

with 3–5 strong longitudinal veins and raised reticulum. Corolla bright orange; tube 17–20 mm long; limb 15–25 mm long.

Acacia-Commiphora bushland on reddish silty sand; 540 m. HA; Somalia. Thulin et al. 11389.

The Somali material so far known has leaves only up to 2.5 cm long and the species was believed to flower precociously. However, this Ethiopian population, which was seen after a good rain, flowered with much larger leaves, and apparently the species is not precocious, but has leaves that vary in size according to the rainfall. The Ethiopian plants also have slightly larger bracts and flowers than the Somali ones, and the fertile bracts tend to be 5- rather than 3-veined.

170. LAMIACEAE

by O. Ryding¹, P.B. Phillipson², A. Paton³ & M. Thulin⁴

The genus *Rothea* was resurrected by Steane and Mabberley in *Novon* 8: 204–206 (1998). Therefore the following changes should be made:

On p. 517, in the key to genera, add *Rothea* and amend couplet 3 as follows:

3. Stamens long-exserted from the corolla-tube; corolla 5–100 mm long; fruit lobed or entire, separating into 4 (or fewer) nutlets. 3a
- Stamens included or shortly exserted from the corolla-tube; corolla 2–6 mm long; fruit entire, indehiscent. 1. *Premna*
- 3a. Flower-bud markedly asymmetrical, corolla expanding abruptly on lower side only, split to the middle at the upper side; anterior corolla-lobe frequently much larger than the other four; anthers usually basifixed (occasionally approaching versatile); stigma-lobes frequently unequal. 3a. *Rothea*
- Flower-bud symmetrical or, if asymmetrical, usually expanding due to galls; anterior corolla-lobe only slightly (if at all) larger than the others; anthers versatile; stigma-lobes equal.

3. *Clerodendrum*

On p. 521 under the generic name *Clerodendrum*, remove the synonym *Rothea*.

On p. 523 add:

3a. *ROTHEA* Raf. (1838)

Cyclonema Hochst. (1842); *Clerodendrum* L. subgen. *Cyclonema* (Hochst.) Gürke (1895).

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Clerodendrum L. subgen. *Clerodendrum* sect. *Konocalyx* Verdc. (1992).

Steane and Mabberley, *Novon* 8: 204–206 (1998).

Shrubs, subshrubs and perennial herbs (rarely lianas or small trees), ill-scented; leaves opposite or whorled, usually sessile or short-petiolate, simple, entire or toothed; inflorescence a terminal thyrse (usually lax, paniculiform) or axillary cyme, occasionally reduced to solitary, axillary flowers; calyx actinomorphic or nearly so, not accrescent, 5-lobed or truncate; corolla blue, purple or white (rarely yellow), subactinomorphic to 1-lipped and then with only anterior lip present, 5-lobed, lobes subequal or anterior lobe largest and often concave and different in colour, tube straight or curved, often gibbous, corolla in bud asymmetrical; stamens 4, didynamous to subequal, long-exserted, filaments arched or straight, anther-thecae parallel, separate at dehiscence; pollen with supratectal spinules; ovary unlobed in flower but becoming lobed during fruit development; stigma-lobes equal or frequently unequal; disc poorly to well developed; fruit drupaceous, 4-lobed, the lobes sometimes elongating greatly during development, eventually separating into fleshy 1-seeded mericarps; endosperm absent.

Also replace 5. *C. alatum* with:

5. *Rothea alata* (Gürke) Verdc. (2000)

and add to the synonyms:

Clerodendrum alatum Gürke (1893).

On p. 525 replace 6. *C. myricoides* with:

6. *Rothea myricoides* (Hochst.) Steane & Mabb. (1998)

and add to the synonyms:

Clerodendrum myricoides (Hochst.) Vatke (1882).

On p. 526 add *Rothea rupicola* which would have keyed out in the old *Clerodendrum* key (as *C. rupicola*) on p. 523, as follows:

7. Inflorescences at the end of short, leafless shoots; flowers yellow-white. 7. *C. robecchii*
- Inflorescences in leaf-axils or terminal on ordinary shoots; flower colour not as above. 8
8. Calyx-lobes 1.5–3 mm long; corolla blue-violet. 6. *C. myricoides*
- Calyx-lobes 3–4 mm long; corolla dull green with purplish midlobe. 9. *C. rupicola*

9. *Rothea rupicola* (Verdc.) Verdc. (2000);

Clerodendrum rupicola Verdc. (1992) – type: Kenya, Hemming 83/11 (K holo., EA iso.).

Shrub or subshrub, 0.5–3 m tall; stems pale brown to dull purplish brown, pubescent when young. Leaves opposite or tufted on short-shoots, oblanceolate to obovate or elliptic, 1–9 x 0.4–5 cm, usually drying black, rounded to subacute at the apex, gradually to abruptly tapering into a petiole-like base, with entire to slightly crenate margin, pubescent when young, glabrescent; true petiole c 1 mm long. Flowers in more or less leafy terminal pubescent

cymes, these sometimes arranged in panicles; bracteoles linear, 2–5 mm long. Calyx pubescent; tube 2.5–3 mm long; lobes ovate-oblong, 3–4 mm long, rounded at apex, densely glandular inside. Corolla with lateral lobes dull green and midlobe purplish; tube c 6 mm long; lobes more or less ovate-oblong, 8–13 mm long, the midlobe largest. Fruit 8–10 mm in diameter, 2–4-lobed.

Acacia-Commiphora bushland on sand; 570 m. HA; S Somalia, E Kenya. Thulin et al. 11161.

5. AJUGA L. (1753)

On p. 528 replace 2. *A.* sp. = Friis et al. 1456 with:

2. *A. leucantha* Lukhoba (2009)
– type: Uganda, Purselove 2112 (EA holo., K iso.).

20. SATUREJA L. (1753)

In recent classifications *Satureja* s. lat. is divided into *Satureja* s. str., *Clinopodium* (syn. *Calamintha* and *Acinos*) and *Micromeria*. The species in Ethiopia and Eritrea belong to *Clinopodium* and *Micromeria*.

On p. 519, amend the key to genera as follows:

45. Upper calyx lip lobed in up to one third of its length; two lower calyx lobes subulate, mostly ciliate (but not ciliate in cultivated *T. vulgaris*).
19. **Thymus**
– Upper calyx lip lobed in over one quarter of its length; two lower calyx lobes subulate or triangular, hardly ciliate. 45a.
45a. Leaves thickened at the margin, entire or almost so. 20b. **Micromeria**
– Leaves not thickened at the margin, crenate-serrate or sometimes entire. 20a. **Clinopodium**

On p. 554 insert the following:

20a. CLINOPODIUM L. (1753)

Ryding, *Bot. J. Linn. Soc.* 150: 391–408 (2006); *Kew Bull.* 61: 419–432 (2006).

The material in the Flora area differs from the description of *Satureja* in the following respect: Leaf blades thin at the margin, crenate, crenate-serrate or sometimes entire, herbaceous and often up to more than 11 mm broad; calyx 13-veined (in the Flora area); posterior stamens fertile or sterile; nutlets mucilaginous upon wetting.

A genus with c 120 species in America, Europe, Asia and Africa.

Also remove the paragraph beginning with “A satisfying separation...”

On pp. 554–556 the following amendments and additions should be made for *Satureja* species 1–5:

1. *C. simense* (Benth.) Kuntze (1891);
Calamintha simensis Benth. (1848); *Satureja simensis* (Benth.) Briq. (1896) – type: GD, Mt. Bachit in Semien, Schimper 999 (K holo., UPS p.p. iso.).

Addition to the description: Cleistogamous flowers sometimes present. Nutlets 0.65–1.05 x 0.55–0.9 mm, brown, apparently not mucilaginous upon wetting.

TU GD GJ WU SU AR WG KF IL SD BA HA; E Africa, Dem. Rep. Congo, Rwanda, Burundi.

The type collection Schimper 999 is mixed and contains both *C. simense* and *C. uhligii*. The duplicate at S contains *C. uhligii* only.

2. *C. uhligii* (Gürke) Ryding var. *obtusifolium* (Avetta) Ryding in *Kew Bull.* 61: 425 (2006);
Calamintha simensis Benth. var. *obtusifolia* Avetta in *Ann. Ist. Bot. Roma* 6: 61 (1897).
Satureja pseudosimensis Brenan (1954).

Additions to the description: Nutlets 0.9–1.4 x 0.6–0.95 mm, brown, mucilaginous or not upon wetting.

In Vol. 5 this taxon is called *Satureja pseudosimensis*. *C. uhligii* var. *uhligii* occurs in E Africa.

3. *C. kilimandschari* (Gürke) Ryding (2006);
Calamintha kilimandschari Gürke (1892); *Satureja kilimandschari* (Gürke) Hedberg (1957).

Additions to the description: Nutlets ellipsoid or ovoid, 0.8–0.9 x 0.7–0.8 mm, brown, apparently not mucilaginous upon wetting.

4. *C. paradoxum* (Vatke) Ryding (2006);
Calamintha paradoxa Vatke (1872); *Satureja paradoxa* (Vatke) Engl. ex Seybold (1988).

Additions to the description: Gynodioecious, but female plants rare. Nutlets ellipsoid or ovoid, 1.1–1.4 x 0.9–1 mm, brown and mostly with darker lines along the veins, slightly mucilaginous upon wetting.

5. *C. abyssinicum* (Hochst. ex Benth.) Kuntze (1891);
Micromeria abyssinica Hochst. ex Benth. (1848);
Satureja abyssinica (Hochst. ex Benth.) Briq. (1896).

Additions to the description: Nutlets ellipsoid or ovoid, 0.8–1.3 x 0.4–0.7 mm, brown or grey, slightly mucilaginous upon wetting.

var. *abyssinicum*

In Vol. 5 this taxon is treated as a subspecies.

var. *condensatum* (Hedberg) Ryding in *Bot. J. Linn. Soc.* 150: 402 (2006);

Satureja abyssinica (Benth.) Briq. var. *condensata* Hedberg in *Symb. Bot. Upsal.* 15, 1: 164 (1957); *S. abyssinica* (Benth.) Briq. subsp. *condensata* (Hedberg) Seybold in *Stuttg. Beitr. Naturk. Ser. A* 421: 18 (1988).

In Vol. 5 this taxon is called *Satureja abyssinica* subsp. *condensata*.

On p. 556 insert the following:

20b. **MICROMERIA** Benth. (1829)

Ryding, *Bot. J. Linn. Soc.* 155: 427–446 (2007).

The material in the Flora area differs from the description of *Satureja* (Vol. 5, p. 554) in the following respect: Leaf blades thickened at the margin, entire or almost so, more or less leathery and less than 11 mm broad; calyx is (12–)13–15-veined; all 4 stamens fertile; nutlets mucilaginous upon wetting.

A genus with c 50 species in Europe, Asia and Africa.

On pp. 556–557 the following amendments and additions should be made for *Satureja* species 6–8:

6. **M. imbricata** (Forssk.) C. Chr. var. **villosa** (Elly Walther & K.H. Walther) Ryding in *Bot. J. Linn. Soc.* 155: 442 (2007);

M. biflora (Buch.-Ham. ex D. Don) Briq. var. *villosa* Elly Walther & K.H. Walther, *Mitt. Thüring. Bot. Gez.* 1, 4: 7 (1957) – type: Kenya, Dale 2695 (K holo.).

Satureja ellenbeckii Gürke (1905); *M. ellenbeckii* (Gürke) Chiov. (1932) – type: HA, Gara Mulata, *Ellenbeck* 533 (B holo. destroyed) – neotype: HA, Gara Mulata, *Gillett* 5319 (K neo., FT isoneo.).

Addition to the description: Nutlets ellipsoid or obovoid, rounded or obtuse at the apex, 0.9–1.4 x 0.5–0.7 mm.

SU AR SD BA HA; E Africa.

In Vol. 5 this taxon is called *Satureja imbricata*. However, Ryding (2007) regards the Yemeni type of *M. imbricata* as more closely related to the next taxon. He does not include the type of *S. contardoi* and similar material from Simen Mts (GD) in var. *villosa* or var. *imbricata*, but leaves this material unclassified at variety level.

7. **M. imbricata** (Forssk.) C. Chr. var. **imbricata**;

M. punctata Benth. (1834); *Satureja punctata* (Benth.) Briq. (1896).

M. ovata Benth. (1834); *Satureja punctata* (Benth.) Briq. subsp. *ovata* (Benth.) Seybold, *Stuttg. Beitr. Naturk. Ser. A* 421: 31 (1988).

M. purtschelleri Gürke (1892).

Correction of the type of *M. ovata* var. *cinereo-tomentosa* (synonym of the earlier *Satureja punctata* subsp. *ovata*): “province de Tchélikite”, collector not cited, *Quartin-Dillon* and/or *Petit* (P? holo.).

Addition to the description: Rarely annual (in EE); inflorescences often with 2–3 cymes or with both cymes and other types of floral branches in the axis of the same bracts; cleistogamous flowers often present along with ordinary chasmogamous flowers. Nutlets oval, ellipsoid or slightly ovoid, rounded to shortly acuminate at the apex, 0.7–1.3 x 0.3–0.65 mm.

Additional distribution area: EE; Arabian Peninsula.

In Vol. 5 this variety is called *Satureja punctata*. Ryding (2007) amalgamated the two subspecies *punctata* and *ovata* to one taxon (*Micromeria imbricata* var. *imbricata*).

8. **M. unguentaria** Schweinf. (1867);

Satureja unguentaria (Schweinf.) Cufod. (1962) – type: GD, “Dschadscha”, *Schimper* 112 (Z lecto., E, FI isolecto.).

Additions to the description: Nutlets oval, c 1.1 x 0.45 mm, acute to slightly acuminate at the apex, brown, smooth, matt.

On p. 565 replace the account of 26. *Tetradenia* with the following:

26. **TETRADENIA** Benth. (1830)

Phillipson & Steyn in *Adansonia* 30(1): 177–196 (2008).

Shrubs, aromatic, often leafless or almost so at flowering stage, with paired “callosities” (short outgrowths) at the nodes, usually with unisexual flowers. Leaves simple, ovate, petiolate, membranous, coarsely dentate. Inflorescence a large panicle-like thyse, often much branched; floral branches spike-like; bracts small, deltoid or ovate, often broadly so, more or less caducous; cymes generally 3-flowered; bracts small, persistent or caducous, bracteoles absent. Flowers subsessile. Calyx 5-lobed, enlarging slightly in fruit. Corolla white to pale pink (in Ethiopian species) small, funnel-shaped, weakly 2-lipped; posterior lip 2-lobed, ascending; lateral lobes spreading; anterior lip formed by a single longer horizontal or deflexed lobe, longer than lateral lobes and the posterior lip. Stamens 4, subequal, exserted, spreading, attached in the throat, reduced to staminodes in female flowers; anthers 1-chambered with confluent thecae. Disc 4-lobed, fleshy. Style exserted, deeply and equally 2-lobed at the apex in female flowers, present but somewhat reduced in male flowers; ovary sterile in male flowers; disc usually prominently 4-lobed. Nutlets small, ovoid to oblong, brown, slightly mucilaginous when wetted.

A genus with 22 species, confined to Madagascar and sub-saharan Africa.

Phillipson & Steyn (2008) divided *T. riparia* sensu Codd (1983) into several species, of which the following two occur in Ethiopia.

1. Calyx lobes sub-equal, the lobes all acute and with the upper lobe gradually spreading in fruit; inflorescence poorly branched, female with long lax spikes, the terminal usually more than 8 cm long.

1. **T. multiflora**

– Calyx lobes unequal, the upper lobe large, rounded, abruptly bent upwards in fruit, the lateral and lower lobes small, acute, separated by a deep basal sinus; inflorescence well-branched or highly reduced, female with short dense spikes, the terminal usually less than 3 cm long.

2. **T. urticifolia**

1. **T. multiflora** (Benth.) Phillipson (2008);

Plectranthus multiflorus Hochst. nom. nud.; *Moschosma multiflorum* Benth. (1848); *Basilicum multiflorum* (Benth.) Kuntze (1891); *Iboza multiflora* (Benth.) E.A. Bruce (1940), p.p. – types: TU, Sara Prov., near Djeladjeranne, *Schimper* 766 (K syn.); 29 Aug. 1840, *Schimper* III/1688 (BM K KIEL syn.).

Dioecious (or possibly gynodioecious) shrub up to 1.5 m tall. Stems densely pubescent with a pale yellowish indumentum, the hairs rather matted, with scattered to dense red sessile glands. Leaves up to 160 x 110 mm, apex rounded, base cordate to rounded, finely pubescent with scattered red sessile glands above, indumentum similar beneath but denser along the veins, and with copious red sessile glands between the veins; petiole up to 1/4 the length of the leaf blade, pubescent like the stems, but generally lacking sessile glands. Inflorescence with few main branches and these lacking spikes in the lowest third and poorly branched in the upper two thirds, with few reduced leaf-like bracts; branches densely pubescent like the stems; bracts caducous, $c 2 \times 2.5$ mm, densely covered with red sessile glands on the outer surface and with a ciliate margin, spikes relatively lax, the terminal spikes (on well-developed inflorescences) more than 4 cm (male) or more than 8 cm (female) long, internodes 3–6 mm long (male and female). Calyx $c 0.7$ mm long, villous and with copious red sessile glands; deeply lobed (to about half-way), the lobes subequal and acute, fruiting calyx broadly ellipsoid to 1.8 mm long, the lobes $c 0.7$ mm long, all gradually curved outwards. Corolla tube $c 0.8$ (male) or $c 0.5$ (female) mm long; lobes with red sessile glands, anterior lobe $c 1.3$ (male) or $c 1.0$ (female) mm long. Nutlets ovoid, slightly flattened with apiculate apex $c 0.9 \times 0.7$ mm.

Rocky places, often growing near rivers; 1600–1900 m. TU GD GJ, only known from Ethiopia. *G. Aweke* 949; *Quartin-Dillon & Petit* 18; *Schimper* 776.

2. **T. urticifolia** (Baker) Phillipson (2008);

Moschosma urticifolium Baker (1900); *Iboza urticifolia* (Baker) E.A. Bruce (1940) – type: Tanzania, *H.H. Johnston* s.n. (K holotype).

Dioecious shrub 2–5 m tall. Stems hispid with a whitish indumentum of short glandular hairs, sometimes also with scattered to moderately dense medium-length eglandular hairs and/or with scattered yellow glands. Leaves up to 170 x 140 mm, apex acute, base cordate to truncate, hispid with sparse to moderate short glandular indumentum, sometimes also with scattered medium-length glandular hairs above; sparsely to densely woolly with matted white medium-length to long eglandular hairs and with scattered pale yellow sessile glands below, the main veins finely hispid; petiole more than half the length of the leaf blade, hispid. Inflorescence well-branched, branches puberulous to villose with glandular and eglandular hairs; bracts persistent, $c 1 \times 1$ mm, with scattered to dense short glandular and medium-length eglandular hairs on the outer surface and the margins; spikes dense, the terminal spikes (on well-developed inflorescences) usually more than 3 (male) or more than 1.5 (female) cm long, internodes $c 2$ – 3 (male) or 1 (female) mm long, the axes hidden by the flowers at anthesis. Calyx $c 0.6$ (male) or 0.8 (female) mm long, pubescent with scattered hairs and with copious pale yellow sessile glands, lobes unequal, the upper large, rounded, abruptly bent upwards in fruit, the lateral and lower lobes small, acute, fruiting calyx el-

lipoid to $c 1.8$ mm, lobes $c 0.7$ mm long. Corolla tube $c 0.8$ (male) or 0.5 (female) mm; lobes without red sessile glands, anterior lobe $c 1.1$ (male) or 0.8 (female) mm long. Nutlets ellipsoidal, $c 0.7 \times 0.3$ mm.

Forest margins, woodland and bushland, mainly on rock outcrops and among large boulders; 1700–2200 m. KF GG SD; Sudan, E Africa, Dem. Rep. Congo, Rwanda, Burundi. *Ebba* 546; *Friis et al.* 541; *Gilbert & Sebsebe* 8827.

31. **ERYTHROCHLAMYS** Gürke (1894)

The genus *Erythrochlamys* has been included in *Ocimum*.

On p. 569 remove 31. *Erythrochlamys* with the description and key. The only species should be named:

Ocimum spectabile (Gürke) A.J. Paton (1999);
Erythrochlamys spectabilis Gürke (1894).

32. **OCIMUM** L. (1737)

On p. 570 add the following synonyms under the generic name:

Erythrochlamys Gürke (1894) (genus 31 in Vol. 5, p. 569).

Becium Lindl. (1842) (genus 33 in Vol. 5, p. 575).

33. **BECIUM** Lindl. (1842)

The genus *Becium* has been included in *Ocimum*.

On p. 575, remove 33. *Becium* with description and comment.

Change the names for, and add synonyms to, the seven species in Ethiopia.

1. ***Ocimum ellenbeckii*** Gürke (1906);
Becium ellenbeckii (Gürke) Cufod. (1963).
2. ***Ocimum serpyllifolium*** Forssk. (1775);
Becium serpyllifolium (Forssk.) J.R.I. Wood (1983).
3. ***Ocimum grandiflorum*** Lam. (1785);
Becium grandiflorum (Lam.) Pic.Serm. (1950).
4. ***Ocimum obovatum*** E. Meyer ex Benth. in E. Mey. (1838);
Becium obovatum (E. Mey. ex Benth. in E. Mey.) N.E. Br. (1910).
5. ***Ocimum formosum*** Gürke (1906);
Becium formosum (Gürke) Chiov. ex Lanza (1939).
6. ***Ocimum verticillifolium*** Baker (1895);
Becium verticillifolium (Baker) Cufod. (1963).
7. ***Ocimum filamentosum*** Forssk. (1775);
Becium filamentosum (Forssk.) Chiov. (1919).

40. PLECTRANTHUS L'Hér. (1785)

On p. 586 add the following synonyms under the generic name:

Solenostemon Schum. (1827) (genus 41 in Vol. 5, p. 599).
Neohyptis J.K. Morton (1962) (genus 42 in Vol. 5, p. 601).
Englerastrum Briq. (1894) (genus 43 in Vol. 5, p. 601).
Calchas P.V. Heath (1997).

On pp. 586–587, in the key, add *P. lasianthus*, *P. xylopodus*, *P. glandulosus*, *P. kamerunensis* and *P. minutiflorus* and amend the key as follows:

Couplet 1 as in the original key

2. Calyx bearded within, with a dense ring of hairs in throat, obscuring the nutlets. 3
 - Calyx throat glabrous; if pubescent then with weak villose hairs, these not obscuring the nutlets. 9
3. Calyx very widely campanulate, almost rotate; fruiting calyx 11–16 mm wide at the mouth. 1. *P. otostegioides*
 - Calyx tubular, subglobose, obconic or narrowly campanulate; fruiting calyx less than 6 mm wide at the mouth. 4
4. Cymes 3-flowered; calyces adpressed to inflorescence axis with pedicels erect. 5
 - Cymes 3–7-flowered, irregular in number; calyces spreading, clearly distant from inflorescence axis with pedicels ascending. 7
5. Bracts succulent, soon spreading, gradually becoming leaf-like but smaller, usually persistent to fruiting stage; creeping herb. 1a. *P. lasianthus*
 - Bracts thin-textured, erect above, enclosing buds, usually early deciduous, if persistent then distinct from the leaves; erect or spreading herb or subshrub. 6
6. Annual or sometimes perennial; stems mostly herbaceous; fruiting calyx 4–7 mm long; corolla 6–14 mm long. 3. *P. caninus*
 - Perennial; stems woody at base, pubescent; fruiting calyx 6–10 mm long; corolla 14–22 mm long. 5. *P. ornatus*
7. Petioles 0–3 mm long; plant with annual stems arising from woody rootstock. 7a. *P. xylopodus*
 - Petioles 3–50 mm long; plant annual or perennial, lacking a woody rootstock. 8
8. Perennials or sometimes annuals, corolla 10–22 mm long. 6. *P. barbatus*
 - Annuals, corolla 8–12 mm long. 4. *P. kivuensis*

9–10 as in the original key

11. alter 17. *P. cylindraceus* to 17. *P. montanus*

12–16 as in the original key

17. Calyx tube swollen at the base (ventricose); upper lip of the corolla small and recurved. 25. *P. sereti*
 - Calyx tube campanulate, upper lip of corolla erect and flat, almost as large as the lower concave lip. 17a
- 17a. Upper lobe of the fruiting calyx narrowly lanceolate-triangular, much longer than broad; corolla 13–21 mm long; cymes with peduncle 2–20 mm long. 31. *P. laxiflorus*

- Upper lobe of the fruiting calyx broadly ovate, about as long as broad; corolla 8–13 mm long; cymes with the peduncles 0.5–3 mm long.

31a. *P. glandulosus*

18–24 as in the original key

25. Corolla tube almost straight parallel-sided with a slight swelling on the upper side, not funnel-shaped; creeping herb with ascending branches.

32. *P. verticillatus*

- Corolla-tube bent, funnel-shaped without a swelling on the upper side; erect herb, not creeping. 25a

25a. Leaf apex acute, usually less than 45°; plant of evergreen forest margin. 31b. *P. kamerunensis*

- Leaf apex rounded or angled more than 45°; plant of dry or seasonally dry woodland or rocky outcrops. 27. *P. longipes*

26–36 as in the original key

37. Stamens and style much exceeding the corolla lip and exerted from it at anthesis, cymes elongating and raceme-like in fruit. 14. *P. aegyptiacus*

- Stamens and style not exceeding the corolla lip and normally enclosed within it, cymes sessile in flower and fruit. 38

38. Perennial; bracts deciduous or rarely persistent to fruiting stage; corolla 5–10 mm long.

18. *P. hadiensis*

- Annual; bracts persistent; corolla 2–5 mm long.

18a. *P. minutiflorus*

On p. 588 add:

1a. *P. lasianthus* (Gürke) Vollesen (1980);

Coleus lasianthus Gürke (1894) – type: Tanzania, Fischer 507 (B holo., destroyed); Tanzania, Abdallah, Mboya & Vollesen 96/109 (K! neo, NHT isoneo.).

Coleus tetensis Baker (1900); *P. tetensis* (Baker) Agnew (1974).

Aromatic succulent mat-forming herb arising from a tap-root, with red sessile glands. Stems brittle, succulent, procumbent, quadrangular, rooting at nodes, densely pubescent. Leaves succulent, petiolate to subsessile; blades elliptic, rhombic or obovate, 10–35 x 5–20 mm, serrate, apex acute to rounded, base cuneate to attenuate, pubescent with long glandular and eglandular hairs. Inflorescence condensed above; bracts succulent, persistent, erect above, soon becoming spreading, broadly elliptic to oblong, 10 mm long, rounded to mucronate at apex; cymes 3-flowered; pedicels erect, 3–4 mm long, flattened, distally curved. Fruiting calyx 5 mm long, shortly tubular and with pedicel attached excentrically behind posterior lip; throat truncate, densely villose; posterior lip shortly decurrent, curving upwards, elliptic or obovate, mucronate at apex; anterior lip 4-lobed with lobes lanceolate, the median longer than the lateral. Corolla white marked blue, blue or purple, 11–18 mm long; tube 5–10 mm long, sigmoid; posterior lip, slightly shorter than anterior lip; anterior lip 6–10 mm long, horizontal, cucullate, enclosing stamens. Staminal filaments fused. Nutlets pale brown, with red dots, broadly ovate in outline, 1 mm long, smooth.

Rocky ground, open *Acacia-Commiphora* bushland; c 1100 m. SD (c 10 km N of Moyale); also from E Africa, South tropical Africa, Madagascar, South Africa. Friis et al. 8718.

P. lasianthus was not included in Vol. 5. It belongs to the group of species with the calyx bearded in the mouth (1–7). It differs from *P. otostegioides* in having an ordinary tubular calyx instead of a widely campanulate to distally rotate calyx. It differs from the other species of this group in having the bracts persistent and similar to the ordinary leaves but gradually smaller upwards in the inflorescence.

On p. 588 remove 2. *P. grandicalyx* (E.A. Bruce) J.K. Morton.

Typical *P. grandicalyx* is not known from Ethiopia. The cited collection, Gillett 14976, agrees better with 5. *P. ornatus*.

On p. 588, under 3. *P. caninus*, add new synonyms:

Coleus spicatus var. *rondinella* Sprenger in *Gartenflora* 45: 358, fig. 62 (1896); *Coleus comosus* var. *rondinella* (Sprenger) Cufod. *Enum.*: 832 (1963) – syntypes: EE/EW, “Chagali”, Schweinfurth & Riva 1071 (FT); “Acrur”, Schweinfurth & Riva 1339 (FT); “Aidereso”, Schweinfurth & Riva 2202 (FT).

A. Paton in *Fl. Trop. E. Afr.* (2009) divides *P. caninus* into two subspecies. The Ethiopian and Eritrean material of the species agrees better with subsp. *caninus* than with subsp. *flavovirens* (Gürke) A.J. Paton. However, the collection Friis et al. 9525 from GG approaches subsp. *flavovirens* in having rather small flowers.

On p. 590 remove 7. *P. comosus* Sims.

The type of *P. comosus* belongs to an Asiatic form of *P. barbatus* that hardly occurs in Ethiopia. The synonym from Eritrea, *Coleus spicatus* var. *rondinella* Sprenger and the cited collections Schweinfurth & Riva 1071, 1339 and 2202, belong to *P. caninus*. The other cited collections have not been seen.

Add:

7a. ***P. xylopodus*** Lukhuba & A. Paton (2000)
– type: Kenya, Symes 293 (EA holo., K iso.).

Perennial subshrub, 0.2–0.6 m tall, with several erect or ascending stems arising from a woody rootstock, not reported to be aromatic, with yellowish sessile glands. Stems often producing leafy sterile shoots. Leaves spreading, slightly succulent, shortly petiolate or sessile, often folded along midrib on drying, sometimes with fascicles of younger leaves in axils of blades; blades narrowly trullate, elliptic or obovate, 15–25(–40) x 3–15 mm, entire, subentire or shallowly crenate, apex rounded or obtuse, base attenuate, densely pubescent; petiole obsolete or up to 3 mm long. Inflorescence lax; cymes sessile or almost so, 3–5-flowered; bracts lanceolate, 2 mm long,

erect above forming an inconspicuous terminal coma; pedicels 3–5 mm long, ascending, shortly flattened, distally curved. Fruiting calyx 7–8 mm long, shortly tubular and with pedicel attached excentrically behind posterior lip; throat truncate, densely villose; posterior lip obovate, shortly apiculate at apex, curving upwards, decurrent; anterior lip 4-lobed, lateral lobes deltate, median lanceolate, longer than lateral. Corolla white to purple, 14 mm long; tube 5–7 mm long, sigmoid; posterior lip much shorter than anterior; anterior lip 7–9 mm long. Staminal filaments fused. Nutlets dark brown, broadly ovoid, c 1.5 mm long, smooth.

Dry shrubby area; 1500–1950 m. SD (southern part of the region); Kenya. Gillett 15858; Mooney 7741; Sebsebe et al. 2204; 4227.

P. xylopodus was not mentioned in Vol. 5, but a collection of this species was cited under the name *P. buchanani* (see below). The species belongs to the group with the calyx bearded in the mouth (1–7). However it differs from the other species of the group in having the stems herbaceous and arising from a woody root-stock.

On p. 593 change 14. *P. tenuiflorus* with synonyms to:

14. ***P. aegyptiacus*** (Forssk.) C. Chr. (1922);
Ocimum aegyptiacum Forssk. (1775); *Ocimum a zatarhendi* Forssk. (1775), non rite publ.; *Plectranthus zatarhendi* E.A. Bruce (1935), quoad pl. typ., non auct. mult. – type: Yemen, Forsskål, not traced, (neotype: Arabia, Herb. Forssk. (KIEL neo.).
P. tenuiflorus (Vatke) Agnew (1974).
Coleus ghindanus Schweinf. ex Baker (1900) – type: EW, “Grande Vallée de Ghinda”, Schweinfurth 2149 (B holo. destroyed, BR G K FT P S iso.).

Description etc. as for *P. tenuiflorus*.

See further Ryding & A. Paton in *Kew Bull.* 56: 691–696 (2001).

On p. 594 change 17. *P. cylindraceus* to:

17. ***P. montanus*** Benth. (1830)
– type: India, Herb. Wight in Wall. *Cat.* 2747B (K-W lecto.).
P. cylindraceus Hochst. ex Benth. (1848).

Description etc. as for *P. cylindraceus*.

On p. 594 the treatment of 18. *P. hadiensis* refers to *P. hadiensis* s. str. and includes a comment on *P. minutiflorus*. The last mentioned should be given a separate entry with the differences between the two species as follows:

18a. ***P. minutiflorus*** Ryding (2000)
– type: SD, 35 km from the main road Yabelo-Mega on the road to Arero, Friis et al. 8374 (C holo.; ETH, K iso.).

Closely related to *P. hadiensis*, but differs from this species in being annual, having leaf blades thinner, bracts persistent, and the corolla smaller, 2–5 mm long.

Open bushland, tree savannah or grassland, mostly near rocks or on sloping ground; 1000–1800 m. SD HA; N Kenya. *Bos* 9030; *Ryding* et al. 2209; *Friis* et al. 8371.

On p. 595 changes should be made to species 20. *P. punctatus* and 21. *P. edulis*:

As they are not quite distinct from each other *P. edulis* has been reduced to a subspecies under *P. punctatus*. *P. punctatus* (incl. subsp. *edulis*) can be distinguished from other Ethiopian *Plectranthus* in having the anthers more or less pocket-shaped. Amend and add as follows:

20. *P. punctatus* (L.f.) L'Hér. subsp. *punctatus*

Description as for *P. punctatus* with the addition: anthers more or less pocket-shaped.

21. *P. punctatus* (L.f.) L'Hér. subsp. *edulis* (Vatke) A.J. Paton (2008);

P. edulis (Vatke) Agnew (1974).

Description as for *P. edulis* with the addition: anthers more or less pocket-shaped.

On p. 596 remove 23. *P. buchanani* as it is not known from Ethiopia. The cited collection, *J. de Wilde & Gilbert* 330 belongs to *P. xylopodus*, for which a description is provided above (7a).

On p. 597 remove 29. *P. alboviolaceus* as it is not known from Ethiopia. The cited collection, *Gilbert & Ranking* 4208 belongs to 28. *P. sylvestris*.

On p. 598 modify the description of 31. *P. laxiflorus* as follows and give *P. glandulosus* (treated in the note) a separate entry:

31. *P. laxiflorus* Benth. (1838)

Leaf-blade deeply cordate. Sessile glands on leaves and inflorescences reddish. Cymes with peduncle 2–20 mm long. Upper lobe of the fruiting calyx narrowly lanceolate-triangular, much longer than broad. Corolla 13–21 mm long.

1800–2700 m. WG KF GG SD BA (but not known from IL); E and C Africa, South tropical Africa, South Africa. *Friis* et al. 1413, 1505, 1615; *de Wilde & de Wilde-Duyffes* 8372; *Westphal & Westphal-Stevens* 2669.

31a. *P. glandulosus* Hook.f. (1861)

– type: Equatorial Guinea, Bioco, *Mann* 318 (K holo.).

Closely related to *P. laxiflorus*, but Ethiopian material differs in having the leaves usually only shallowly cordate; sessile glands on leaves and inflorescence pale yellow, not reddish; the cymes 1–3-flowered; the peduncles of the cymes 0.5–3 mm long; the upper lobe of the fruiting calyx broadly ovate, about as long as broad; and the corolla, 8–13 mm long.

Forest, forest openings and edges, coffee plantations; 1300–1800 m. IL; S Sudan, W and C Africa, Uganda, Angola. *Friis* et al. 1805, 1951, 2014.

The two species appear to be more distinct in Ethiopia than in other parts of Africa. Although there is overlap in leaf, cyme and calyx characters in other parts of Africa, the difference in the colour of sessile glands seems to be consistent. *P. glandulosus* is more western in its distribution, though it does extend east to Uganda and western Ethiopia. Most non-Ethiopian material has the upper lip of the corolla narrower.

Also add:

31b. *P. kamerunensis* Gürke (1894)

– type: Cameroon, *Preuss* 1039 (B holo. destroyed).

Very similar to *P. laxiflorus*, but differs in the following characters: leaves often viscid to touch; cymes sessile, very rarely shortly pedunculate, 4–6-flowered; peduncles absent or up to 2 mm long; pedicels up to 6 mm long; fruiting calyx 6–9 mm long, with a lanceolate to obovate posterior lip; corolla 10–22 mm long; anterior lip c (5–)6–11 mm long.

Forest margins or clearings; c 1000–1650 m. SD; E Africa, Nigeria, Cameroon. *Burger* 1852.

P. kamerunensis also can be confused with *P. longipes* Baker. *P. kamerunensis* is found in evergreen forest margins and usually has acute leaf apices. *P. longipes* is found in dry rock areas in grass or bushland and usually has obtuse to rounded leaf apices.

41. SOLENOSTEMON Thom. (1827)

Solenostemon has been included in *Plectranthus*.

On pp. 599–600 amend as follows:

1. *P. autranii* (Briq.) A.J. Paton (2008);

Coleus autranii Briq. (1894), as *C. autrani*; *Solenostemon autranii* (Briq.) J.K. Morton (1998), as *S. autrani*.

2. *P. bojeri* (Benth.) Hedge (1998);

Coleus bojeri Benth (1832) – type: Madagascar, *Bojer* s.n. (P holo., W iso.).
Solenostemon latifolius Benth. (1848).

3. *P. dupuisii* (Briq.) A.J. Paton (2008);

C. dupuisii Briq. (Aug. 1898) – type: Dem. Rep. Congo, *Dupuis* s.n. (BR holo.).
P. porpeodon Baker (1900); *Solenostemon porpeodon* (Baker) J.K. Morton (1998).

4. *P. scutellarioides* (L.) R. Br. (1810);

Ocimum scutellarioides L. (1763); *Coleus scutellarioides* (L.) Benth. (1830); *Solenostemon scutellarioides* (L.) Codd (1975).

42. NEOHYPTIS J.K. Morton (1962)

Neohyptis has been included in *Plectranthus*.

On p. 601 amend as follows:

P. guerkei Briq. (1904);

Hyptis baumii Gürke (1903), non *P. baumii* Gürke – type: Angola, *Baum* 789 (K, W iso.).

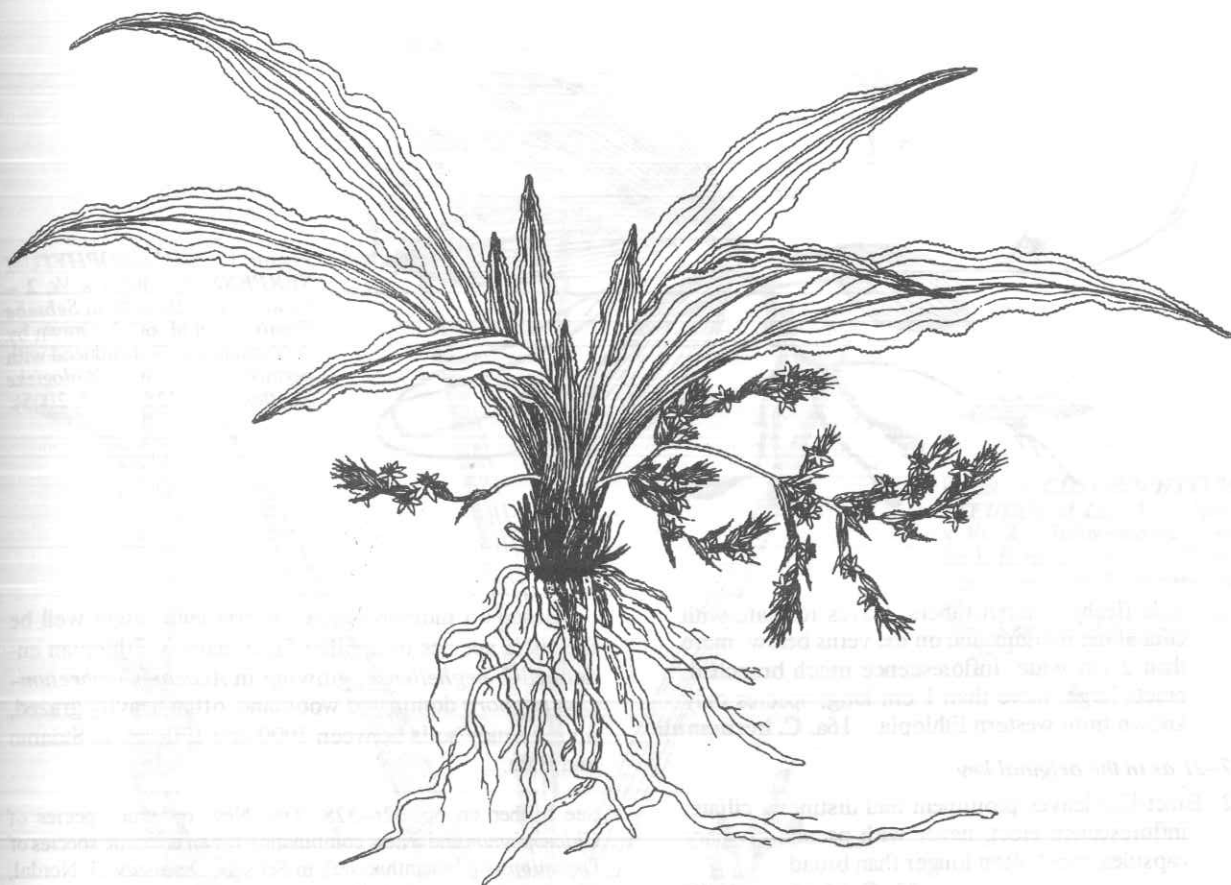


Figure 14. *CHLOROPHYTUM HERRMANNII*: Habit $\times \frac{1}{2}$. From Herrmann 220. Drawn by S. Voronkova. (Reproduced with permission from *Biologiske Skrifter* 55, p. 327, Fig. 2, 2005).

Geniosporum paniculatum Baker (1900); *Neohyptis paniculata* (Baker) J.K. Morton (1962), non *P. paniculatus* Jacq. or Baker.

43. ENGLERASTRUM Briq. (1894)

Englerastrum has been included in *Plectranthus*.

On p. 601 the nomenclature of *E. schweinfurthii* should be updated as follows:

Plectranthus djalonensis (A. Chev.) A.J. Paton (2008);
Englerastrum djalonense A. Chev. (1909) – type:
Guinea, Chevalier s.n. (P holo., K iso.)
E. schweinfurthii Briq. (1894), non *Plectranthus schweinfurthii* Sprenger (1900).

Volume 6

190. ANTHERICACEAE

2. CHLOROPHYTUM Ker-Gawl. (1807)

On pp. 91–93, in the key, add *C. herrmannii*, *C. serpens* and *C. pseudocaule* and amend as follows:

5. Rachis papillate or pubescent; flowers bell-shaped or urceolate; tepals covering the ovary at anthesis, papillate on the inside just above ovary. 5a

– Rachis glabrous; flowers open, star-shaped; tepals not covering the ovary at anthesis, not papillate. 6

5a. Inflorescence a simple spike, or with 1–3 basal branches. 4. *C. longifolium*

– Inflorescence a much branched panicle.

24. *C. pseudocaule*

6–15 as in the original key

16. Leaves 2–4 cm wide, in a rosette; peduncle and the branched inflorescence \pm erect.

15. *C. gallabatense*

– Leaves up to 1 cm wide, in 2 ranks; peduncle and the simple, rarely slightly branched, inflorescence prostrate. 16a

16a Roots wiry with tubers on short lateral branches; leaves distichous, glabrous, up to 1 cm wide; inflorescence unbranched (rarely with one basal branch); bracts inconspicuous, up to 4 mm long; species only known from southern Ethiopia.

16. *C. humifusum*