

THE GENERA *EMBELIA* BURM. f. AND *GRENACHERIA* MEZ (MYRSINACEAE) IN NEW GUINEA

H. SLEUMER

Rijksherbarium, Leiden, The Netherlands

SUMMARY

A taxonomic revision of the genera *Embelia* Burm. f. and *Grenacheria* Mez in New Guinea incl. the Solomon Islands, comprising 12 species, of which 5 are new to science. A key to the species, full descriptions of all taxa, and an enumeration of the collections are given.

INTRODUCTION

Our knowledge of the genus *Embelia* in New Guinea dates only from 1916, when S. Moore described *E. gracilentia* from the southern coast, and that of *Grenacheria* from 1922 by Mez with the description of two very closely related (in fact conspecific) species from the Ledermann collection made in the Upper Sepik R. area. Since then but a few species have been added in *Embelia*. The number of collections in both strongly related genera amounts to about 120 at the moment, most of them collected after 1945, and scattered over the whole island.

Both genera grow from the lowland to the montane, and even the mossy forest, and may be locally common, though they never become dominant.

One New Guinean species of *Embelia* occurs also in Australia (Queensland, New South Wales). *Embelia* is also known from the Western Pacific, extending its area to Fiji and Hawaii, besides its occurrence in Asia and Malesia. *Grenacheria* has an exclusively Malesian distribution.

For the present work specimens have been sent on loan from A, BM, BO, K, and P. Collections cited are deposited in the Rijksherbarium at Leiden (L) if not stated otherwise.

The author has collected *Embelia* and *Grenacheria* in a few places of western New Guinea during his expedition (together with P. van Royen, resp. W. Vink) in 1961/1962.

1. *EMBELIA*

Embelia Burm. f., Fl. Ind. (1768) 62, t. 23; Mez, Pflanzenr. 9 (1902) 295.

KEY TO THE SPECIES IN NEW GUINEA AND THE SOLOMON ISLANDS

- 1 a. Inflorescences terminal, i.e. from top of a main-branch or of a branchlet of the first order, paniculate-pyramidal 2
 b. Inflorescence lateral, i.e. from top of short lateral (secondary) branchlets or brachyblasts, consisting of several simple or low-branched, fasciculate-ly arranged racemes 3
- 2 a. Leaves more or less densely pubescent on the midrib beneath, glabrescent, veins rather obscure. *New Guinea (Arfak Mts)* 1. *E. arfakensis*
 b. Leaves glabrous from the beginning, veins more or less densely reticulate on both faces. *New Guinea, New Britain* 2. *E. cotinoides*
- 3 a. Leaves markedly obovate, relatively small (1.5–3 by 1–2 cm) 4
 b. Leaves not so, larger in general 5
- 4 a. Leaves lepidote above at least initially. *New Guinea (Vogelkop Peninsula)*
 3. *E. resinosa*
 b. Leaves glabrous above from the beginning. *New Guinea (E. Highl. Dist.)*
 4. *E. ottoniana*
- 5 a. Leaves pubescent to tomentulose beneath. *New Guinea (E. Highl. Dist. to Milne Bay Dist.)* 5. *E. brassii*
 b. Leaves glabrous (epilose)..... 6
- 6 a. Leaves subcoriaceous to coriaceous, more or less stiff when dry, reticulation of veins and veinlets, if present, rather coarse 7
 b. Leaves chartaceous, more or less flexible when dry, reticulation, if present, very fine 9
- 7 a. Inflorescence few-flowered, laxly racemose to subumbellate, practically glabrous, 1–1.5 cm. *New Guinea (S. coast)* 6. *E. australiana*
 b. Inflorescence many-flowered, truly racemose, more or less densely rufous-puberulous or -lepidote, 2–5 cm 8
- 8 a. Leaves with 6–8 pairs of markedly prominent lateral nerves. Pedicels 0.5–1 mm. *New Guinea (Vogelkop Peninsula)* 7. *E. elevativena*
 b. Leaves with 8–10(12) pairs of moderately prominent lateral nerves. Pedicels 3–4 mm. *New Guinea (S. & W. Highl. Dist.)* 8. *E. kuborensis*
- 9 a. Leaves oblong to obovate-oblong, (3–)5–9 by (1–)2–3 cm. *New Guinea (Central Dist.)* 9. *E. pullenii*
 b. Leaves ovate- to oblong-elliptic, (5–)7–10(–13) by (3–)4–5.5 cm. *New Guinea, Solomon Islands (Ranongga I.)* 10. *E. gracilentia*

1. *Embelia arfakensis* Kaneh. & Hatus.

Embelia arfakensis Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 222, f. 9. – Type: R. Kanehira & S. Hatusima 13635, New Guinea, Vogelkop Peninsula, Arfak Mts, Mt Koebré, fr. 6 Apr. 1940 (FU, n.v.).

Scandent shrub. Branches and branchlets angular, brown-purplish, younger parts slender and puberulous, older ones densely set with fuscous lenticels. *Leaves* oblan-

ceolate or broadly so, apex shortly acuminate or acute, tip obtuse, base cuneate, coriaceous, greenish brown and dull, paler beneath when dry, glabrous on both faces except the densely pubescent midrib beneath, sparsely punctulate, entire, 4–5 by 1.5–2.2 cm, midrib much impressed above, prominent beneath, lateral nerves c. 12 pairs subparallel, coming from the midrib in an angle of c. 45°, more or less obsolete on both faces as is the hardly visible reticulation; petiole 3–4 mm. *Inflorescence* terminal, bipinnately paniculate, many-flowered, densely fuscous-pubescent, 7–8 cm long, 5–7 cm broad; pedicels c. 1.5 mm. *Flowers* not known. *Calyx lobes* below the fruit ovate-triangular, subacute, tip obtuse, serrulate-ciliate, sparsely blackish-punctate dorsally, c. 1 mm. *Drupe* globose, glabrous, densely gland-punctulate.

Distribution. New Guinea, once found in the Vogelkop Peninsula, Arfak Mts, on the summit of Mt Koebré (between Angi Lakes).

Ecology. In thickets.

Note. Kanehira and Hatusima state that they found *E. arfakensis* on Mt Koebré at 2800 m. However, the highest point of this mountain (which was passed by Kanehira and Hatusima on their way from Iray to Testega) is only 2430 m. Vink and Sleumer have investigated this place thoroughly in 1962, but did not find *E. arfakensis*, maybe due to the fact that the vegetation was much damaged by burning at that time. There is no mountain top of 2800 m in the area visited by Kanehira and Hatusima in 1940 at all. It is possible, that Kanehira and Hatusima took over the altitude of Mt Koebré from Gibbs, who gives 2750 m for its summit, but it is known that Mrs. Gibbs' altitudes are much too high in general.

2. *Embelia cotinoides* (S. Moore) Merr.

Embelia cotinoides (S. Moore) Merr., J. Arnold Arbor. 35 (1954) 149. – *Maesa cotinoides* S. Moore, Trans. Linn. Soc. Bot. II, 9 (1916) 103. – Type: C.B. Kloss s.n., S. New Guinea, Uakwa R. to Mt Carstensz, Camp VIa, 945 m, fl. 8 Jan. 1913 (BM; K, iso).

Embelia novo-guineensis Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 224, f. 11. – Type: R. Kanehira & S. Hatusima 12975, New Guinea, W. part, Vogelkop Peninsula, Waren (60 miles S. of Manokwari), fr. 21 March 1940 (FU, n.v.).

Scrambling shrub or semiprostrate in open area, or generally woody climber on forest trees, to 20 m tall; stems said to be thorny, with black sap at junction of wood and pith, no latex. Branches pustulate by large elliptic lenticels. Branchlets slender, young parts glabrous, red brown, ribbed longitudinally in dry specimens, lenticels sparse. *Leaves* elliptic or elliptic-oblong, rarely ovately or obovately so, apex rather suddenly short-acuminate, tip blunt, or broadly attenuate-obtuse, base narrowed to the petiole and slightly inequilateral, or not rarely more or less obtuse, firmly chartaceous to subcoriaceous (at higher elevations maybe coriaceous), olive green and shining above, paler (sometimes glaucous) beneath when fresh, olivaceous-brownish when dry, quite glabrous, the upper surface with numerous minute, subglandular, more or less impressed points, the lower surface showing dark glands (each one per areola), entire, (5–)6–10(–15) by (2.5–)3–5(–7) cm, rarely microphyllous (4 by 1.5 cm), midrib impressed above, bold beneath, lateral nerves 8–10(–20) pairs with

a few shorter ones between, all subparallel or slightly irregular, curved-ascending, joined before the edge, a little raised on both faces, reticulation of veins and veinlets dense, finely prominent on both faces or less so above; petiole canaliculate, (3–)4–6 (–10) by 1(–1.5) mm. *Inflorescence* terminal, large, diffuse-pyramidal, paniculate, slender-in anthesis, stoutish in fruit, many-flowered, 10–20 cm, lower branches horizontally spreading, 5–15(–20) cm, all over finely patently puberulous and minutely lepidote-furfuraceous, on short peduncle; pedicels at full anthesis 0–1 mm; bracts ovate, acute, blackish-punctulate, hardly 1 mm. *Flowers* 5-merous, white or greenish, often pinkish or wine red at base, with agreeable scent. *Calyx lobes* narrowly ovate, subacute, ciliolate, sparsely punctate, c. 1 mm. *Petals* obovate, obtuse, papillose-puberulous at edge and inside, sparsely micropunctate, 1.5 mm. *Filaments* linear, as long as or shorter than the anthers. *Drupe* subglobose or obovoid, dark purple when fully mature, striate-sulcate lengthwise and dark-punctate, 7–9 mm in diam. when fresh, 5 by 4 mm in the dry state, often not well developed and only 2.5–3.5 mm diam.

Distribution. Scattered all over New Guinea (Salawati I. to Milne Bay Dist.), and on New Britain.

Ecology. In lowland to montane forest, in shrubberies, often along stream, also in secondary forest or regrowth, to 2150(–2895) m, locally common.

Note. Very close to *E. javanica* A.DC. (Malay Peninsula, Sumatra, Java, Borneo, Flores) in which the filaments are filiform and distinctly longer than the anthers.

NEW GUINEA. W. part: Salawati I., *BW 4265 Koster*. Bele R., *Brass 11440*. Cyclops Ra., Ifar, gully to Kotanica, *van Royen & Sleumer 5859*. – E. part: W. Sepik Dist., Telefomin area, *LAE 59617, 65784*. – E. Sepik Dist., Ambunti, *Hoogland & Craven 10223*. – Western Dist., Kiunga, Ingembit, *NGF 31952*. – Gulf Dist., Vailala R., *LAE 61286*. – W. Highlands Dist., Minj, Ongolth R., *Vinas 4876*. – S. Highlands Dist., Tambul to Mendi, *LAE 56166, NGF 32937*. Koroba, Lake Erebo, *Powell 2415, UPNG 2415*. – E. Highlands Dist., Chimbu, Keglsugl to Pengagl creek, *Borgmann 195, LAE 53237, NGF 19905, 23110, 23193, 23720, 35770*. Mt Otto area, *Robbins 835*. Marafunga-Fatima R., *Grubb & Edwards 37, NGF 27674, 40688*. Kainantu-Okapa, *Hartley 13692, NGF 24918*. Wahgi-Jimmi divide, *NGF 18239*. Daulo, Asaro-Mairi divide, *Hoogland & Pullen 5424, NGF 38428*. – Madang Dist., Aiome, *NGF 32826*. Kaulo R. (trib. of Minjem R.), *Schlechter 17520 (P)*. Saidor, Sewe, *NGF 19781*. – Morobe Dist., Lae, *NGF 31665*. Burep R., *Hartley 12266*. Kasanombe, *Jacobs 8613*. Buso R., *Vinas & Kairo 299*. Boana, *Clemens 41820*. Wareo, *Clemens 1450*. Sattelberg, *Clemens 648, 1282*. Sarawaket Ra., Sambanga, *Clemens 6833 (B), 7871*. Rawlinson Ra., *Hoogland 9303, NGF 16121*. Mumeng, Mt Shungol, *NGF 45383*. Wau, Edie Creek–Mt Kaindi area, *Hartley 12598, NGF 21231, 23876, 30301, 38466*. Nawata Banda, *NGF 35666*. Bulolo–Aseki road, *Streimann 8404*. Aseki–Watut divide, *Conn 1584*. Gurakor, *Brass 29404*. Garaina, Saru R., *NGF 48000*. Ana village near Mor R., *LAE 74677*. – Central Dist., Port Moresby, Rubulogo creek, *Pullen 6771*. Brown R., Karema, *Schodde 2498*. Tapini, *NGF 46382*. Cape Rodney, *NGF 19606*. Sogere, Wariarata, *NGF 8765*. Lake Myola nr. 1, *NGF 34958*. Amazon Bay, Nunumai, *Pullen 7564*. Mt Victoria, The Gap, *Carr 13820, 15065*. Koitaki, *Carr 12028, 12161*. Isuarava, *Carr 15587, 15945*. Kokoda, *Carr 16156*. – Northern Dist., Popondetta, Amboga R., *NGF 4760*. – Milne Bay Dist., Mt Simpson area, Mt Moiba, *Schodde 5360*.

NEW BRITAIN. Kandrian, Mt Klantal, *NGF 41257*. Pirilongi, *NGF 21991*. Talasea, Linga Linga, *NGF 26766*.

3. *Embelia resinosa* Kaneh. & Hatus.

Embelia resinosa Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1943) 224, f. 12. — Type: *R. Kanehira* & *S. Hatusima 14158*, New Guinea, Vogelkop Peninsula, Arfak Mts, E. slope running up to Lake Angi Gita, 2000 m, fl. 10 April 1940 (FU, n.v.; A, BO, both sterile, iso).

Scandent shrub to 3 m tall. Branches subterete, sparsely lenticellate. Branchlets angular-striate or subterete, slender, covered in the youngest parts with fuscous-ferruginous minute scales or papillae (no proper hairs). *Leaves* obovate, sometimes broadly so, apex rounded, base cuneate to the slender petiole (6–10 by 0.5 mm), firmly chartaceous to subcoriaceous, brown above and paler beneath when dry, dull, entire, edge subrevolute, initially covered above with minute grayish very thin scales, glabrescent there with age, finely and rather densely gland-punctate beneath, 2–3 by 1–2 cm, midrib impressed above, prominent beneath, lateral nerves 6–7 pairs, moderately curved-ascendent, obscure above, a little raised or visible beneath only, reticulation of veins weak. *Inflorescence* from the uppermost leaf-axils, consisting of solitary racemes or several together in a fascicle, each raceme densely 8–12-flowered, 2–3 cm long, and covered all over by resinous fuscous-ferruginous scales; rhachis slender; pedicels 2–3(–5) mm; bracteoles linear, c. 1 mm, early going. *Flowers* 4-merous, light green. *Calyx lobes* ovate, obtuse, c. 0.5 mm. *Petals* free, elliptic, c. 0.6 mm. Anthers almost sessile. *Drupe* not known.

Distribution. NW. New Guinea, twice found.

Ecology. In primary forest or edge of low thickets, 800–2000 m.

NEW GUINEA. W. part: Wandammen Peninsula, Wondiwoi Mts, 800 m, fl. 5 March 1962, *BW 13363 Schram*.

4. *Embelia ottoniana* Sleum., *spec. nov.*

Scandens, usque ad 20 m alta. Rami teretes, 3–5 mm diam., laxe minute lenticellati. Ramuli laterales angulo subrecto orti, abbreviati (2–10 cm longi) interdum furcati, sat graciles, cito corticati et rimosi vel subangulati, in partibus junioribus subdense ferrugineo-lepidoto-papilloso, distaliter tantum laxe foliati. *Folia* obovata, apice late attenuata vel obtusato-rotundata, basi in petiolum gracilem cuneata, firme chartacea vel subcoriacea, in sicco brunnea et opaca, subtus pallidiora, integra vix revoluta, glabra (epilosa et elepidota), punctis glandulosis parvis densis supra subtusque bene visibilibus (prominulis) ornata, 1,5–3 cm longa, 1–1,5 cm lata, costa supra paullo impressa, subtus prominente, nervis lateralibus 6–8-paribus subtus tantum levissime elevatis, reticulatione venarum subtus subnulla; petioli 3–5 mm longi. *Racemi* simplices vel partim breviter ramosi plures (3–5) subfasciculatos ramulos secundarios (0,5–3 cm longos) terminantes, ad rhachides et pedicellos minute lepidoto-papilloso; rhachis gracilis, stricta, (1–)1,5–3(–4) cm longa; pedicelli sub anthesis ca. 2 mm longi; bractae anguste ovato-acuminatae, 1–1,5 mm longae. *Flores* 4-meri, fl. masc. tantum collecti, ex coll. viridi-brunnescentes. Calycis lobi ovati-subacuminati, minute atropunctulati, ca. 1 mm longi. Petala libera, subovato-

oblonga, subacuta, ciliolata, imprimis superne atro-punctata, dorso glabra, intus papillosa, 2 mm longa. Antherae plus minus basifixae, ca. 0,3 mm longae; filamenta ima basi petalorum fixa, linearia, 2 mm longa. Drupa deest.

Distribution. New Guinea, once found in the Eastern Highlands Dist., on Mt Otto in the Bismarck Range.

Ecology. Climber in rain forest, 2400 m.

NEW GUINEA. E. part: E. Highl. Dist., Mt Otto, S. slopes, fl. 18 Aug. 1959, *L.J. Brass 31128* (L, type; A, n.v., K, iso).

5. *Embelia brassii* Sleum., *spec. nov.*

Alte scandens. Rami haud visi. Ramuli graciles, tortuosi, ca. 3 mm diam., secundarii laterales angulo subrecto orientes breviores, laxe foliati, sicut folia inflorescentiaeque rufo-crispulo-tomentulosi et substellato-furfuracei, ca. 2 mm diam. *Folia* ovata vel late elliptica, apice breviter sat abrupte acuminata vel apiculata, interdum obtusa, basi rotundata, interdum (sub)cordata, firme chartacea usque subcoriacea, in sicco brunnea, supra nitentia, subtus opaca, plana, subdense glanduloso-punctata, supra ad costam tantum, subtus per totam faciem rufo-tomentulosa, integra, 6–9 (–11) cm longa, 3–5(–8) cm lata, costa supra plana vel leviter immersa, subtus valde prominente, nervis lateralibus 6–8-paribus paucisque intercalaribus multo brevioribus additis, leviter curvatis, ante marginem distincte curvato-conjunctis, subtus tantum elevatis, venis quam nervi subtus minus distinctis, reticulatione venularum aliquot prominula imprimis supra discolore beneque visibili; petioli 1,5–2 cm longi, 1,5 mm crassi, sicut ramuli et folia rufo-tomentulosi. *Inflorescentiae* ex axillis foliorum summorum ramulorum lateralium ortae, racemos (2–)3–5(–6) simplices vel haud raro inferne ramosos itaque paniculatos multifloros praebentes, in omnibus partibus exterioribus rufo-tomentulosae, rhachibus sat gracilibus 2–3(–4) cm longis; pedicelli crassiusculi 1–1,5 mm longi; bractee lanceolatae 1 mm longae. *Flores* 4-meri, albidi vel cremei, fl. masc. tantum cogniti. Calycis lobi ovati, obtusi, 1 mm longi. Petala late oblonga, laxe glanduloso-punctata, intus puberula, 1,5 mm longa. Antherae dorsifixae, 0,8 mm longae; filamenta glabra, 1–1,3 mm longa. Cetera desunt.

Distribution. New Guinea, twice found each in the E. Highlands Dist. and in the Milne Bay Dist.

Ecology. In primary, also disturbed mossy forest, 1990–2600 m.

NEW GUINEA. E. part: E. Highl. Dist., Goroka, Daulo pass summit, 2350 m, *LAE 63431 Clunie et al.* Marafunga Sawmill, 2600 m, *Grubb & Edwards 150*. – Milne Bay Dist., Maneau Ra., N. slopes of Mt Dayman, 2000 m, male fl. June 1953, *L.J. Brass 22914* (L, type; A, n.v., K, iso). Raba Raba, S. side of Guaruridge near Mayu 2, *LAE 55570 Stevens & Veldkamp*.

6. *Embelia australiana* (F. Muell.) Mez

Embelia australiana (F. Muell.) Mez, *Pflanzenreich* 9 (1902) 331. – *Choripetalum australianum* F. Muell., *Fragm.* 3 (1862) 36. – *Samara australiana* F. Muell., *Fragm.* 6 (1868) 164; Benth., *Fl. Austral.* 4 (1869) 274. – *Ribesiodes australiana* O. Ktze, *Rev. Gen. Pl.* 2 (1891) 403. –

Type: *H. Beckler s.n.*, Australia, New South Wales, ad flum. Clarence R., female fl. fr. (MEL, n.v.; L, iso).

Shrubby climber; main branchlets slender, terete, 4–6 mm diam., with numerous much shorter and more slender horizontally spreading ones (5–15 cm by 2 mm), glabrous; lenticels elliptic, flattish. *Leaves* elliptic to elliptic-oblong, sometimes obovately so, apex broadly attenuate, tip subacute or blunt, base cuneate to the petiole, subcoriaceous to coriaceous, almost yellowish light green when fresh, brownish when dry, glossy on both faces, glabrous, with dark, small, rather obscure glandular points, edge a little undulate, 5–8(–9) by 2.5–4(–5) cm, midrib, lateral nerves and reticulation of veins raised on both faces, lateral nerves 6–8 pairs with several shorter ones between, subparallel, arched and joined before the edge, reticulation rather dense, that of the veinlets less distinct; petiole canaliculate, 4–8 by c. 1 mm. *Inflorescences* from foliate axils of the lateral short branchlets in form of few-flowered racemes (1–1.5 cm) from top of a peduncle which bears several basal imbricate bracts, practically glabrous in all outer parts; pedicels slender, 4–6 mm. *Flowers* 4-merous. *Calyx lobes* deltoid, subacuminata, ciliate, 1.3 mm. *Petals* oblong-elliptic, obtuse, papillose inside, c. 1.5 mm. *Male flower*: anthers ovate-elliptic, filaments short. *Female flower*: ovary ovoid, style slender cylindrical, stigma lobed. *Drupe* subglobose, green, turning plum red, rugulose by dark, slightly raised spots, 6(–8) mm diam., on stoutish pedicel 4–6 mm.

Distribution. Australia (Queensland, New South Wales), once found in S. New Guinea.

Ecology. In light rain forest, locally common, at low elevations.

NEW GUINEA. E. part: Gulf Dist., Beara, C.T. White 13045.

7. *Embelia elevativena* Kaneh. & Hatus.

Embelia elevativena Kaneh. & Hatus., Bot. Mag. Tokyo 57 (1942) 223, f. 10. – Type: *R. Kanehira* & *S. Hatusima* 13636, New Guinea, Vogelkop Peninsula, Arfak Mts, summit of Mt Koebré (between Angi Lakes), 2400 m, fl. 6 April 1940 (FU, n.v.).

Shrubby climber to 3 m tall, with slender, glabrous, tortuous branches, these with numerous short laxly foliate lateral branchlets. *Leaves* elliptic-obovate or elliptic, apex obtuse to rounded, sometimes slightly retuse, base cuneate, coriaceous, rarely thinly so, stiff, glabrous, brownish olivaceous and dull when dry, with numerous dark points (elevated with a depressed centre in dry specimens) distinct mainly beneath, edge slightly revolute, 3–5 by (1.5–)2–4 cm, midrib and nerves raised on both faces though more markedly so beneath, lateral nerves 6–8 pairs, rather irregular, moderately curved-ascending below, inarching distally, reticulation of veins distinct, that of veinlets more or less obsolete; petiole stoutish, 4–6 mm. *Racemes* (2) 3 or 4 umbellately from the axils of the uppermost leaves of the lateral branchlets, seemingly terminal but in fact not so, more or less densely rufous-puberulous all over; rhachis slender, 2–3 cm, not bracteolate at base; pedicels slender, 0.5–1 mm. *Flowers* 4-merous (not 5-merous, as stated by Kanehira and Hatusima, cf. their fig. 10), yellowish; bracteoles triangular-ovate, minute. *Calyx lobes* narrowly deltoid,

subacute, subglabrous dorsally, hardly 1 mm. *Petals* ovate-oblong, glabrous outside, papillose inside, laxly gland-punctate, 1.5 mm. *Filaments* very short. *Drupe* ellipsoid, apiculate, reddish brown, c. 6 mm long, densely dark-punctate; style very slender, 1 mm.

Distribution. New Guinea, only known from the Vogelkop Peninsula.

Ecology. Climber in more or less open heath-vegetation, or edge of mossy forest, 1750–2400 m, locally common.

NEW GUINEA. W. part: Vogelkop Peninsula, Arfak Mts, Mt Gwamongga, Angi Gigi Lake, 2150 m, *BW 14244 Sleumer & Vink*. Kebar valley, Mt Nettoti, N. slope, path to Wekari R., 1750 m, *van Royen & Sleumer 8085*.

8. *Embelia kuborensis* Sleum., *spec. nov.*

Frutex effusus vel scandens probabiliter sat parvus. Rami tortuosi, teretes, 5–6 mm diam., rubro-brunnei, lenticellis parvis sparse induti. Ramuli a ramis plus minus horizontaliter prodeuntes iisque multo graciliores, laterales, abbreviati, striati, rubro-brunnei, 2–3 mm diam., lenticellis pallidioribus. *Folia* apicem ramulorum lateralium versus sparsa, obovato-oblonga vel -elliptica, apice late attenuata vel plerumque obtusata usque rotundata, basi in petiolum cuneata paulloque inaequilateralia, subcoriacea vel coriacea, firma, in sicco brunnescenti-olivacea, subtus pallidiora, supra subnitida vel saepius utrinque opaca, subtus subdense minute glanduloso-punctulata, margine in sicco paullo recurvata, (3–)4–6 cm longa, 2–2,5 cm lata, costa supra impressa, subtus valde elevata, nervis lateralibus 8–10(–12)-paribus, pluribus intercalaribus brevioribus additis, inferne subrectis, distaliter curvatis interque sese ante marginem conjunctis, utrinque prominulis, vel supra evanidis, reticulatione venarum et venularum leviter elevata vel haud raro parum visibili; petioli sat graciles, 6–8 mm longi. *Racemi* veri ramulos terminales terminantes, 2–6(–7) umbellatim quasi ex apice axis crassae 6–8 mm longae producti, erecti, multiflori; rhachis sat robusta, 3–5 cm longa, sicut pedicelli (sub plena anthesi 3–4 mm longi) subdense fuscolepidota. *Flores* 4-meri, lutescenti-viridescentes. Calycis lobi ovato-acuminati, 1 mm longi. Petala oblonga, extus laxe glanduloso-punctata, ciliolata ceterum dorso glabra, intus minute papillosa, 1,5 mm longa. Filamenta quam antherae breviora.

Distribution. New Guinea, scattered in the Southern and Western Highlands Dist.

Ecology. In mossy (*Nothofagus*) forest, 2530–2940 m.

NEW GUINEA. E. part: W. Highl. Dist., Kubor Ra., Minj-Nona divide S. of Minj, 2745 m, male fl. 4 Sept. 1963, *R. Pullen 5345* (L, type; CANB, iso, n.v.); *ibid.*, 2940 m, fl. bud 29 Aug. 1963, *R. Pullen 5291*. – S. Highl. Dist., W. slope of Mt Giluwe above Klareg, 2530 m, *R. Schodde 2096*.

9. *Embelia pullenii* Sleum., *spec. nov.*

Frutex repens. Rami teretes, griseo-corticati, usque ad 7 mm diam. visi. Ramuli plus minus horizontaliter a ramis abeuntes, abbreviati, sat graciles, parce ramosi, apicibus rubro-brunnei, striatuli parceque brevissime puberuli, paucefoliati. *Folia*

oblonga vel interdum obovato-oblonga, apice breviter attenuata, ipso apice obtusa vel subrotundata, basi in petiolum cuneata, paullo inaequilateralis, tenuiter chartacea, in vivo supra saturate viridia et nitida, subtus nervis saturate viridibus exceptis dilutiora, in sicco supra olivaceo-brunnescentia, supra nitentia, subtus costa nervisque rubescentibus exceptis pallidiora, integra, plana, glabra, sub lente sat obscure laxaque glanduloso-punctata, (3-)5-9 cm longa, (1-)2-3 cm lata, costa supra vix, subtus bene elevata, nervis lateralibus angulo acuto a costa ascendentibus parum curvatis, ante marginem excurrentibus vel obscure conjunctis, 8-10-paribus, utrinque cum reticulo venarum venularumque denso leviter sed distincte prominulis; petioli graciles, (4-)5-10 mm longi, vix 1 mm crassi. Inflorescentiae ignotae. *Infructescentiae* ex axilla folii summi ramuli lateralis orti, racemos veros vel interdum inferne breviter ramosos 2-4 fasciculatim digestos 5-10-floros praebentes; rhachis gracillima, sicut pedicelli (2 mm) patenter fuscescenti-puberula; bracteolae lineares. Sepala 4 sub fructu anguste deltoidea, ciliolata, reflexa, vix 1 mm longa. Drupa submatura in vivo olivaceo-viridis, in sicco globosa 3 mm diam., lineis glandulosis verticalibus densis ornata; stylus filiformis ca. 1 mm longus.

Distribution. New Guinea, once found in the Central Dist.

Ecology. Woody rampant shrub in understory of poorly developed monsoon forest, on low foothills at c. 100 m.

NEW GUINEA. E. part: Central Dist., Tovobada hills c. 8 miles NNW. of Port Moresby, *R. Pullen* 6962, fr. 12 May 1967 (L, type; dupl. distr. to A, BO, BRI, CANB, K, LAE, PNH, US, n.v.).

10. *Embelia gracilentata* S. Moore

Embelia gracilentata S. Moore, Trans. Linn. Soc. Bot. II, 9 (1916) 105. - Type: C.B. Kloss s.n., New Guinea, S. part, Utakwa R. to Mt Carstenz, camp VIa, 945 m, male fl. 15 Jan. 1913 (BM; K, iso).

Climber to 15 m tall. Branchlets slender, glabrous, 1.5-2.5 mm diam., early grayish-corticate, striate, laxly lenticellate, short, few-leaved, more or less horizontally spreading from the thicker (3-4 mm) terete ones. *Leaves* ovate- to elliptic-oblong, apex short-acuminate, tip blunt, base cuneate or obtuse, thin-chartaceous, greenish olivaceous when dry, paler beneath, shining above, glabrous, each alveola with a dark thick gland-point, sometimes with a few dark lines too, visible on both faces, entire, (5-)7-10(-13) by (3-)4-5.5 cm, midrib and lateral nerves more or less impressed above, prominent beneath, nerves moderately curved-ascending, rather faintly joined before the edge, 6-8(-10) pairs, reticulation of veins and veinlets very finely visibly raised mainly beneath; petiole slender, canaliculate, 5-10(-15) mm. *Inflorescences* from top of short, lateral, more or less horizontally spreading branchlets (or their very short ramifications), on stout peduncle 5-10 mm long, in form of 5-8 fasciculate or subumbellate, very slender, many-flowered racemes, these laxly to densely puberulous or rufous-papillose or sometimes practically glabrous, (2-)3-5 cm; pedicels slender, (1.5-)2-2.5(-3) mm in the male flowers; bracts hardly 1 mm. *Flowers* 4-merous, whitish, or suffused lilac at base. *Calyx lobes* ovate, obtuse or subacute, gland-punctate, 0.5 mm. *Petals* ovate-oblong, obtuse, outside glabrous and with few glandular points, inside papillose, (2-)3-4(-5)

mm. *Stamens* inserted c. 1 mm above the base of the petals; filaments very slender, 1.5–2 mm. *Female flower* (NGF 34301): ovary globular, glabrous; style 1.3 mm, stigma subcapitate. *Drupe* (BSIP 15609) globular or slightly attenuate towards the base, densely gland-punctate, smooth, c. 4 mm diam. in the dry state, on slender pedicel 2–3 mm, crowned by a slender style c. 1 mm.

Distribution. Scattered in E. New Guinea, in the Solomon Islands so far only known from Ranongga I.

Ecology. In beach or lowland to (sub)montane rain forest, also in secondary growth, to 1800 m.

Note. Close to *E. frangulifolia* (Span.) Mez from Timor, which, however, has subpaniculate inflorescences.

NEW GUINEA. W. part: McCluer Gulf, Anakasi near Babo, *Aet* (Exp. Lundquist) 139. – E. part: E. Sepik Dist., Angoram, Timbunke, NGF 34301 (K). – Morobe Dist., Madawa I., *Kairo* 202. – Central Dist., Yodda R., 150 m, *Carr* 13915. Isuarava, 1400 m, *Carr* 15374. Kokoda, 365 m, *Carr* 16306. – Milne Bay Dist., Kwagira R., Peria creek, 50 m, *Brass* 24326.

SOLOMON ISLANDS. Ranongga I., BSIP 14402, 15609, 15691, 15795:
Cult. Hort. Bogor. sub XVII.B.71, anno 1954.

LIST OF EMBELIA COLLECTIONS FROM NEW GUINEA NOT SPECIFICALLY NAMED

NEW GUINEA. W. part: Orange Mts, Mt Goliath, *de Kock* 170. Rouffaer R., *Docters van Leeuwen* 9875. – E. part: Gulf Dist., Mt Bosavi, *Jacobs* 9293. – E. Highl. Dist., Mt Michael, *Kairo* 458. – Central Dist., Brown R., W. of Karema, *Schodde* 2536. Kokoda, *Carr* 1637. – Milne Bay Dist., Baniara, Opanabu, *Kanis* 1272.

EXCLUDED

Embelia papuana S. Moore, Trans. Linn. Soc. Bot. II, 9 (1916) 106 = *Discocalyx papuana* (S. Moore) Merr., J. Arnold Arbor. 35 (1954) 106, *non* Kanehira & Hatusima 1943.

Embelia papuana Lauterb. ms. = *Loheria papuana* (Lauterb.) Mez, Bot. Arch. 2 (1922) 210, *nota sub Loheria sessilifolia* Mez.

2. GRENACHERIA

Grenacheria Mez, Pflanzenr. 9 (1902) 292; Airy Shaw, Kew Bull. (1939) 513, in text.

Grenacheria is most related to *Embelia* Burm. f. (with free petals), different only by its slightly connate petals, and maybe by its growing habit, i.e., its deflexed lateral branchlets which apparently are less distinctly developed that way in *Embelia*, as stated by Airy Shaw (1939). *Grenacheria* is known from the Malay Peninsula, Sumatra, Java, Borneo, and again New Guinea, but absent from the Philippines, Celebes and the Moluccas so far known.

KEY TO THE SPECIES OF GRENACHERIA IN NEW GUINEA

- 1 a. Panicles short (3–4 cm), condensed 1. *G. royenii*
 b. Panicles elongate, effuse 2. *G. buxifolia*

1. *Grenacheria royenii* Sleum., *spec. nov.*

Scandens. Ramuli teretes, rubro-brunnei, striati, sparse lenticellis ellipticis obsiti, 3–4 mm crassi, laterales numerosi angulo subrecto abeuntes multo graciliores et breviores, apices versus sulcati et subdense minutissime papilloso-lepidoti, laxe foliati, 8–11 cm longi, 1,5–2 mm crassi. *Folia* oblongo- vel elliptico-obovata, apice late attenuata rarius rotundata, ipso apice obtusa, basi in petiololum crassum 1,5–2 mm longum cuneata, firme chartacea vel subcoriacea, sat rigida, in vivo olivaceo-viridia, in sicco saturate brunnea, subtus paullo pallidiora, margine subrevoluta, supra certe initio lepidibus minutissimis adspersa, cito omnino glabra, subtus subdense glanduloso-punctulata, 2,5–3,5 cm longa, 1–1,5 cm lata, costa supra leviter impressa, subtus prominente, nervis lateralibus numerosis inter sese subparallelis utrinque levissime elevatis, rete venarum et venularum subtus sat obscuro. *Racemi* subspicati simplices vel inferne ramosi ex axillis superioribus foliorum plerumque iam delapsorum orti, plures in paniculam ramulos laterales quasi terminantes 2,5–4 cm longam multifloram et densifloram condensati, ad rhachides pedicellosque laxe breviter rufocrispulo-pilosi laxequae lepidibus minutis ferrugineis instructi; pedicelli sat robusti, sub anthesi ca. 1 mm longi, sub fructu paullo accrescentes; bractee lineari-oblongae, ciliatae, dorso atro-punctatae, 1–1,5 mm longae. *Flores* 5-meri, albidii. Sepala ovato-acuminata, ciliata, dorso punctulata, ca. 1 mm longa. Petala inferne leviter connata, elliptico-oblonga, obtusa, dorso punctulata, intus papillosa, 1,2–1,5 mm longa. Drupa submatura obovoideo-subglobosa, dense glanduloso-punctata, in sicco ad 5 × 3 mm visa, stylo perbrevis superata, stigmatibus subcapitulato-lobulato.

Distribution. New Guinea, once found in the Vogelkop Peninsula.

Ecology. Climber in *Nothofagus* forest edge, 1750 m.

NEW GUINEA. W. part: Vogelkop Peninsula, Nettoti Ra., S. slope of Mt Nettoti, path Andjai-Wekari R., fl. fr. 28 Nov. 1961, *P. van Royen & H. Sleumer* 7392 (L, type; dupl. distr. to A, BO, CANB, K, LAE).

2. *Grenacheria buxifolia* Mez

Grenacheria buxifolia Mez, Bot. Arch. 2 (1922) 211. Syntypes: *C. Ledermann* 9924, New Guinea, border between W. and E. Sepik Dist., April R.–L. Schultze R. area, 'Lordberg' (B, lost); *ibid.*, *C. Ledermann* 7739, 'Schichtberg' (B, lost); *ibid.*, *C. Ledermann* 9185, 'Etappenberg' (B, lost); *ibid.*, *C. Ledermann* 9609, 'Lager 18 on April R.', Nov. 1912 (B, lost; L); *ibid.*, *C. Ledermann* 9844, male fl. (B, lost; L, lecto).

Grenacheria ledermannii Mez, Bot. Arch. 2 (1922) 211. – Type: *C. Ledermann* 10177, New Guinea, border between W. and E. Sepik Dist., April R.–L. Schultze R. area, 'Lordberg', female fl. (B, lost; L, iso).

Small tree or high scandent liana, with thick stem. Branchlets slender, dark or brownish reddish in dry specimens, with shorter, lateral, more or less horizontally spreading ones which end in inflorescences, glabrous, or laxly set with spreading hairs at tips only, laxly foliate. *Leaves* elliptic or elliptic-oblong, sometimes rather narrowly or obovately so, apex short-acuminate to obtuse, tip subacute or blunt, base shortly attenuate, slightly inequilateral, firmly chartaceous to subcoriaceous, dark green above and paler beneath when fresh, dark red-brown above, paler beneath in the dry state, glabrous in general, maybe laxly set with spreading crisp brown hairs on petiole, or initially along the margin and on the midrib beneath, a little glossy above, the whole undersurface with dark minute gland-points, entire, edge somewhat revolute, (1.5–)3–4(–5) by (0.8–)1–1.5(–2) cm, midrib impressed above, prominent beneath, lateral nerves numerous and subparallel to each other, obscure above, very finely raised beneath, reticulation none; petiole slender, 1–3 mm. *Panicles* from the upper foliate or already defoliate axils of each lateral branchlet, forming together a lax terminal panicle, each panicle composed of (2) 3 or 4 spike-like, dense-flowered racemes (2–12 cm), the whole inflorescence softly patently rufous-tomentulose or ferruginous-puberulous; rhachis slender; bracts narrowly lanceolate, c. 2 mm, markedly blackish punctulate, rather early caducous; pedicels very slender, (1–)1.2–1.5 mm. *Flowers* 5-merous, whitish. *Calyx lobes* ovate-acuminate, ciliate, blackish punctulate, 1.2 mm. *Petals* elliptic-oblong connate for 1/4 their length or less, sometimes practically free, epilose outside, papillose inside, blackish punctulate, 1.2–1.8 mm. *Male flower*: anthers elliptic, dark-punctate dorsally, 1 mm; filaments very short, thin. *Female flower*: ovary subglobose, glabrous; style very short; stigma discoid. *Drupe* not known yet.

Distribution. New Guinea.

Ecology. In lowland and montane, even mossy rain forest, to c. 2150 m.

NEW GUINEA. W. part: Bernhard camp, Idenburg R., 2150 m, *Brass 12457* (with slightly larger leaves). Eipomek–Tal (4°25' S–140°01' E), 1400–1550 m, *Hiepko & Schultze-Motel 1211* (B), *1433a*. – E. part: W. Dist., Kiunga, *LAE 51827*; *ibid.*, Ingembit, *NGF 33381*.