long, (early to) late caducous. *Leaves* distichous; petiole 2–3 mm long, U-shaped in transverse section, with asperities; blade ovate-elliptic, 3.5–5 by 1.3–1.8 cm, 2.8–3 times as long as wide, symmetric, base (acute to) obtuse, margin entire, apex acute to subacuminate, surfaces without glands, drying blackish; venation distinct, pinnate, side veins in 6–7 pairs, looped and closed near margin, midrib above with asperities, veinlets reticulate. *Inflorescences* bisexual, axillary fascicles of single to several bracteate flowers; bracts shorter than stipules, triangular, margin erose. *Flowers* actinomorphic, pedicellate, erect; calyx urceolate, 6-lobed, imbricate; petals, disc and pistillode absent. *Staminate flowers*: pedicel c. 1.2 mm long; calyx coriaceous, lobes short, with internal scale at lobe insertion that closes immature flower; stamens 3, united into central vertical androphore, anthers along androphore opening with extrorse lengthwise split, 2-thecate. *Pistillate flowers*: pedicel c. 1 mm long; calyx persistent, fused for c. 1 mm, lobes c. 0.25 mm long, distinct; ovary short-cylindrical, 3-locular, apically flat; style long, splitting into 3 stigmas, latter folded inward. *Fruits* capsules; calyx c. 2.5 mm diam, with free lobes 0.4–0.5 mm long; capsules c. 4 by 4.5 mm, subglobose, dehiscent in upward direction, smooth, glabrous, thin-walled and woody when dry, red; style c. 1 mm long, stigmas 0.2–0.3 mm long. *Seeds* c. 3.3 by 2 mm, sharply trigonous, smooth, with yellow to reddish sarcotesta.

Distribution — Only known from the type from North Borneo (Sabah).

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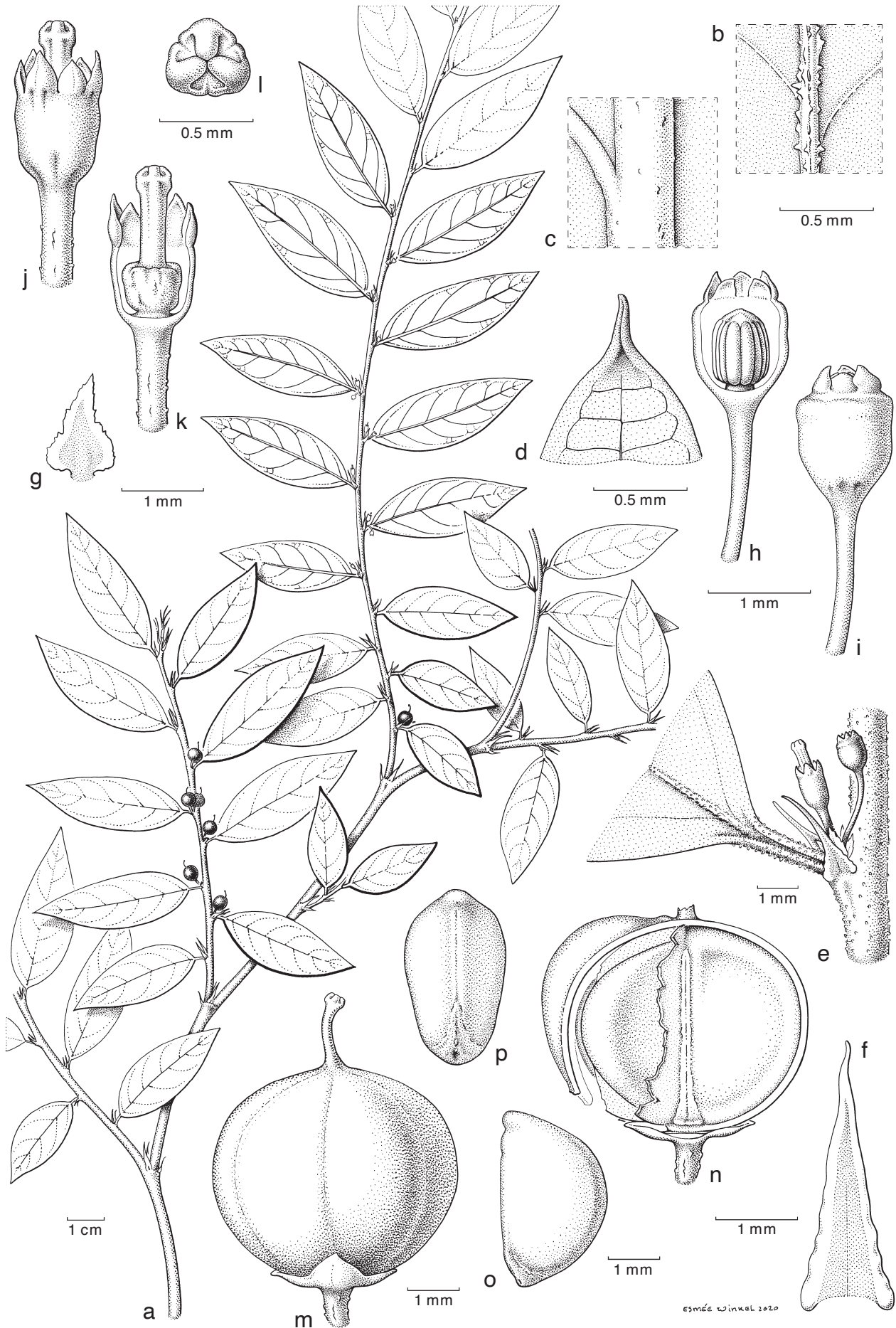


Fig. 1 *Breynia longistyla* Welzen & Esser. a. Habit; b. upper leaf surface with asperities; c. lower leaf surface; d. leaf apex; e. fascicle with staminate and pistillate flower; f. stipule; g. bract; h. staminate flower with part of calyx removed showing androecium; i. staminate flower; j. pistillate flower; k. pistillate flower with part of calyx removed showing gynoecium; l. stigmas; m. fruit; n. dehiscent fruit opening especially septoidally; o. seed in side view; p. seed in front view (all: after SAN (J.B. Sugau, S. Dauni, L. Kuntil, S. Lideh) 149532, L.). — Illustration by Esmée Winkel, 2020.

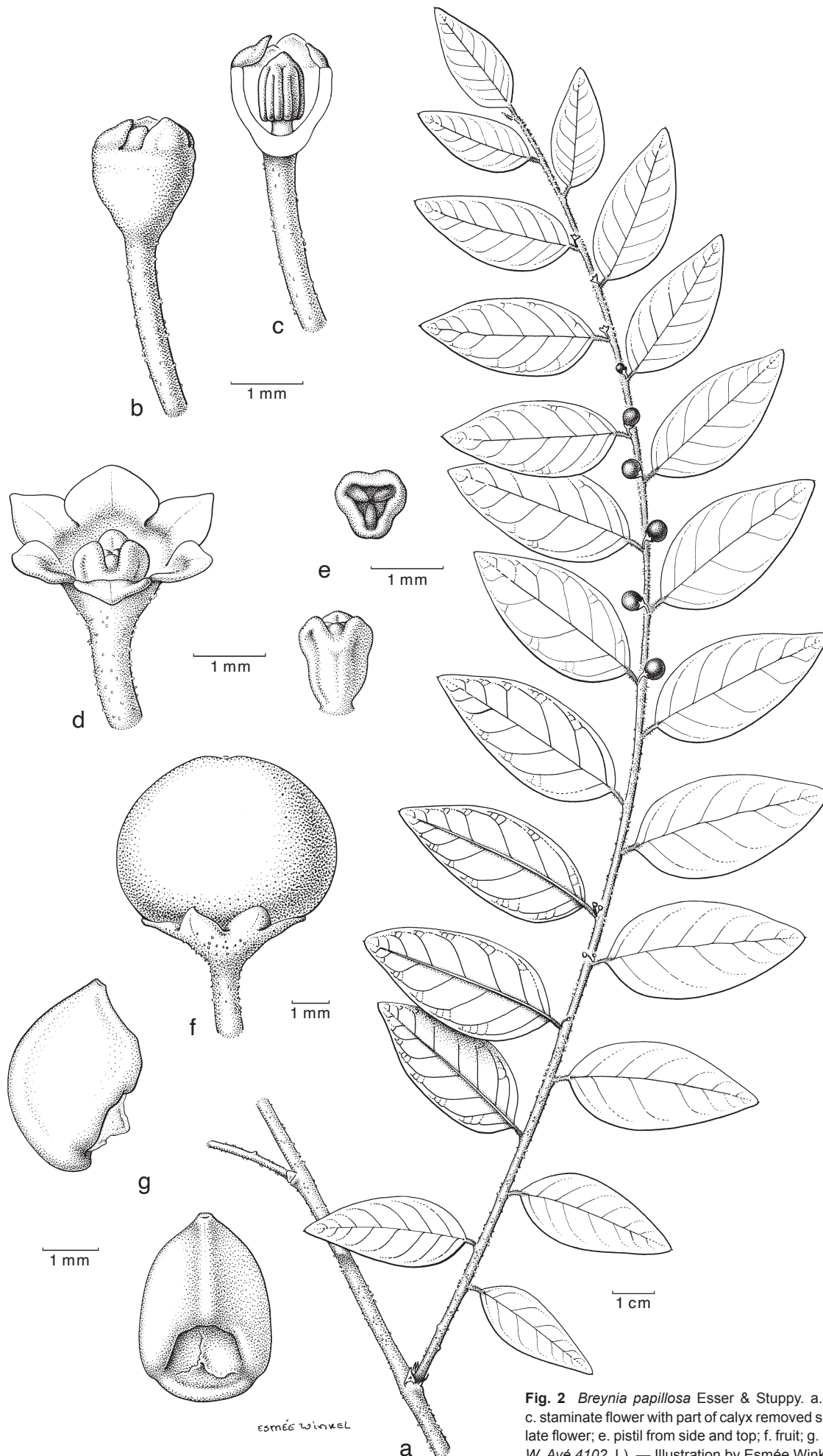


Fig. 2 *Breynia papillosa* Esser & Stuppy. a. Habit; b. staminate flower; c. staminate flower with part of calyx removed showing androecium; d. pistillate flower; e. pistil from side and top; f. fruit; g. seed from side and front (all: *W. Avé 4102*, L). — Illustration by Esmée Winkel, 2020.

Habitat & Ecology — Primary montane rainforest, hill slope. Flowering and fruiting: November.

Note — Though not phylogenetically analysed, the species is part of *Breynia* subg. *Breynia* sect. *Breynia*, because of the dark colour of the dried leaves, the structure of the stamens and the short stigmas. Very typical for this species and unique in the genus is the long style. The fact that the stigmas are infolded and short is likely indicative that this species is moth pollinated like most other species in section *Breynia*.

2. *Breynia papillosa* Esser & Stuppy, *sp. nov.* — Fig. 2

Breynia racemosa auct. non (Blume) Müll.Arg.: Gage (1917) 479.

Typical for this species are the elliptic leaves with very distinct venation at least below when dry, appearing glabrous without a lens but in fact being short papillate-pubescent, and appearing distinctly glaucous-greyish below. — Type: *H.J. Lam 746* (holo L [L 0066064]; iso BO, SING), Indonesia, Papua, near Pioneer Bivouac, Mamberamo, 31 July 1920.

Shrub or treelet, to 4 m tall, very slender, sparsely branched. *Indumentum*: pubescent, with simple hairs 0.05–0.1(–0.2) mm long and nearly papillate, usually not visible with the naked eye. *Stipules* 1.5–2(–2.5) by c. 0.75 mm, glabrous or with very few hairs at base. *Leaves*: petiole 2–3 mm long, pubescent; blade elliptic to slightly ovate (very rarely ovate), (2.2–)3–6.5 by (1–)2–3 cm, (1.7–)2.0–2.4(–3.3) times longer than wide, symmetric, membranous, base obtuse to slightly acute, margin entire, apex acute, upper surface pubescent on midvein and sideveins, otherwise glabrous, lower surface glaucous, slightly pubescent on midvein and sideveins to nearly glabrous; venation pinnate, side veins in 7–9 pairs, smaller veinlets slightly to distinctly visible. *Flowers* white to greenish, actinomorphic, pedicellate, erect; calyx 6-lobed, pitcher-shaped; petals, disc and pistillode absent. *Staminate flowers* 1–3(–4) in an axillary glomerule or in a short raceme, glabrous to slightly pubescent; pedicel up to 1.5–2 mm long; stamens 3, united into a central vertical androphore. *Pistillate flowers* solitary, glabrous or pubescent at base; pedicel 1.2–1.5 mm long; calyx 2.5–3 mm long, subglabrous, lobes c. 0.5 mm long; ovary glabrous; stigmas 3, free, simple. *Fruits* solitary, fleshy, green turning pinkish to red to blackish; pedicel 2–4 mm long, slightly pubescent to glabrous; calyx hardly accrescent, (2.5–)3–3.5 mm diam, with free lobes 0.5–1 mm long, flat, without visible venation, glabrous; fruit (4–)5 by 5.5–7 mm, subglabrous but sometimes whitish at apex, without an apical ring, somewhat fleshy outside; stigmas 0.2–0.3 mm long, free, undivided. *Seeds* c. 5 by 3.5–4 mm, trigonous, smooth.

Distribution — Endemic to New Guinea (Indonesian Papua, Western Province of Papua New Guinea).

Habitat & Ecology — In secondary vegetation, open places in and margin of primary forest, on riverbanks, among tall cane grass (*Saccharum*); soil clay or gravel. Locally rather common. Altitude: sea level to 800(–1800) m. Flowers and fruits collected in January to March, July to November.

Vernacular names — Katok iya; Padogre (Kapaokoe language).

Additional collections studied (paratypes). Indonesia, West Papua, Bird's Head Peninsula, surroundings of Ayawasi, E132°29' S1°09', 450 m, 05 Jan. 1996, *W. Avé 4102* (L); Sg. Aëndoea near Oet, 06 July 1941, *Aët* (exp. *E. Lundquist*) 437 (A, BO-2 sheets, L, SING); Indonesia, Papua, P. Jappen (= Japen), Kp. Baroe, near Seroei, 30 July 1939, *Aët & Idjan* (exp. *L.J. Van Dijk*) 240 (A, L); Irian Jaya, P. Jappen, Wasabori near Seroei, 16 Aug. 1939, *Aët & Idjan* (exp. *L.J. Van Dijk*) 478 (L); Papua New Guinea, Western Province, Fly River, 1876, *L.M. d'Albertis s.n.* (MEL-2 sheets); Papua New Guinea, Strickland (= Bonito) River, Aug. 1885, *W. Bäuerlen s.n.* (MEL); 15 km SW of Bernhard Camp, Idenburg (= Taritatu) River, 1800 m, Jan. 1939, *L.J. Brass 12300* (A, L); Irian Jaya, 4 km SW of Bernhard Camp, Idenburg River, E138°27' S2°54', 850 m, s.dat., *L.J. Brass 13077* (A, CANB, L); Enarotali, Lake Paniai, Wissel Lakes, S03°55' E136°15', 1800 m, 26 Mar. 1955, *BW* (*Chr. Versteegh*) 3091 (CANB, L); Irian Jaya, Armina, Sjuga-Wagura area,

Bomberai Peninsula, 13 May 1962, *BW* (*V.W. Moll*) 13026 (CANB, L); Van Rees Gebergte, Van Gelderen River, 100 m, May 1926, *W.M. Docters van Leeuwen 9241* (BO, L-2 sheets); Rouffaer River, 175 m, Aug. 1926, *W.M. Docters van Leeuwen 10096* (BO, L); Nassaagebergte, Exploration Camp, 700 m, Oct. 1926, *W.M. Docters van Leeuwen 10617* (BO-2 sheets, L); Mamberano, Camp Albatross, 60 m, Nov. 1926, *W.M. Docters van Leeuwen 11355* (BO, L-2 sheets); Wissel Lake Region, van rivier naar kebonbivak Perai, 11–17 Oct. 1939, *P.J. Eyma 5261* (BO); Geelvink Bay, Nabire, 23 Feb. 1940, *R. Kanehira & S. Hatusima 11445* (A, BO); Geelvink Bay, Dalman, 45 km inward of Nabire, 400 m, 01 Mar. 1940, *R. Kanehira & S. Hatusima 12029* (BO); near Doorman-kali, 200 m, 21 Sept. 1920, *H.J. Lam 1250* (BO, L); near Doorman river, 200 m, 24 Sept. 1920, *H.J. Lam 1367* (A, BO, L); Noord river (= Lorentz river), 20 Oct. 1909, *L.S.A.M. von Römer 679* (L).

Notes — 1. The species is part of *Breynia* subg. *Breynia* sect. *Breynia* because of the structure of the stamens and the short, non-divided stigmas. In particular the very short indumentum is characteristic, in connection with the leaves being glaucous below. The fruits have a small calyx and a pedicel of regular length, and are not distinctive.

2. Doubtfully here may belong: Irian Jaya, W Irian, above Sukamapura (Hollandia = Djajapura), *Kostermans & Soegeng 182* (L).

3. *Breynia suborbicularis* Esser & Stuppy, *sp. nov.* — Fig. 3

Breynia mollis auct. non J.J.Sm.: Airy Shaw (1982) 9, pro parte quoad Celebes specimens.

Breynia vestita auct. non Warb.: Airy Shaw (1982) 10, pro parte quoad Celebes specimens.

Breynia vitis-idaea auct. non (Burm.f.) C.E.C.Fisch.: Airy Shaw (1982) 10, pro parte quoad Celebes specimens.

This new species agrees with *B. cernua* (Poir.) Müll.Arg. by the large, accrescent fruiting calyx, but differs, among others, by the distinct indumentum (instead of being glabrous) and leaves with fewer veins (c. 5 pairs instead of 7 or more) and a mostly rounded (instead of acute) apex. A similar indumentum is shared with *B. vestita* Warb. from New Guinea, but the latter differs in elliptic (vs elliptic-suborbicular to more ovate) leaves c. 1.7–2 (instead of 0.9–1.6) times longer than wide, more distinctly glaucous below, and fruits without an apical ring and a smaller fruiting calyx (diameter smaller than fruit diameter, instead of larger). — Type: *M.J.E. Coode 5797* (holotype L [L 0066241]; probable iso BO not seen, K not seen), Indonesia, Celebes, Sulawesi Tengah, Luwuk, slopes above town, S0°56' E122°47', 200 m, 04 Oct. 1989.

Shrub or treelet, to 3 m tall. *Indumentum*: pubescent, with simple hairs 0.15–0.3(–0.5) mm long. *Stipules* 1–1.5 by c. 0.5 mm, pubescent at base. *Leaves*: petiole 2–2.5 mm long, pubescent; blade symmetric, thinly chartaceous, broadly (ovate-)elliptic to orbiculate, 1.3–2.5 by (1–)1.5–2 cm, 0.9–1.6 times longer than wide, base obtuse, margin entire, apex rounded to subacute to slightly retuse, upper surface slightly pubescent, in particular on midvein, lower surface slightly brighter but not glaucous when dried, pubescent all over and slightly more distinct on midvein and side veins; venation pinnate, side veins in c. 5 pairs, distinct and prominent when dry, smaller veinlets visible to indistinct above and below. *Flowers* pale green, actinomorphic, pedicellate, erect; calyx 6-lobed, pitcher-shaped; petals, discs and pistillode absent. *Staminate flowers* 1(–2) per axil, pubescent to subglabrous; pedicel 1.5–4 mm long, slightly pubescent to subglabrous; calyx subglabrous; stamens 3, united into a central vertical androphore. *Pistillate flowers* solitary, pubescent; pedicel 1–2.5 mm long, pubescent; calyx 1.5–2 mm long, pubescent outside, with short free lobes c. 0.25 mm long; young ovary papillate all over; stigmas 3, free, simple. *Fruits* solitary, becoming fleshy red; pedicel 2–3 mm long, pubescent; calyx distinctly accrescent, 4–6 mm diam, with free lobes 0.5–1 mm long, flat, diameter equal or larger than the fruit itself, without visible venation except for the midvein, pubescent outside and sometimes also inside; 3–4 by 4–4.5 mm, glabrous but apically often papillate, with or without an apical ring 0.25–0.9 mm high, somewhat fleshy outside; stigmas 0.2–0.3 mm long, free, undivided. *Seeds* c. 3.5 by 2.5 mm, trigonous, smooth.

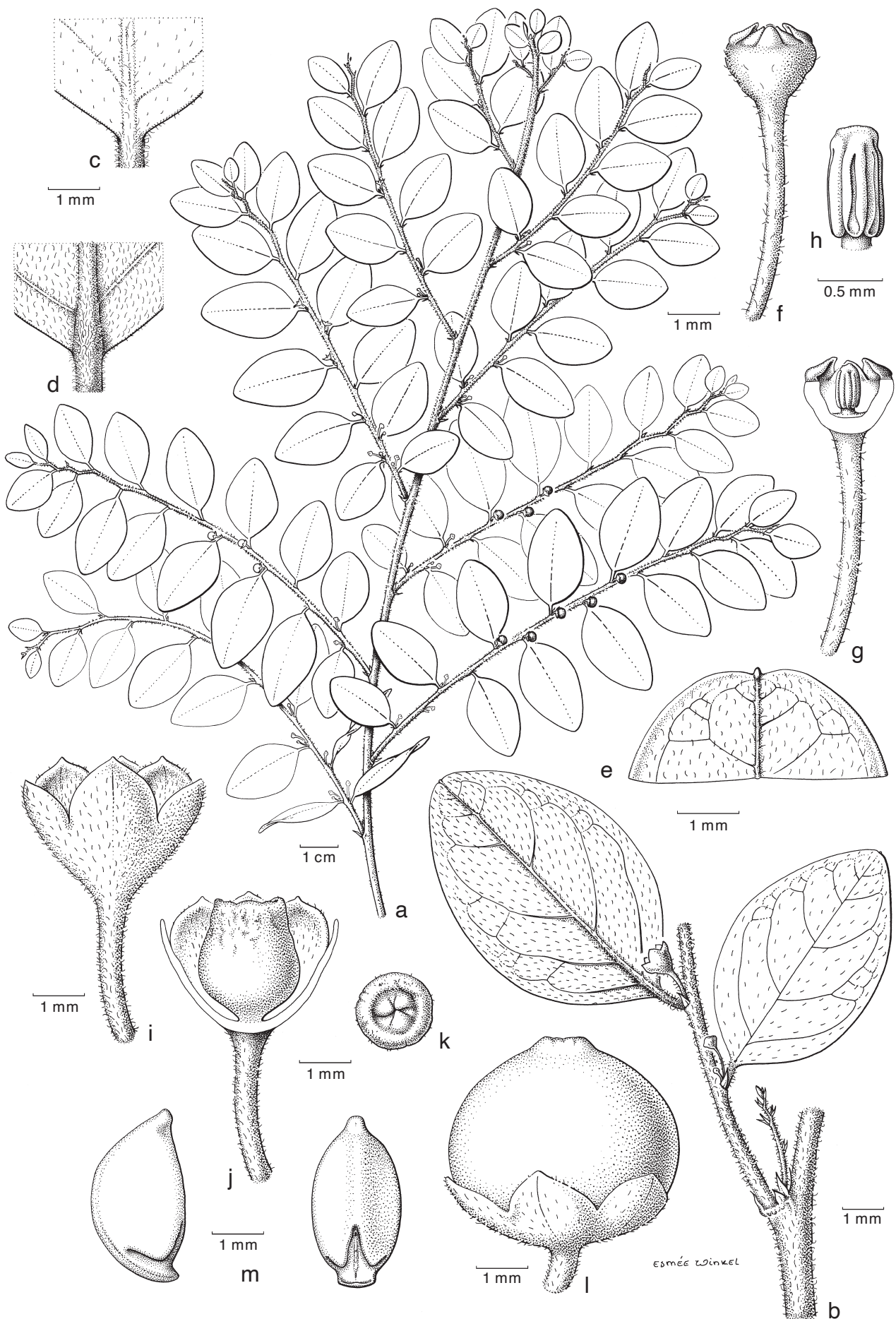


Fig. 3 *Breynia suborbicularis* Esser & Stuppy. a. Habit; b. part of branch with staminate flowers; c. upper leaf surface; d. lower leaf surface; e. leaf apex; f. staminate flower; g. staminate flower with part of calyx removed showing androecium; h. androecium; i. pistillate flower; j. pistillate flower with part of calyx removed showing pistil; k. top of pistil; l. fruit; m. seed from side and front (a–k: *W. Meijer 10228*, l, m: *M.M.J. van Balgooy 2979*, all L.). — Illustration by Esmée Winkel, 2020.

Distribution — Endemic to Indonesia: Borneo, Celebes.

Habitat & Ecology — Growing in secondary scrubs and disturbed lowland forest, often on steep slopes; soil clay or coral limestone, alt. 0–600 m. Flowers and fruits collected in April, May, July to November.

Additional collections studied (paratypes). Indonesia, Borneo, Kalimantan, Central-East Borneo, W Koetai, Long Poehoes, Villa Rust Roest, 10 Aug. 1925, *F.H. Ender* 2445 (L); Indonesia, Celebes, Manado resid., Sibalaja, 20 m, Jan. 1929, *Adj. veearts Donggala* 42 (BO); Celebes, Manado, Donggala, Paloe, c. 150 m, 21 Nov. 1928, *Bosch[bouw]proefstation (Kajoelai)* 5 (B, L); Celebes, surroundings of Karumba, c. 8 km E of Tawaeli on road to Parigi, S0°43' E119°56', 200 m, 24 Apr. 1979, *E.F. de Vogel* 5026 (L); Celebes, Ost-Celebes, Loewoek, Burkmark, Aug. 1919, *W. Kaudern* 360 (S); Celebes, Central part, area of Kulora, near Palu, S0°53' E119°53', 500 m, 18 May 1975, *W. Meijer (leg. Noerta)* 10183 (L); Celebes, Central part, area of Wayungan, near Palu, S0°53' E119°53', 600 m, 19 May 1975, *W. Meijer (leg. Noerta)* 10228 (L, MO); Celebes, W. Centr. Celebes, Madjene and vicinity, Kamp Pangale, 29 July 1912, *Noerkas (exp. L. van Vuuren)* 414 (BO-4 sheets, L); Celebes, Central Celebes, Madjene and vicinity, Kamp Papang, 27 July 1913, *Rachmat (exp. L. van Vuuren)* 249 (BO, L); Celebes, C Sulawesi, Road Palu–Donggala, S0°30'–1°30' E119°30'–120°30', 10 m, 02 Apr. 1979, *M.M.J. van Balgooy* 2979 (A, L).

Notes — 1. The species is part of *Breynia* subg. *Breynia* sect. *Breynia*.

2. The combination of a distinct indumentum, mostly orbicular leaves with only few veins, and a large fruiting calyx is very characteristic.

Lectotypes

Breynia acuminata (Müll.Arg.) Müll.Arg.

Breynia acuminata (Müll.Arg.) Müll.Arg. (1866) 442. — *Melanthesa acuminata* Müll.Arg. (1863) 74. — Lectotype (designated by Chakrabarty & Gangopadhyay 1996, as 'type'): *H. Cuming* 1543 (G-DC*; isolecto A, BM, FI-W, GOET, K, KIEL, L, MO*, P*, TCD, UPS, W, WRSL*), Philippines, Luzon, Prov. Batangas, no date.

Breynia rumpens J.J.Sm. (1910) 227; *syn. nov.* — Lectotype (designated here): *Atasrip (exped. C.E.A. Wichmann)* 241 (BO; isolecto L), Indonesia, Irian Jaya, Lake Sentani, Apr. 1903.

Notes — 1. The collections from the Philippines and from New Guinea are morphologically nearly identical; the only minor difference may be the fruit size, 3.75–4.5 by 4.5–6 mm in the former, 4.5–5.5 by 5–6 mm in the latter.

2. *Breynia rumpens* had been synonymized with *B. racemosa* by Chakrabarty & Gangopadhyay (1996) and with *B. cernua* by Govaerts et al. (2000), but these synonyms are erroneous; *B. racemosa* has leaves distinctly glaucous beneath and does not occur in New Guinea, while *B. cernua* occurs in New Guinea but differs, e.g., by a much larger fruiting calyx, being larger than the fruit diameter.

Breynia cernua (Poir.) Müll.Arg.

Breynia cernua (Poir.) Müll.Arg. (1866) 439. — *Phyllanthus cernuus* Poir. in Lam. (1804) 298. — *Melanthesa cernua* (Poir.) Decne. (1834) 483. — Type: *no collector given* (holo P-LA*), 'dans les Indes'.

Melanthesa rubra Blume (1826) 591. — *Phyllanthus blumei* Steud. (1841) 326 (non *P. ruber* (Lour.) Spreng., nor *P. ruber* Noronha, nor *P. ruber* (Blume) T.Kuros.). — *Breynia rubra* (Blume) Müll.Arg. (1866) 438. — Lectotype (designated here): *C.L. Blume s.n.* (L [sheet no. 903.155-127]; isolecto A, L, P not seen), Java, 'in fruticetis montanis', no date.

Melanthesa cernua (Poir.) Decne. var. *acutifolia* Müll.Arg. (1863) 74. — *Breynia cernua* (Poir.) Müll.Arg. var. *acutifolia* (Müll.Arg.) Müll.Arg. (1866) 439. — Lectotype (designated here): *H. Cuming* 1103 (G-DC*; isolecto BM, FR, G, K, L, MEL, W), Philippines, Luzon, Prov. Albay, no date. Remaining syntype: *H. Cuming* 540 (BM, G, K, L, W), Philippines, Luzon, Laguna province, no date.

Breynia coronata Hook.f.

Breynia coronata Hook.f. (1887) 330. — Lectotype (designated here): *King's Collector* 6401 (K; isolecto BM, CAL*, E, FI, L), Malaysia, Perak, Larut, July 1884.

Note — The lectotype chosen is an excellent specimen with both flowers and fruits and a larger number of duplicates, and it was part of the Herbarium Hookerianum.

Breynia discigera Müll.Arg.

Breynia discigera Müll.Arg. (1866) 440. — Neotype (designated here): *J.F. Maxwell* 82-21 (L [L 0066137]; isoneotypes AAU, BKF, L [L 0066138], SAR), Singapore, Bukit Kalang Reservoir, 28 Jan. 1982.

Melanthesa racemosa Blume var. *pubescens* Müll.Arg. (1863) 73. — *Breynia rhamnoides* (Blume) Müll.Arg. var. *pubescens* (Müll.Arg.) Müll.Arg. (1866) 441. — Lectotype (designated here): *N. Wallich* Cat. 7917 A (G-DC*; isolecto BM, E, E-GL, FI-W, G, K, K-W), Malaysia, Penang.

Note — *Breynia discigera* was described based on only one specimen from Singapore (*Jäger* 17, B) that was presumably destroyed together with the Berlin herbarium in World War II, and is therefore lost now. The citation of the collector was most probably erroneous and might refer to F. Jagor, who collected in Singapore in 1858, and whose collections were kept in B. The species is easy enough to recognize, being the only one with pubescent leaves in sect. *Breynia* in Thailand and the Malay Peninsula incl. Singapore. Therefore, a neotype is proposed here from a gathering from Singapore with several known duplicates, but which is presumably not present in SING.

Breynia fruticosa (L.) Müll.Arg.

Breynia fruticosa (L.) Müll.Arg. (1866) 237. — *Andrachne fruticosa* L. (1753) 1014. — *Melanthesopsis fruticosa* (L.) Müll.Arg. (1866) 437, *nom. alt.* — *Breynia fruticosa* (L.) Hook.f. (1887) 331, *comb. nov. superfl.* — Lectotype (designated by Esser in Jarvis 2007: 289): *P. Osbeck s.n.* (LINN [LINN 1155.2], China, no date).

Melanthesa chinensis Blume (1826) 592. — *Phyllanthus introductus* Steud. (1841) 327 (non *P. sinensis* Müll.Arg.). — Lectotype (designated here): *C.L. Blume s.n.* (L [L 0271835]; isolecto A, NY, P not seen), cultivated in Bogor Botanic Gardens and introduced from China, no date.

Note — *Breynia fruticosa* is locally common in China, e.g., around Canton, an area visited by several colonial botanists in former centuries. Therefore, it was once cultivated in botanical gardens in Europe, among others, in Berlin in 1832 (as reported by an anonymous collection in KIEL) and in Bogor in 1826.

Breynia microphylla (Kurz ex Teijsm. & Binn.) Müll.Arg.

Breynia microphylla (Kurz ex Teijsm. & Binn.) Müll.Arg. (1866) 442. — *Melanthesa microphylla* Kurz ex Teijsm. & Binn. (1864) 49. — Type: *J.E. Teijsmann s.n.* (CAL*), Indonesia, Java, Japara, Gunung Moeria, no date. *Melanthesa rhamnoides* Blume (1826) 591 [non *Breynia rhamnoides* Müll.Arg. (1866) 440, *nom. illeg.*]. — Lectotype (designated here): *C.L. Blume* 2049 (L [L 0271910]; isolecto A, L, NY, P not seen), Indonesia, Java, 'in fruticetis', no date.

Melanthesa rhamnoides Blume var. *hypoglauca* Müll.Arg. (1863) 73. — *Breynia rhamnoides* (Blume) Müll.Arg. var. *hypoglauca* (Müll.Arg.) Müll.Arg. (1866) 440. — Lectotype (designated here): *H. Zollinger* 3018 (G-DC*; isolecto A, BM, FI-W, G, MEL), Indonesia, Java, no date.

Note — Although *Melanthesa rhamnoides* Blume is the oldest available name for this species, the combination under *Breynia* is unavailable because of the name of Müller (1866), which is in fact an illegitimate replacement name for *Breynia vitis-idaea* (Burm.f.) C.E.C.Fischer (Fischer 1932: 65). *Melanthesa rhamnoides* is, contrary to the statement by Govaerts et al. (2000), not illegitimate; the two heterotypic epitheta of *rhamnoides* were indeed confused by several authors.

Breynia mollis J.J.Sm.

Breynia mollis J.J.Sm. (1912) 784, t. 135. — Lectotype (designated here): *K. Gjellerup 271* (BO; islecto K, L, U), Indonesia, Irian Jaya, 'Husin, am Oberlauf des Tami', 08 July 1910.

Breynia virgata (Blume) Müll.Arg.

Breynia virgata (Blume) Müll.Arg. (1866) 441. — *Melanthesa virgata* Blume (1826) 592. — *Phyllanthus sylvaticus* Steud. (1841) 327 (non *P. virgatus* G.Forst.). — Lectotype (designated here): *C.L. Blume 1448* (L [L 0272365]; islecto A, L), Indonesia, Java, 'ad pedem montis Burangrang', no date.

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REFERENCES

- Airy Shaw HK. 1982. The Euphorbiaceae of Central Malesia (Celebes, Moluccas, Lesser Sunda Is.). *Kew Bulletin* 37: 1–40.
- Blume CL. 1826. *Bijdragen tot de Flora van Nederlands Indië* 12: 578–636. Lands Drukkerij, Batavia.
- Bouman RW, Keßler PJH, Telford IRH, et al. 2022. Revised phylogenetic classification of tribe Phyllanthae (Phyllanthaceae). *Phytotaxa* 540: 1–100.
- Chakrabarty T, Balakrishnan NP. 2018. Indo-Burmese Phyllanthaceae: a taxonomic revision. Bishen Singh Mahendra Pal Singh, Dehra Dun.
- Chakrabarty T, Gangopadhyay M. 1996. The genus *Breynia* (Euphorbiaceae) in the Indian subcontinent. *Journal of Economic and Taxonomic Botany* 20: 501–512.
- Decaisne J. 1834. Description d'un herbier de l'île de Timor. *Nouvelles Annales du Museum d'Histoire Naturelle* 3: 333–501.
- Fischer CEC. 1932. The Koenig collection in the Lund Herbarium. *Bulletin of Miscellaneous Information* 1932: 49–76.
- Gage AT. 1917. Euphorbiaceae. *Nova Guinea* 12(5): 479–486, pl. 182–187.
- Govaerts R, Frodin DG, Radcliffe-Smith A. 2000. World checklist and bibliography of Euphorbiaceae (and Pandaceae). The Board of Trustees of the Royal Botanic Gardens, Kew.
- Hooker JD. 1887. Euphorbiaceae. In: Hooker JD (ed), *The flora of British India* 5(14): 241–462. Reeve & Co., London.
- Jarvis C. 2007. Order out of chaos. *Linnaean plant names and their types*. The Linnean Society of London, London.
- Lamarck JPAPM. 1804. *Encyclopédie Méthodique, Botanique* 5. Chez Panckoucke, Paris, etc.
- Linnaeus C. 1753. *Species Plantarum*. Salvius, Stockholm.
- Müller Argoviensis J. 1863. Euphorbiaceae. *Vorläufige Mitteilungen aus dem für DeCandolle's Prodrum bestimmten Manuscript über diese Familie*. *Linnaea* 34: 1–126.
- Müller Argoviensis J. 1866. Euphorbiaceae excl. Euphorbieae. In: De Candolle ALPP (ed), *Prodrum Systematis Naturalis Regni Vegetabilis* 15(2): 190–1286. Fleischer, München / Masson, Paris.
- Pruesapan K, Telford IRH, Bruhl JC, et al. 2012. Phylogeny and proposed circumscription of *Breynia*, *Sauropus* and *Synostemon* (Phyllanthaceae), based on chloroplast and nuclear DNA sequences. *Australian Systematic Botany* 25: 313–330.
- Radcliffe-Smith A. 2001. *Genera Euphorbiacarum*. Royal Botanic Gardens, Kew.
- Smith JJ. 1910. Euphorbiaceae. *Nova Guinea* 8(1): 221–245.
- Smith JJ. 1912. Euphorbiaceae. *Nova Guinea* 8(4): 779–796.
- Steudel EG. 1841. *Nomenclator Botanicus* ed. 2, 2. Cotta, Stuttgart & Tübingen.
- Teijsmann JE, Binnendijk S. 1864. *Plantae novae v. minus cognitae in hort Bogor. cultae*. *Natuurkundig Tijdschrift voor Nederlandsch-Indië* 27: 15–58.
- Van Welzen PC, Esser H-J. 2005. *Breynia*. In: Chayamarit K, Van Welzen PC (ed), *Euphorbiaceae (Genera A–F)*. In: Santisuk T, Larsen K (eds), *Flora of Thailand* 8(1), The Forest Herbarium, Bangkok.
- Van Welzen PC, Pruesapan K, Telford IRH, et al. 2014. Phylogenetic reconstruction prompts taxonomic changes in *Sauropus*, *Synostemon* and *Breynia* (Phyllanthaceae tribe Phyllanthae). *Blumea* 59: 199–206.
- Webster GL. 2014. Euphorbiaceae. In: Kubitzki K (ed), *The Families and Genera of Vascular Plants* 11: Flowering Plants. Eudicots Malpighiales: 51–216. Springer, Heidelberg, New York, Dordrecht, London.