

FLORAE MALESIANAE PRAECURSORES V.
NOTES ON MALAYSIAN RUBIACEAE

by

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I. ARGOSTEMMA.

Argostemma Wall. (type species: *A. verticillatum* Wall.).

This large Old World genus, comprising about 240 binomials of which ca 70—80 will prove to be distinct species, has been almost unanimously left undivided. Exceptions are Reinwardt who in 1825 created the genus *Pomangium*, independently of Wallich (1824) and Ridley who in 1927 based the genus *Argostemmella* on two Bornean species of *Argostemma*. My revision (in msc.) of *Argostemma* occurring in Malaysia confirmed the common view that there is no reason for splitting up this genus. However, several subdivisions (sections) can reasonably be accepted. As those sections mostly represent well-delimited taxa in connection with a rather evident distribution of their own, I propose here the following 5 sections for *Argostemma*. It should be borne in mind that I have examined almost all extra-Malaysian species too.

1. Sect. *Euargostemma* K. Schum. in Engl. & Prantl, Nat. Pfl. Fam. 4, 4, 1891, 32, p.p., typo incl.; Ridl., J. Bot. 65, 1927, 26, p. max. p. — *Argostemma* sect. *Monophyllum* K. Schum. in Engl. & Prantl, l.c. 1891, 32 — *Argostemma* sect. *Pomangium* (typo excl.): *Verticillatae* & *Heterophyllae-Monophylleae*, Ridl., J. Bot. 65, 1927, 30.

Type species: *A. verticillatum* Wall.

2. Sect. *Pomangium* (Reinw.) Ridl., J. Bot. 65, 1927, 30 — *Pomangium* Reinw., Syll. Pl. Nov. Ratisb. 2, 1825, 10, pro genere — *Argostemma* sect. *Euargostemma* K. Schum. in Engl. & Prantl, Nat. Pfl. Fam. 4, 4, 1891, 32, p.p., typo excl. — *Argostemma* sect. *Pomangium* (typo incl.): *Eupomangiae-Homophyllae*, Ridl., J. Bot. 65, 1927, 30.

Type species: *A. montanum* Bl. ex DC.

3. Sect. *Argostemmella* (Ridl.) Bakh. f. sect. nov. — *Argostemmella* Ridl., J. Bot. 65, 1927, 41, pro genere.

Type species: *A. gracile* Stapf.

4. Sect. *Elatostemoides* K. Schum. in Engl. & Prantl, Nat. Pfl. Fam. 4,

4, 1891, 32 — *Argostemma* sect. *Pomangium* (typo excl.): *Heterophyllae-Polyphyllae*, Ridl., J. Bot. 65, 1927, 30, 31.

Type species: *A. parvifolium* Benn.

5. Sect. *Borrachineum* Bakh. f. sect. nov. — *Argostemma* sect. *Euar-gostemma* K. Schum. in Engl. & Prantl, Nat. Pfl. Fam. 4, 4, 1891, 32 p.p., typo excl. — *Argostemma* sect. *Pomangium* (typo excl.): *Homophyllae*, Ridl., J. Bot. 65, 1927, 30, p.p.

Herbae ascendentes vel erectae, raro repentes, plerumque robustiores et suffruticulosae, rhizomate saepissime conspicuo et robusto, tuberis nullis. *Folia* pauca, distincte inter se remote decussata, ex eodem pari aequalia vel subaequalia stipulis multo maiora, raro valde inaequalia cum nanophyllis stipuliformibus. *Inflorescentia* cymosa, sive subumbelliformis sive axibus scorpioideis 1 — ca 160-flora. *Flores* 5-vel raro in parte 6-meri. *Corolla* subcampanulata, basin versus ultra mediam partita, raro campanulata. *Stamina* 5—(6) cohaerentia conica; conus staminalis subsessilis coriaceus, saepissime niger in sicco; connectivum dorso sensim in thecas transiens, connectivo et thecis ultimo sibi non distinguendis; antherae longitudinaliter dehiscentes.

Type species: *A. borragineum* Bl. ex DC.

1. *Argostemma buwaldae* (§ *Elatostemoides*) Bakh. f., spec. nov.

Herba ascendens, circa 13 cm longa. Caulis robustior glaber, internodiis 1.75—3 cm longis. *Folia* pauca, distincte remota valde inaequalia; folia normalia magis minusve ovato-lanceolata basi aequalia vel subaequalia cuneata acuta, apice breviter acuminata utrimque glabra, in sicco submembranacea, 12.5—14 cm longa, 4.5—5 cm lata, nervis lateralibus 10—13 gracillimis remotis, nervis secundariis et venis obscuris; petiolus glaber 6—8 mm longus; nanophylla et stipulae mox caduci, oblongo-lanceolati glabri ca 4 mm longi. *Inflorescentia* corymbosa ca 10-flora, ca 2.5 cm longa ramificationibus brevissimis; pedunculus glaber 1 cm longus; bractee lanceolatae glabrae ad 3 mm longae; pedicelli pubescentes ca 4—5 mm longi. *Flores* 5-meri. *Calycis* tubus dense pubescens ca 1 mm longus; sepala ovata acuta glabra ca 1 mm longa. *Corolla* subrotata alba ca 5—7 mm longa; lobi ovato-oblongi acuti. *Stamina* 5 cohaerentia; conus staminalis subsessilis ovatus conspicue rostratus ca 5 mm longus; thecae appendice apicali multo longiores. *Stylus* subinclusus glaber ca 5 mm longus; stigma ellipticum. *Fructus* mihi ignoti.

SUMATRA, Riouw, Indragiri, primary forest: *Buwalda* 6417 (BO, type), fl. Apr.

2. *Argostemma* (§ *Pomangium*) *fallax* Bakh. f., spec. nov.

Herba ascendens, minime 18 cm longa. Caulis sparse minute pilosellus, valde glabrescens. *Folia* pauca distincte remota, aequalia, ovato-oblonga — lanceolata vel ovata, basi acuta vel obtuso-rotundata, apice breviter et acutiuscule acuminata, supra sparse minute pubescentia scabridula, subtus in nervis sparse puberula, tenuia herbacea 3—6 cm longa, 1.25—3.25 cm lata, nervis lateralibus 7—9; petiolus gracilis minute pubescens ca 0.5—1.5 cm longus; stipulae anguste lanceolatae obtusiusculae glabrae vel subglabrae firmae ca 8—11 mm longae. *Inflorescentia* terminalis umbellata multiflora; pedunculus gracilis glaber ca 3—6 cm longus; bractee parvae; pedicellus

gracilis pubescens ca 1.25—1.75 cm longus. *Flores* 5-meri. *Calycis* tubus campanulatus dense pubescens ca 1.5 mm altus; sepala ovata acuta extus subglabra firma ca 1 mm longa. *Corolla* basin versus multo ultra partem dimidiam partita, alba ca 8—10 mm longa; lobi ovato-lanceolati caudato-acuminati extus glabri, intus graciliter lanati. Stamina 5 cohaerentia; conus staminalis ovato-lanceolatus acutus ca 8—9 mm longus; thecae appendice apicali multo longiores; filamenta glabra ca 0.5 mm longa. *Stylus* filiformis glaber, ca 10 mm longus, paulum exsertus, stigmate subellipsoideo. *Fructus* ignoti.

SUMATRA, Westcoast, Korinchi Peak, Sungei Penoh: *Robinson & Kloss* 20 (BM, type), fl. June.

3. *Argostemma* (§ *Borrachineum*) *flavescens* Bakh. f., spec. nov.

Herba repens ad 25 cm longa. Caulis dense crispe-pubescens firmus, internodiis ca 4—8 mm longis. *Folia* pauca, distincte remota valde inaequalia; folia maiora elliptico-oblonga vel subrhomboidea basi obtusa, apice acuta, supra areolae secus nervis lateralibus dense crispe-pilosae cum areolis subglabris alternantes, pilis appressis in sicco luteolis, subtus pallida dense punctato-verruculata, in nervis pubescentia, herbacea, 1—3 cm longa, 0.75—1.5 cm lata; petiolus firmus pilosus 3—8 mm longus; nanophylla et stipulae isomorphi aequales vel subaequales vel minus frequenter partim inaequales, ovato-subcordati ca 2—4 mm longi; nanophylla supra pilosa, stipulae glabrae. *Inflorescentia* 1—(3)-flora, appresse crispe-pubescens; pedunculus robustior ca 1—2 cm longus; bracteae florales lanceolatae ad 3 mm longae. *Flores* 5-meri; pedicelli pubescentes ca 5—8 mm longi, subacrescentes. *Calycis* tubus semiovoideus dense pubescens ca 2 mm longus; sepala late ovata acuta extus pilosa ca 1 mm longa. *Corolla* campanulata ca 4 mm longa. *Stamina* 5 cohaerentia; conus staminalis subsessilis ovatus coriaceus ca 2 mm longus. *Stylus* pilosus conspicue exsertus ca 4 mm longus; stigma ellipticum. *Fructus* subglobosi dense pilosi ca 3—4 mm longi.

BORNEO, West Borneo, Sarawak, Matang: *Haviland* 84/75 (SING, type; CAL); ibidem: *Beccari* 621 (FI).

4. *Argostemma* (§ *Euargostemma*) *neurosepalum* Bakh. f., spec. nov.
— *Argostemma acuminatum* (non King) Ridl., Fl. Mal. Pen. 2, 1923, 23, p.p.

Herba erecta, ca 17—23 cm longa, rhizomate probabiliter tuberoso. Caulis infra apicem verticillis foliorum valde reductorum singulis vel paucis praeditus, verticilla superiore persistente, laminis lanceolato-linearibus ad 7 mm longis, basin versus foliolis destitutus glaber. *Folia* ex eodem nodo aequalia vel subaequalia, caulis apice conferta quasi-verticillata; folia maiora 4—6, lanceolata basi decurrentia, apice acute caudato-acuminata membranae utrimque sparse minute pubescentia, marginibus graciliter ciliatis, subtus pallida nervis lateralibus ca 12—15 tenuibus obscuris avenia vel subavenia, (5)—7—15 cm longa, (15)—3—4.5 cm lata; petiolus gracilis pilis paucis sparse vestitus; stipulae lanceolatae ad 0.5 cm longae. *Inflorescentia* terminalis umbellata vel scorpioidea maxime ca 20-flora, ca 6—7.5 cm longa, parte florifera ad 1 cm longa; pedunculus gracilis glaber 5—6.5 cm longus. *Flores* 4-meri; pedicellus tenuis graciliter patente-puberulus 7.5 mm longus. *Calycis* tubus campanulatus dense appresse pilosellus ca 1 mm

longus; sepala magna tubo longiora, oblongo-lanceolata acuta ciliata membranacea trinervia ca 23 mm longa, sub fructu longitudine ad 4 mm accrescentia. *Corolla* nondum ad medium divisa, 3.3 mm longa; tubus late campanulatus basin versus abrupte angustatus, utrimque glaber ca 2 mm longus; lobi valde reflexi ovati acutissimi, extus distincte nervosi et venosi, ca 1 mm longi. *Stamina* 4 libera prope corollae basin affixa; filamenta glabra ca 1 mm longa; antherae late lineares, basi subcordatae apice breviter rostratae, poro apicali dehiscentiae, ca 3 mm longae. *Stylus* filiformis glaber ca 2.5 mm longus, stigmatе subclavato. Discus applanatus glaber. *Fructus* immaturi semiglobosi piloselli ca 3 mm diametientes.

MALAY PENINSULA, Perak, Lenggong: *Ridley 14479* (K, type; CAL, SING), fl. Aug.

5. *Argostemma* (§ *Pomangium*) *subfalcifolium* Bakh. f., spec. nov. — *Argostemma lanceolarium* (non Ridl.) Merr., Mitt. Inst. Bot. Hamburg 7, 4, 1937, 277.

Herba ascendens, ad 35 cm alta. Caulis gracilis dense transverse bullato-striatus. *Folia* pauca distincte remota, valde inaequalia; nanophylla stipuliformia; folia maiora subfalcato-lanceolata, basi aequalia vel inaequalia acuta, apice acute caudato-acuminata, glabra, 2.5–16 cm longa, 0.75–3.5 cm lata; nervis lateralibus ca 6–9 subconspicuis; petiolus glaber ca 5–6.5 mm longus; nanophylla et stipulae subisomorphi sessiles oblongo-lanceolati glabri venosi firmi ca 3–12 mm longi, stipulis paulum longioribus et latioribus. *Inflorescentia* terminalis corymbiformis vel umbellata laxa pauci- ad multiflora, parte florifera ad 6 cm longa, axibus distinctis; pedunculus glaber ca 0.7–7 cm longus. *Flores* 5-meri; bracteae nanophyllis et stipulis similes, sed apicem versus sensim minores, semipersistentes involucales, infimae maiusculae ad ca 5 mm longae; pedicellus gracilis pubescens ca 7.5–10 mm longus. *Calycis* tubus anguste campanulatus dense pilosus ca 2 mm altus; sepala ovata vel ovato-oblonga acuta vel minute acuminata glabra avenia ca 2.5–3.5 mm longa, hypanthio longiora, non reflexa. *Corolla* fere ad basin partita alba 6–6.5 mm longa; lobi ovato-lanceolati subacuminati glabri venulati. *Stamina* 5 cohaerentia; conus staminalis ovato-lanceolatus acutus ca 6 mm longus; thecae appendice apicali sublongiores. *Stylus* filiformis glaber ca 7 mm longus, stigmatе ovali. *Fructus* fere semiglobosi conspicue sulcati subglabri ca 3.5–5 mm longi, sepalis accrescentibus persistentibus coronati.

BORNEO, West Borneo, Bidang Menabei, primary forest, alt. 700 m: *H. Winkler 791* (H, NY), fl. Dec.; Bukit Mehipit, forest, alt. 500 m: *H. Winkler 660* (H, NY); East and Northeast Borneo, West Kutai, Mt Kemul, primary forest, alt. 1600 m: *Endert 4327* (BO, L), fl. Oct.; West Borneo, Sarawak, Dulit Range, primary rainforest, alt. about 100 m: *P. W. Richards 2090 A* (K, type), fl. Sept.; Mt Kinabalu, Penibukan: *J. & M. S. Clemens 30650* (BM, BO, GH, K, L, UC), fl. fr. Jan.; *idem 31963* (BM, BO, GH, L, UC), fl. March.

6. *Argostemma uniflorum* Bl. ex DC., Prodr. 4, 1830, 418.

Var. *curtum* Ridl. ined.

Herba nana, ad ca 10 cm longa (pedunculo incluso). *Folia* lanceolata vel obovato-lanceolata, basi longe vel breviter decurrentia acuta, apice anguste cuneata acuta, supra subglabra vel in costa solum pubescentia,

subtus avenia pallida, ca 2—3 cm longa, ca 7—12 mm lata; petiolus tenuis ca 4—6 mm longus; nanophylla et stipulae isomorphi oblongo-lanceolati glabri ad 5 mm longi. *Flores* solitarii; pedunculus gracilis glaber ca 0.5—1 cm longus; pedicellus pubescens 6—8 mm longus. *Corolla* ca 4—5 mm longa. *Stylus* ca 5 mm longus.

SUMATRA, West Coast, Mt Talakmau, alt. 900 m: *Bünnemeyer* 504 (BO), fl. Apr.; East Coast, Simelungun between Siantar and Prapat, forest, alt. 900—1000 m: *Yates* 995 (K, type; UC), fl. fr. Sept.; Sibolangit, above Bandarbaru, alt. 1000 m: *Lörzing* 5345 (BO, L), fl. Oct.; ibidem: *Lörzing* 5811 (BO, L), fl. July; Kp. Serpang, alt. 400 m: *Galungi* 485 (BO), fr. July; Agam, Brani, alt. 950 m: *Bünnemeyer* 3151 (BO, L), fl. June; Riouw-Lingga Arch., P. Singkep, forest near Manggu, alt. 60 m: *Bünnemeyer* 7158 (BO), fl. fr. Aug.

Differs from the type variety by the peculiar dwarf habit, the flowers which are smaller in all details, the short pedicels and the veinless lower surface of the leaves.

Var. *pilosellum* Bakh. f., var. nov.

Herba ascendens, ad ca 30 cm longa. *Folia* lanceolata vel angustoria, basi apiceque acuta, utrimque, costa excepta, glabra subavenia, 2—5 cm longa, 0.75—2 cm lata; petiolus 4—7 mm longus; nanophylla et stipulae isomorphi lanceolati vel lineari-lanceolati glabri ad 7 mm longi. *Flores* solitarii; pedunculus gracilis appresse graciliter pilosellus ca 0.75—2 cm longus; pedicellus pilosus ca 0.75—1 cm longus. *Corolla* ca 1—1.3 cm longa. *Antherae* sulphureae.

SUMATRA, Atjeh, Mt Goh Lembuh, near Putih falls, alt. 1200 m: *Van Steenis* 8964 (BO, type; L), fl. Febr.; idem, alt. 1200—1500 m: *Van Steenis* 8968 (BO, L), fl. Febr.

7. *Argostemma aequifolium* Ridl., J. Roy. As. Soc. Str. Br. 35, 1901, 15.

Var. *albo-ciliatum* (Ridl.) Bakh. f., stat. nov. — *A. albociliatum* (-a) Ridl., J. Roy. As. Soc. Str. Br. 35, 1901, 15.

8. *Argostemma borragineum* Bl. ex DC., Prodr. 4, 1830, 417.

Var. *corymbosum* (Ridl.) Bakh. f., stat. nov. — *A. corymbosum* Ridl., J. Mal. Br. Roy. As. Soc. 1, 1923, 67.

forma *ovatum* (Ridl.) Bakh. f., stat. nov. — *A. ovatum* Ridl., J. Fed. Mal. Stat. Mus. 8, 4, 1917, 45.

9. *Argostemma distichum* Val. in Nova Guinea 8, 1911, 447.

Ssp. *quadripetalum* (Elm.) Bakh. f., stat. nov. — *A. quadripetalum* (sph. *quadripetiolata*) Elm., Leaf. Philip. Bot. 1, 1906, 361, 63.

10. *Argostemma grandiflorum* Ridl., J. Roy. As. Soc. Str. Br. 74, 1918, 77.

Var. *lammii* (Val.) Bakh. f., stat. nov. — *A. lammii* Val., Bot. Jahrb. 60, 1—2, 1925, 39, in clavi.

11. *Argostemma parvifolium* Benn., Pl. Jav. Rar. (1838), 96.

Var. *involutratum* (Hemsl.) Bakh. f., stat. nov. — *A. involutratum* Hemsl., Hook. Icon. 16, 1887, t. 1556 — *A. pulchrum* Korth., Ned. Kr. Arch. 2, 2, 1851, 122 (neotype: *Bünnemeyer* 3609 [BO, type; L, isotype]).

Argostemmatis species excludendae.

12. *Argostemma fulvum* Z. & M. in Moritzi, Zoll. Syst. Verz. (1846) 61 = *Pomazota fulva* (Z. & M.) Bakh. f., comb. nov. (syn.: *Coptophyllum pilosum* Miq., 1869 — *Pomazota pilosa* (Miq.) Bremek., 1947).

13. *Argostemma gesnerella* Wernh., Trans. Linn. Soc. 9, 1916, 66 = *Ophiorrhiza* spec.

14. *Argostemma membranaceum* King, J. As. Soc. Beng. 72, 1903, 145 = *Epithema* cf. *saxatile* Bl. (Gesner.).

15. *Argostemma microcnide* Miq., Fl. Ind. Bat. Suppl. 1, 1860, 539 = *Ophiorrhiza bracteata* Korth. (1851).

16. *Argostemma nubicola* Wernh., Trans. Linn. Soc. 9, 1916, 66 = *Ophiorrhiza* spec.

II. BIKKIA.

1. *Bikkia tetrandra* (L. f.) A. Gray, Proc. Amer. Acad. 4, 1860, 307. Ssp. *guilloviana* (Brongn.) Bakh. f., stat. nov. — *Bikkia guilloviana* Brongn., Bull. Soc. Bot. France 13, 1866, 42.

III. CRUSEA.

1. *Bigelovia mitracarpoides* Miq., Fl. Ind. Bat. 2, 1856, 334 = *Crusea rubra* (Jacq.) Cham. & Schlecht. (1830).

IV. LERCHEA.

1. *Lerchea paniculata* Back. ined., spec. nov. — *Lerchea interrupta* (non Korth.) Ridl., J. Fed. Mal. Stat. Mus. 8, 4, 1917, 46.

Var. *paniculata*.

Suffrutex ad ca 75 cm altus. Caulis glaber minute verrucosus, parte superiori in vivo purpureus. *Folia* numerosa lanceolata vel oblanceolata, basi acuta attenuata, apicem versus attenuata acuta vel acute acuminata, supra glabra, subtus pallida, glabra vel in nervis primariis papillosa, 9—18 cm longa, 2.5—4 cm lata, nervis 13—24 erecto-patentibus; *stipulae* semipersistentes integrae, ovato-lanceolatae acutissimae vel acuminatae, marginibus valde replicatis, glabrae 8—17 mm longae; petiolus glaber 2—6 cm longus. *Inflorescentiae* terminales vel pseudo-laterales, spicato-paniculiformes, 10—19 cm longae, axibus glabris vel papillois; pedunculus brevis vel longus, 1—8 cm. *Flores* omnes in cymas breviter pedunculatas collecti; cymae numerosae remotiores pauciflorae saepe cincinnatae, basi bractea lineari-lanceolata ad 1 cm longa sustentae; cymarum pedunculi graciles 2—10 cm longi, inferiores maximi, valde reflexi; pedicellus glaber vel pilosellus ad 2 mm longus. *Calycis* tubus glaber 1 mm altus; sepala ovata vel oblonga obtusa ca 0.5 mm longa, omnia vel pleraque persistentia, glabra vel ciliata. *Corolla* alba, ca 3 mm longa; tubus cylindricus 2 mm longus extus glaber, intus in parte superiore pilosus; lobi triangulares acuti 1 mm longi, fauce pilosa. *Stamina* inclusa, infra corollae tubi medium affixa;

filamenta pilis paucis sparse praedita; antherae lineares obtusae ca 0.75 mm longae. *Stylus* glaber ca 2 mm longus, stigmatibus subbifido papilloso. *Fructus* 1—2 mm longi globosi subdidymi glabri vel papilloso-piloselli sepalis accrescentibus coronati.

JAVA, Priangan, G. Bulud, SW of Tjibober, alt. 1000 m: *Winckel 1725* β (L, type), fl. fr. Oct.; G. Bèsèr, near Tjidadap: *Bakhuizen van den Brink 243* (L), fl. fr. Sept.

SUMATRA, Westcoast, Siolak Dras, about 900 m: *Robinson & Kloss s.n.* (K, BM), fr. March; Korinchi Mt, Sandaran Agong, alt. $\pm$ 730 m: *Robinson & Kloss 166* (BM), fl. fr. May; Benculen, Passumah, Bt Tinggi, about 1100 m: *Forbes 2200* (L).

Var. *beccariana* Bakh. f., var. nov.

Differt a typo inflorescentiae multo maiore ad 33 cm longa, cum caule et foliorum nervatione pilosella, stipulis applanatis, foliis maioribus ca 5.5—8 cm latis.

SUMATRA, Westcoast, Sungei Bulu: *Beccari 926* (L, type); BM, FI, K), fl. Sept.; locality unknown: *Korthals s.n.* (L).

V. XANTHOPHYTUM.

1. *Xanthophytum* Reinw. ex Bl., Cat. (1823) 17, descr. — *Paedicalyx* Pierre ex Pitard in Fl. Gén. Ind.-Chine 3, 1922, 88, fig. 10: 5 — *Xanthophytopsis* Pitard in l. c. 3, 1922, 90, fig. 10: 7—8.

2. *Xanthophytum glomeratum* Valetton ined., spec. nov.

Var. *glomeratum*.

Suffrutex erectus minime 2 m altus. Caulis in speciminibus a me examinatis non ramosus robustus, parte superiore pilis patentibus vel subpatentibus rufis longiusculis dense hirsutus, basin versus valde glabrescens. *Folia* oblongo-lanceolata vel subobovato-oblonga ad oblanceolata, basi acuta haud decurrentia, apice acutiuscula vel brevissime acuminata, crassiuscula, supra glabra vel pilis paucis praedita subtus pilis appressis longis rufis dense vestita, marginibus conspicue ciliatis, 7—14 cm longa, 3.5—5.5 cm lata; nervis lateralibus 13—15 subtus elevatis, nervis secundariis et venis numerosis subtus conspicuis; *stipulae* late obovato-spathulatae vel ovato-lanceolatae crassiusculae supra pilosae subglabrescentes, subtus praecipue in nervis dense subappresse pilosae, nervis multis densis percursae, ca 1.5—2 cm longae; petiolus robustiusculus pilis patentibus rufis hirsutus, 2—2.5 cm longus. *Capitula* globosa ca 7.5 mm diametentia; bracteae et bracteolae subaequales lineares pilosae ca 1.5 cm longae. *Flores* incompleti tantum a me visi. *Calycis* tubus subglobosus dense pilosus ca 1 mm altus; sepala 5 subaequalia, basi leviter connata linearia 3—5 mm longa, in fructibus longiora, parte dimidia superiore extus et intus pilosa. *Corollae* tubus 3 mm longus, extus glaber intus in parte superiori tantum pilosus; lobi ignoti. *Stamina* a me non visa. *Stylus* glaber 1.75 mm longus. *Discus* glaber. *Capsula* breviter pedicellata globosa dense pilosa ca 2—2.5 mm longa.

BORNEO, West Borneo, Sarawak, Gat, Upper Rejang River, forest: *J. & M. S. Clemens 21721* (K, type); Sarawak, exact locality unknown: *Beccari 2797* (F1), fl. Sept.

Var. *semiorbiculare* Bakh. f., var. nov.

Caulis gracilis, parte superiore rufo-pilosulus, basin versus glabrescens. *Folia* elliptico-oblonga, rarius late lanceolata, basin et apicem versus dis-

tinete decurrentia, acuminata minute pilosa vel hirsuta, ca 13—18 cm longa, 5—8 cm lata; *stipulae* semiorbiculares ad late obovatae, ciliatae sparse pilosulae vel hirsutae, graciliter multinerviae, ca 10—17 mm longae, 12—23 mm latae. *Capitula* globosa, eis varietatis typicae maiora, in inflorescentiam amplexicaulem conspicuam 2—3 cm diametientem collecta. *Flores* 5-meri, longe pedicellati, pedicellis sub fructu valde elongatis. *Calycis* tubus globosus sparse pilosus vel longe hirsutus ca 1 mm longus; sepala linearia ca 2 mm longa pilosa vel hirsuta, sub fructu valde vel vix ampliata. *Corolla* 4.5 mm longa; tubus 3.5 mm longus, extus glaber intus pilosulus; lobi ovato-oblongi acuti, apice extus pilis paucis longis praedita, ceterum glabri. *Stamina* 5, in medio tubi affixa, paulum e fauce exserta; filamenta glabra longa; antherae lineares ca 0.8 mm longae. *Stylus* inclusus, glaber ca 4 mm longus, stigmate lineari.

BORNEO, West Borneo, Landak: *Tecsmann 11224* (BO); East and Northeast Borneo, Bukit Kasian: *Jaheri 1046* (BO, type); Sg. Blu-u; *Jaheri 375* (BO); Sg. Pary: *Jaheri 1134* (BO).

3. *Xanthophytum grandifolium* Valetton ined., spec. nov.

Frutex robustus ad 4 m altus. Caulis pilis appressis castaneis dense vestitus glabrescens, innovationibus distincte angulatis; ramuli floriferi simplices. *Folia* lanceolata vel lineari-lanceolata, rarius oblonga, basi cuneata vel longe et acute decurrentia, apice attenuata acutissima vel acuminata, supra sparse pilosa, subtus densiuscule appresse pilosa (8)—19—32 cm longa, (3)—5.5—10 cm lata, nervis lateralibus 14—22 remotis subtus conspicue elevatis laxe venosa herbacea; *stipulae* integrae vel bifidae ovato-lanceolatae vel subtriangulati-lanceolatae, maiores 10—18 mm longae, 4—9 mm latae, apice acutae vel subulato-acuminatae, extus carinatae, utrimque dense appresse pilosae, maiores 10—18 mm longae, 4—9 mm latae; petiolus robustus dense appresse pilosus, (2.5)—3.5—6 cm longus. *Inflorescentiae* 4—14 cm longae, longe pedunculatae, in partibus superioribus capitula 3—4 manifeste pedunculata gerentes; pedunculus 4.5—10 cm longus dense appresse pilosus; capitula ca 0.5—2 cm diametientia, valde congesta globosa vel cymosa, cymis 2—3 densis umbelliformibus; capitulorum pedunculi in bractearum magnarum axillis positi pubescentes 0.5—1.5 cm longi; bractee semipersistentes oblongo-lanceolatae acutae dense minute pubescentes, ca 1—1.5 cm longa, pedunculo aequilongae vel longiores, pedunculum in parte inferiore amplectentes; bractee involucales exteriores ca 5 mm longae, interiores minutae; pedicelli graciles pubescentes 1—1.5 mm longi, accrescentes, in fructu 4 mm non superantes. *Calycis* tubus campanulatus ca 0.75 mm altus, pilis persistentibus erectis minutis dense vestitus; sepala ovata acuta vel acutiuscula, utrimque latere dense minute pubescentia ca 0.5 mm longa. *Corolla* alba; tubus cylindricus vel leviter infundibuliformis 4—5 mm longus, utrimque quoad partem dimidiam superiorem solum pilis parvis paucis vel pilis longis numerosissimis vestitus; lobis acuti 0.75 mm longi extus pilis erectis paucis muniti, intus glabri. *Stamina* 5, circiter ad medium corollae tubum adnata; antherae lineares paulum exsertae vel inclusae, ca 1 mm longae. *Stylus* in parte superiore sparse pilosus 4—5 mm longus, stigmate clavato crasso. *Discus* sublobatus. *Capsula* subglobosa vel ovoidea 2—2.5 mm longa; semina numerosa.

BORNEO, West Borneo, Pencin Mts: *Teysmann s.n.* (L, type), fl. fr. Sept.; G. Lianggagang, near S. Mandai: *Hallier s.n.* (K, L, U), fl. fr. fr. March-Apr.; ibidem: *Hallier 2634* (NY, SING, U); Kapuas: *Teysmann 8176* (BO, FI); East and Northeast Borneo, Sungei Buleng, upper course of Mahakam River: *Amdjah 114* (L), fl. fr. Oct.; West Borneo, Sarawak: *Beccari 4017* (FI, K); Rojang: *Haviland 712* (K); Kapit, Upper Rejang River, riverine forest, shrub up to 10 ft: *J. & M. S. Clemens 21404* (K); Gat, Upper Rojang River, forest: *ibidem 21774* (K); Lio Matu, Upper Baram: *Moulton 6701/5* (K, SING), fl. fr. Oct.; ibidem: *Moulton 30* (SING), fl. fr. Oct.; Dulit Range, rain forest, below 300 m, shrub up to 4 m tall: *P. W. Richards 1039* (K), fl. fr. July.

List of collector's numbers.

(The numbers between brackets indicate the numbering of the species).

Amdjah 114 (V 3); Bakhuizen van den Brink 243 (IV 1); 621 (I 3), 926 (IV 1), 3797 (V 2), 4017 (V 3); Bünnemeyer 504 (I 6), 3151 (I 6), 7158 (I 6); Buwalda 6417 (I 1); Clemens (J. & M. S.) 21404 (V 3), 21721 (V 2), 21774 (V 3), 30650 (I 5), 31963 (I 5); Enderit 4327 (I 5); Forbes 2200 (IV 1); Galungi 485 (I 6); Hallier sn (V 3), 2634 (V 3); Haviland 84/75 (I 3), 712 (V 3); Jaheri 375 (V 2), 1046 (V 2), 1134 (V 2); Korthals sn (IV 1); Lörzing 5345 (I 6), 5811 (I 6); Moulton 30 (V 3), 6701/5 (V 3); Richards (P. W.) 1039 (V 3), 2090 A (I 5); Ridley 14479 (I 4); Robinson & Kloss sn (IV 1), 20 (I 2), 166 (IV 1); Steenis (van) 8963 (I 6), 8964 (I 6); Teysmann sn (V 3), 8176 (V 3), 11224 (V 2); Winekel 1725 β (IV 1); Winkler 660 (I 5), 791 (I 5); Yates 995 (I 6).

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(Synonyms in italics).

ARGOSTEMMA Wall.	I	— <i>flavescens</i> Bakh. f.	I 3
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Bakh. f.	I	— <i>gesnerella</i> Wernh.	I 13
sect. <i>Borrachineum</i> Bakh. f.	I	— <i>gracile</i> Stapf	I
sect. <i>Elatostemoides</i> K. Schum.	I	— <i>grandiflorum</i> Ridl.	I 10
sect. <i>Euargostemma</i> K. Schum.	I	var. <i>lammii</i> (Val.) Bakh. f.	I 10
sect. <i>Monophyllum</i> K. Schum.	I	— <i>involutum</i> Hemsl.	I 11
sect. <i>Pomangium</i> (Reinw.) Ridl.	I	— <i>lammii</i> Val.	I 10
sect. <i>Pomangium</i> : <i>Eupomangiae-Homophyllae</i> Ridl.	I	— <i>lanceolarium</i> (non Ridl.) Merr.	I 5
sect. <i>Pomangium</i> : <i>Heterophyllae-Monophyllae</i> Ridl.	I	— <i>membranaceum</i> King	I 14
sect. <i>Pomangium</i> : <i>Heterophyllae-Polyphyllae</i> Ridl.	I	— <i>microcnide</i> Miq.	I 15
sect. <i>Pomangium</i> : <i>Verticillatae</i> Ridl.	I	— <i>montanum</i> Bl. ex DC.	I
sect. <i>Pomangium</i> : <i>Verticillatae</i> Ridl.	I	— <i>neurosepalum</i> Bakh. f.	I 4
sect. <i>Pomangium</i> : <i>Verticillatae</i> Ridl.	I	— <i>nubicola</i> Wernh.	I 16
sect. <i>Pomangium</i> : <i>Verticillatae</i> Ridl.	I	— <i>ovatum</i> Ridl.	I 8
sect. <i>Pomangium</i> : <i>Verticillatae</i> Ridl.	I	var. <i>involutum</i> (Hemsl.) Bakh. f.	I 11
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var. <i>albo-ciliatum</i> (Ridl.) Bakh. f.	I 7	— <i>quadripetalum</i> Elm.	I 9
— <i>albo-ciliatum</i> Ridl.	I 7	— <i>quadripetiolata</i> Elm.	I 9
— <i>borrachineum</i> Bl. ex DC.	I, I 8	— <i>subfalcifolium</i> Bakh. f.	I 5
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— <i>corymbosum</i> (Ridl.) Bakh. f.	I 8	var. <i>curtum</i> Ridl. ined.	I 6
— <i>corymbosum</i> (Ridl.) Bakh. f.	I 8	var. <i>pilosum</i> Bakh. f.	I 6
— <i>corymbosum</i> (Ridl.) Bakh. f.	I 8	— <i>verticillatum</i> Wall.	I
— <i>buwaldae</i> Bakh. f.	I 1	<i>Bigelovia mitracarpoides</i> Miq.	III 1
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— <i>fallax</i> Bakh. f.	I 2	Bakh. f.	II 1
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— <i>bracteata</i> Korth.	I 15	var. <i>semiorbiculare</i> Bakh. f.	V 2
		— <i>grandifolium</i> Val. ined.	V 3
		<i>Xanthophytopsis</i> Pitard	V 1