Synopsis of the genus *Vitex* (Lamiaceae) in the Democratic Republic of the Congo

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**INTRODUCTION**

The genus *Vitex* L. (Linnaeus 1753: 638 “938”) comprises some 250 species almost all in tropical regions (Mabberley 2017). Until recently, *Vitex* was classified in Verbenaceae, subfamily Viticoideae (Briquet 1895). Harley et al. (2004) conclusively showed that Viticoideae are better placed in Lamiaceae. Very recently, subfamily Viticoideae has been restricted to three genera by new molecular phylogenetic evidence (Li et al. 2016).

*Vitex* is the only genus of the subfamily present in Africa. The genus *Vitex* awaits revision in Africa (Cabral 2013). The most comprehensive account is still Pieper’s (1928) revision. Moldenke compiled much information in his “Materials towards a monograph of the genus *Vitex*”, which has not always contributed to taxonomic clarification (Moldenke 1955a, 1955b, 1956, 1957, 1958a, 1958b). *Vitex* has recently been revised for the *Flora of Tropical East Africa* (FTEA) (Verdcourt 1992), and for *Flora Zambesiaca* (FZ) (Sales 2001, 2005). For the Democratic Republic of the Congo (D.R. Congo), the most recent account of *Vitex* dates back to De Wilde (1929a). In order to prepare the treatment of the genus *Vitex* for the *Flore d’Afrique centrale* (FAC; see Sosef 2016), I have revised all the material from D.R. Congo.

During that work, a number of taxonomic and nomenclatural issues had to be solved, with implications beyond the borders of FAC, an account of which is given in the present note.

I present here a key to the species, and a check-list with a revised synonymy. When my taxonomic treatment departs from FZ and FTEA, a concise justification is provided. New combinations are coined when necessary and new synonyms are reported. Lectotypifications were necessary in a number of cases. For each taxon, a brief description is provided, focused on diagnostic traits. Detailed accounts of the taxa, including citation of specimens studied, will be published in the *Flore d’Afrique centrale*.

**MATERIAL AND METHODS**

All the relevant material from D.R. Congo in BM, BR, BRLU, COI, K, P, POZG, WAG has been examined. Additional specimens were investigated using the JSTOR Global Plants facility (http://plants.jstor.org). This material was supplemented with my own collections and field observations made in Upper Katanga between 2012 and 2016. Twenty-nine names have been found that are typified by specimens collected in D.R. Congo. All the specimens cited have been seen except otherwise stated (n.v.).
RESULTS AND DISCUSSION

In total, 21 taxa are recognized for the study area, i.e. 17 species, 1 subspecies, 3 varieties.

Two taxa are new to the D.R. Congo (V. ciliata, V. fischeri var. keniensis). Four taxa (3 species, 1 variety) are endemic to the D.R. Congo (Vitex agelaefolia var. rufula, V. discoideoglans, V. djumaensis, V. rubroaurantiaca). Two other taxa are subendemic, i.e. have most of their range in D.R. Congo (Vitex congolensis var. thomasi, V. cuspidata). Two new combinations are made (Vitex congolensis var. thomasi, V. fischeri var. keniensis).

Nine new synonyms are proposed. A lectotype is designated for 17 names and a second-step lectotype for one name.

Synonymy is restricted to names that have been used in the literature for material collected in D.R. Congo. Voucher specimens are cited only for taxa that are new to D.R. Congo. Fruit colour is mentioned only if not black. Full descriptions of taxa and citation of representative material will be published in the *Flore d’Afrique centrale*.


1a. **Vitex agelaefolia** var. agelaefolia


A myrmecophilous liana, with quadrangular hollow twigs. Leaflets: 3; 4–5 pairs of secondary veins. Inflorescence thyrsoid. Fruit globose, c. 9 mm in diameter, orange-brown.

**Distribution** – W of Central Africa, from Gabon to D.R. Congo.

**Note** – Lectotypification of *Vitex wellensii* De Wild. The protologue cites Gillet s.n., Vermoesen 1556, Vermoesen 1652, Wellens 110. All the original material matches the description given there. Wellens 110 is selected because it has well developed inflorescences and De Wildeman’s handwriting on the label.


This variety is quite distinct by the ferruginous pubescence of the petioles and inflorescence axes.

**Distribution** – Endemic to D.R. Congo.


*Vitex robynsii* De Wild. (De Wildeman 1929a: 13); Moldenke (1957: 116). – Type: D.R. Congo, Haut-Katanga, Kasenga, vers 970 m, savane arbustive, 8 Apr. 1926, Robyns 1913 (lecto-: BR barcode BR0000008906168, designated by Moldenke in schedis; isoleceto-: BR barcode BR0000008906151).

A sarmentose shrub, not myrmecophilous; twigs pubescent, solid. Leaflets 5, pubescent on both surfaces. Inflorescence of thyrses grouped in a terminal panicle. Fruit c. 6–8 mm diam., with golden-yellow outer layer exfoliating at maturity; calyx cupuliform, elapsing fruit base.

**Distribution** – Tropical E Africa, from Tanzania to Mozambique southwards and to D.R. Congo westwards.


A tree. Twigs chocolate brown, with sparse yellow cilia. Leaflets 5; petiolule 0–2–3 mm; lamina strongly spathulate, cupbidate, with sparse fine yellowish hairs on veins beneath. Inflorescence a large multiflorous long pedunculate dichasium equalling leaves. Calyx c. 2 mm; corolla whitish. Fruit obovoid, 10–15 mm long.

**Distribution** – W of Central Africa, from Gabon to D.R. Congo. This species is new to D.R. Congo. Voucher: Mayumbe, Mbenge, s.d., Bittremieux 244 (BR barcode BR0000018425963).

**Note** – Lectotypification of *Vitex ciliata* Pierre ex Pellegr. The protologue cited Le Testu 1701 and Klaine 3257; three sheets of the former and three sheets of the latter have been found, which all match the description in the protologue. I designate one of the most complete specimens as the lectotype.

4. **Vitex congolensis** De Wild. & T.Durand (Durand & De Wilde 1899: 134); Baker (1900: 325); De Wildeman & Durand (1900: 50); Durand & Durand (1909: 437); De Wilde (1910b: 401; 1912b: 142, 242; 1929a: 7); Pieper (1928: 59); Pauwels (1993: 216); Lebrun & Stork (1997: 524); Meerts (2016: 231). – Type: D.R. Congo, Bas-Congo, Bokakata, Feb. 1896, Dewèvre 770a (lecto-: BR barcode BR0000008905918, designated here; isoleceto-: BR barcode BR0000008905871).

**4a. Vitex congolensis** var. congolensis

### Key to the species of *Vitex* in D.R. Congo

1. Leaflets coarsely dentate or crenate, at least in upper third .................................................. 2
1’. Leaflets entire ............................................................................................................................. 3

2. Leaflets 5; lamina narrowly elliptic, long acuminate, thin and papery; rainforest tree
   .................................................................................................................................................. 13. *V. oxyccpus*
2’. Leaflets 1–3(–5); lamina obovate, rounded at tip, thick and coriaceous; savanna shrub
   .................................................................................................................................................. 11a. *V. madiensis* subsp. *madiensis*

3. Cymules arranged in thyrses, often grouped in panicles; fruit globose, 5–9 mm in diameter .......... 4
3’. Cymules arranged in compound dichasia; fruit ovoid, (7–)10–40 mm long .............................. 7

4. Leaflets 5; secondary veins 7–9 on each side; thyrses mostly grouped in a terminal panicle .... 5
4’. Leaflets 3; secondary veins 4–5 on each side; thyrses mostly in the axils of leaves .. 1. *V. agelaeifolia*

5. Fruit with golden-yellow glandulose outer layer exfoliating at maturity; fruiting calyx cupuliform, clasping base of fruit ................................................................................................. 2. *V. buchananii*
5’. Fruit brownish, without a golden-yellow outer layer; fruiting calyx patelliform, not clasping fruit base ................................................................................................................................. 6

6. Twigs pubescent, solid, not myrmecophilous, quickly becoming terete; leaflets pubescent on both surfaces ................................................................................................................................. 6. *V. discoideoglendulosa*
6’. Twigs glabrous to puberulous, hollow, inhabited by ants, strongly quadrangular; lower surface of leaflets almost glabrous ........................................................................................................ 17. *V. thyrsiflora*

7. Ovary hirsute-tomentose .............................................................................................................. 8
7’. Ovary glabrous, glandulose, or, rarely, with short stiff hairs at top ........................................ 13

8. Leaves in verticils of three; leaflets almost glabrous except ciliate domatia; fruit < 9(–10) mm long ..
   .................................................................................................................................................. 7. *V. djumaensis*
8’. Leaves opposite (very rarely verticillate); leaflets glabrous or pubescent; fruit > 9 mm long .......... 9

9. Leaflets glabrous, shiny above, coriaceous, petiolulate, mostly rounded at tip (more rarely with a short blunt acumen) ........................................................................................................ 8. *V. doniana*
9’. Leaflets variously pubescent, dull, petiolulate or sessile, rounded or acuminate .................. 10

10. Leaflets markedly cuspidate or acuminate; upper surface of lamina glabrous, except on main vein .......................................................... 11
10’. Leaflets rounded to obtuse at tip; upper surface of lamina pubescent .................................. 12

11. Peduncle 0.5–3 cm; cyme few-flowered, branched at 2 to 4 nodes, much shorter than subtending leaf, branches ochraceous pubescent; leaflet upper surface blackish-green in herbarium, smooth; lower surface with short ochraceous hairs on veins; bracts narrowly elliptic, discolorous, ochraceous tomentose beneath .......................................................... 9. *V. ferruginea*
11’. Peduncle 5–11 cm; cyme very lax, branched at 5 to 7 nodes, equalling subtending leaf; leaflet upper surface green to brownish in herbarium, very slightly scabridulous; lower surface softly tomentellous; bracts linear, concolorous .................................................................................................................. 5. *V. cuspidata*

12. Corolla 10–15 mm long, with long-protruding stamens; inflorescence few-flowered, 2–4 cm wide, lax; lower surface of leaflets yellowish pubescent, the indumentum not masking areolae .................................................. 12. *V. mombassae*
12’. Corolla 6–10 mm long, stamens not protruding; inflorescence many-flowered, 3–10 cm wide, cymules often compact; lower surface of leaflets densely greyish floccose-velvety, the indumentum masking areolae .................................................................................................................. 14. *V. payos*

13. Calyx, pedicels and petiole with long patent fulvous to ferrugineous hairs, most of them exceeding 0.5 mm; leaflets with soft spreading hairs on lower surface and shorter erect hairs on upper surface ..... 4. *V. congolensis*
13’. Calyx, pedicels and petiole without patent fulvous to ferrugineous hairs, puberulent or tomentose; leaflets almost glabrous to pubescent ........................................................................................................ 14
14. Leaves glabrous (except for a few short hairs on lower surface of mid-vein); inflorescence < 5 cm (including peduncle), few-flowered; corolla ≥ 10 mm long, orange, more rarely white. ................................. V. rubrosaurantiaca

14'. Leaves more or less pubescent; inflorescence 5–20 cm long, many-flowered, corolla < 10 mm long, white, purplish or bluish. ................................................. V. rivularis

15. Flowering calyx obliquely subtruncate, slightly zygomorphic, with obsolete teeth (< 0.5 mm long); inflorescence branches and calyx with a very short dense tomentellum of greyish-beige to ochraceous-beige curly hairs; secondary veins 15–25 pairs; tertiary veins prominent on lower surface (but often masked by indumentum), forming a conspicuous ladder-like pattern; leaflets widest at the middle or below the middle; petiolules 10–30 mm; bracts discolorous, beige-ochraceous tomentose on lower surface, glabrous on upper surface. ......................................................... V. fischeri

15'. Flowering calyx not zygomorphic, with well-developed teeth; inflorescence branches and calyx puberulent or pubescent, but not densely beige tomentose; secondary veins 8–20 pairs; tertiary veins not forming a conspicuous ladder pattern (except V. ciliata); leaflets generally widest above the middle, sessile or petiolulate; bracts not markedly discolorous. ................................................. V. ciliata

16. Upper surface of leaflets markedly scabrid, with reticulum prominulent; leaflets very coriaceous; calyx 2.5–3.5 mm long with broadly triangular teeth; corolla 5–10 mm long, bluish or magenta with white throat; savanna shrub. ........................................................................................................ 11b. V. madianensis subsp. milanjensis

16'. Upper surface of leaflets not scabrid (or slightly so), with reticulum not prominent; leaflets not remarkably coriaceous; calyx 1.5–2.5 mm long, with narrow triangular teeth; corolla < 5 mm long, whitish-pink sometimes with a blue tinge in lower lip (corolla unknown in V. cuspidata); trees of woodlands and forests. ................................................................. 5. V. cuspidata

17. Leaflets softly tomentose on veins and reticulum beneath, without conspicuous glands; inflorescence branches and petiole tomentose; leaflets narrowly elliptic to oblanceolate, 2.5–3.5 cm wide, abruptly contracted into a short acumen; petiolule 3–17 mm; flowers unknown; dry woodland tree. .................................................................................................................. 10. V. milanjensis

17'. Leaflets only sparsely puberulous on main veins beneath, conspicuously yellow gland-dotted; inflorescence branches and petiole puberulent to almost glabrous; leaflets 3–6.5 cm wide, variable in shape; rainforest trees. ........................................................................................................ 3. V. ciliata

18. Leaflets spathulate, broadly rounded at tip, cuspidate; petiolules 0–2(–3) mm; secondary veins 9–12 pairs; calyx with yellowish-felted hairs, without conspicuous glands; young twigs with golden yellow hairs. ............................................................................................................. V. cuspidata

18'. Leaflets elliptic or obovate, with a long fine acuminate (5–20 mm); petiolules 5–25 mm; secondary veins 10–20 pairs; calyx puberulent, with conspicuous golden yellow glands; young twigs puberulent, without long golden yellow hairs. .......................................................................................... V. rivularis
mainly based on the material of the type. The original material has the diagnostic characters of *V. congolensis*; it is unusual in having short leaflets, but it is impossible to discriminate taxa on that basis.

**Lectotypification of *Vitex gilletii* De Wild.** Only one of the two syntypes has been found (*Gillett* 2163); the other syntype (*Pogge* 698) has probably been destroyed in Berlin and no duplicate could be traced. The type material of *V. gilletii* has leaves with a somewhat unusual shape (low length/width ratio), abruptly contracted in a relatively long acumen. However, *V. congolensis* has a variable leaflet shape and size and it is impossible to discriminate taxa on that basis.

**4b. *Vitex congolensis* var. *thomasi* (De Wild.) Meerts, comb. nov.**


*Vitex buchneri* Gürke (*Gürke* 1893: 166); Baker (1900: 331); De Wildeman (1912b: 280); Pieper (1928: 58); Lebrun & Stork (1997: 524). – Type: Angola, Kassambo, *Büchner* 574 (holo-: B†), *synon. nov.*

Differs from the type variety by the large foliaceous elliptic lower bracts.

**Distribution** – Subendemic to D.R. Congo, restricted to the southern margin of the distribution range of *V. congolensis*, i.e. Kasai and Katanga, very locally extending to N Angola.

**Note** – *Vitex congolensis* is a Guineo-Congolian linking species extremely variable as to density, length and intensity of the fulvous color of the indumentum. Variation of indumentum is continuous and cannot be translated into infraspecific units. *Vitex thomasi* De Wild. is a variant showing a very unusual character, i.e. foliaceous bracts at the lower inflorescence nodes, up to 30 × 8 mm. This is not a teratological condition, because several gatherings from distant localities exhibit such bracts. This variant deserves taxonomic recognition.

**Lectotypification of *Vitex kapirensis* De Wild.** The type material of *V. kapirensis* has leaves with a somewhat unusual shape (low length/width ratio), abruptly contracted in a relatively long acumen. However, *V. congolensis* has a variable leaflet shape and size and it is impossible to discriminate taxa on that basis.

**Distribution** – Endemic to D.R. Congo.

**Note** – *V. discoideaeglandulosa* is a member of the complex of *V. thyrsiflora-V. buchananii*, characterised by a thyrsoid induencescence, more or less lianescent habit and small globose fruits (section *Terinales* W.Piep.). Pieper (1928) regarded it as a synonym of *V. vulkensis* Gürke, an East African plant now synonymized with *V. buchananii*. However, *V. dis-
| Trait comparison of *V. discoideoglandulosa*, *V. thyrsiflora* and *V. buchananii* in D.R. Congo. |
|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| **V. discoideoglandulosa** | **V. thyrsiflora** | **V. buchananii** |
| Young branches | persistently pubescent, soon terete, solid, not myrmecophilous | puberulent, soon glabrescent, persistently quadrangular, hollow, myrmecophilous | persistently pubescent, soon terete, solid, not myrmecophilous |
| Leaflets | pubescent on both surfaces | glabrous to puberulent on nerves; upper surface scabrid | pubescent on both surfaces |
| Fruit | brown, without outer layer | brown, without outer layer | with golden-yellow glandular outer layer |
| Fruiting calyx | patelliform | patelliform | cupuliform, claping fruit base |

coideoglandulosa lacks the diagnostic trait of *V. buchananii*, i.e. the golden-yellow glandulose outer fruit layer exfoliating at maturity. It is undoubtedly a distinct species. Table 1 summarizes the differences between the three species.

Lectotypification of *Vitex discoideoglandulosa* De Wild. De Wildeman (1929a) cited six syntypes (*Caesens* s.n., *Gillet* 1973, *Gillet* s.n. (coll. 1901), *Gillet* s.n. (coll. 1902), *Gillet* s.n. (coll. 1926), *Sapin* s.n.), corresponding to six sheets in BR. The only specimen with fruits is selected as the lectotype, because the characters of the fruits are discriminant with respect to *V. buchananii*.


A small tree. Leaves in whorls of 3. Leaf glabrous except for ciliate domatia; leaflets 5; petiolules 3–17 mm; lamina coriaceous, acute or shortly acuminate. Inflorescence of dichasia; peduncle short (<2 cm), calyx 2 mm, ovary hairy. Fruit small c. 9 × 7 mm.

**Distribution** – Endemic to D.R. Congo.

**Note** – *V. djumaensis* is related to *Vitex doniana* (glabrous leaves, petioloate leaflets, pubescent ovary). It has an original combination of traits, i.e. ternate leaves, leaflets with few secondary veins (6–10 pairs), small fruit, and ciliate domatia. *Vitex djumaensis* is endemic to southern D.R Congo. It is a poorly known taxon. All the specimens cited by Moldenke (1955b) are misidentifications. New specimens have been found, from Bas-Congo, Kasai and W Katanga, which had been previously misidentified as *V. doniana*.


*Vitex cuneata* Thonn. (Schumacher 1827: 289); Baker (1900: 328); De Wildeman (1926: 205; 1929a: 8; 1929b: 101); Pieper (1928: 71); Delevo (1929: 478). – Type: Guinea [Ghana], *Thomson* 244 (holo-: C barcode C10004694; iso-: S barcode S10-29263, LE barcode LE00016530).


? *Vitex lundensis* Güürk (Güürk 1893: 168); Durand & Schinz (1896: 25); Baker (1900: 327); Durand & Durand (1909: 437); De Wildeman (1912b: 280); Pieper (1928: 73); Moldenke (1956: 448); Lebrun & Stork (1997: 525). – Type: D.R. Congo, Lulua river, Lunda, 17 May 1892, *Pogge* 1260 (B†).

? *Vitex poggei* Güürk (Güürk 1893: 168); Durand & Schinz (1896: 25); Baker (1900: 329); Durand & Durand (1909: 437); Pieper (1928: 73); Moldenke (1957: 80); Lebrun & Stork (1997: 525). – Type: [Probably Angola], Lunda, *Pogge* 1255 (holo-: B, n.v.).


A tree. Twigs fulvous to greyish puberulent. Leaves glabrous; leaflets 5, long petioloate; lamina very coriaceous, shiny above, generally rounded at tip. Inflorescence of dichasia, generally much shorter than leaves; calyx 3–4 mm, shortly pubescent; ovary hairy; corolla whitish with bluish lower lip. Fruit c. 25 mm long.
Distribution – Widespread in tropical and subtropical Africa; Madagascar, W of Indian Ocean.

Note – Very robust specimens of *V. doniana* with short inflorescence, occurring mostly in the rainforest region (e.g. *Lejoly* 4191 (BRLU), *Dhetchuvi* 1054 (BRLU)), resemble *V. grandifolia*, a species of W tropical Africa, not recorded from D.R. Congo. Unlike *V. grandifolia*, *V. doniana* is never associated to ants; *V. doniana* has a pale blue corolla with white throat (vs. a yellowish-brown corolla with red throat in *V. grandifolia*).

The type specimens of *V. lundensis* Gürke and *V. poggei* Gürke have not been seen, but the protologue and the subsequent descriptions based on the original material (Baker 1900; Pieper 1928) leave little doubt that both taxa belong here.


*Vitex welwitschii* Gürke (Gürke 1893: 166); Hierm (1900: 166); Baker (1900: 329); Pieper (1928: 69); De Wildeman (1929a: 20); Robyns (1947: 140); Moldenke (1958b: 222); Lebrun & Stork (1997: 526). – Type: Angola, Golongo Alto, *Welwitsch* 5644 (lecto-: K barcode K000249101 designated by Cabral (2013)).


A tree. Young twigs ochraceous pubescent. Leaflets 5; petiolule 3–12 mm; lamina narrowly elliptic, acuminate, upper surface glabrous and smooth, dark blackish green in herbarium; lower surface shortly ochraceous pubescent on veins. Inflorescence of dichasia, much shorter than subtending leaf, few-flowered; bracts narrowly elliptic, discolorous, ochraceous tomentose beneath, glabrous above; calyx 3–5 mm, densely ochraceous pubescent; corolla 8–12 mm, cream with mauve lower lip, stamens long protruding; ovary hairy. Fruit 15–35 mm long.

Distribution – Widespread in tropical Africa, southwards to South Africa.

Note – Lectotypification of *Vitex ferruginea* Schumach. & Thonn. The three specimens of *Thonning* 265 in C (C barcodes C10004695, C10004696, C10004697) have to be considered as syntypes (Hepper 1976). The most complete specimen is selected as the lectotype (C barcode C10004696).

Lectotypification of *Vitex welwitschii* Gürke. The protologue describes flowers, not fruits. Cabral (2013) designated *Welwitsch* 5644 (K barcode K000249101), a flowering specimen, as the lectotype. *Welwitsch* 5644 is, however, an admixture of specimens collected at three dates, two with flowers and one with fruits (Hierm 1900). Therefore, as pointed out by Albuquerque et al. (2009), it is not recommended to consider sheets with the same number to be isolecototypes, in the case of Welwitsch’s collections. All the other remaining original material has therefore to be considered as syntypes (BM barcodes BM0000834750 & BM0000566971, COI barcode COI00077134, LISU barcodes LISU254232 & LISU223678, PRE barcode PRE0590365-0, C barcode C10001498).


10a. *Vitex Fischeri* var. *Fischeri*


A tree. Twigs greyish beige tomentellose. Leaves 5 foliolate; petiolules 11–30 mm; lamina elliptic, acuminate, upper surface glabrous, lower surface discolorous, greyish tomentose, 15–25 secondary veins, tertiary veins forming a ladder pattern. Inflorescence of dichasia, shorter than leaves, branches greyish beige tomentellose; calyx zygomorphic, teeth < 0.5 mm, with short greyish-beige tomentellum of crispate hairs. Fruit 10–15 mm long.

Distribution – Mostly E Africa, from Kenya southwards to Zambia and extending westwards to Angola.

Note – Lectotypification of *Vitex bequaertii* De Wild. The protologue cited *Homble* 202 and *Bequaert* 314 [*“319”*]. Both match the description in the protologue. *Bequaert* 314 (barcode BR0000005570843) is selected because it bears annotations in De Wildeman’s handwriting.

10b. *Vitex Fischeri* var. *keniensis* (Turrill) Meerts, comb. nov.

*Vitex keniensis* Turrill, Diagnoses Africanae LXII: 47. 1915. (Turrill 1915); Pieper (1928: 60); Moldenke (1956: 420);

Distribution – Tropical E Africa from Kenya to Mozambique. Festuca vescherti var. keniensis is new to D.R. Congo, where it occurs in dense forests of Ituri region (Ituri, environs de Nduye, NE de la Naitatu, Mont Balihata, rochers dans la forêt primaire, 1100 m, 12 Apr. 1977, Lisowski 43205 (POZG)).

Note – Verdcourt (1992: 52) wrote “Usually synonymized with V. fischeri, there is no doubt that it [V. keniensis] is a distinct taxon and I think worthy of specific rank”. A few years later, Ahenda (1999) concluded that V. keniensis was not distinct. However, Ahenda’s evidence is unconvincing. In particular, this author does not appear to have examined pubescence pattern of leaf upper surface and ovary. I did find two consistent differences between specimens from dense forests and from dry woodlands. The former has persistently puberulent leaf upper surface and ovary crowned by short stiff hairs, while the latter has glabrous leaf upper surface and ovary with glands (occasionally a few hairs) at top. These differences justify recognition of V. keniensis at varietal rank; the subspecific rank does not seem appropriate because the area of this taxon broadly overlaps with that of the type variety.


Vitex camporum Büttn. (Büttner 1890: 35); De Wildeman (1903a: 121; 1909: 127; 1910a: 255; 1912b: 47, 367; 1921: 164); De Wildeman & Durand (1900: 49); Durand & De Wildeman (1898: 124); Durand & Durand (1909: 436). – Type: Angola, Welwitsch 5728 (lecto.: BM barcode BM000839714, designated here; isolecito.: BM barcode BM000839714, Bf).


A small tree. Leaves 1–3-foliolate; leaflets coarsely crenate-dentate, smooth above, the middle one long petiolulate. Inflorescence of dichasia, long pedunculate, pedicels with long whitish fine hairs; calyx 2–3 mm, broadly campanulate, broad triangular teeth 0.5–1 mm, with long whitish hairs; corolla whitish-mauve 6–8 mm, stamens included; ovary glabrous. Fruit c. 25–30 mm long.

Distribution – Widespread in tropical Africa.

Notes – Vitex madiensis subsp. madiensis is probably the most polymorphic Vitex taxon in Africa. Many morphotypes have received a formal taxonomic treatment; some of them have been reported in D.R. Congo by Moldenke (1956): V. madiensis var. schweinfurthii (Gürke) W.Piep. (5 leaflets; e.g. de Bergveld 34, Robyns 3018), V. madiensis var. baumii W.Piep. (leaflet margin entire; e.g. Lebrun 6748), V. madiensis var. glaberrima (glabrous in all parts; e.g. Pittetry 819). These taxa are not recognized here.

The distribution ranges of V. madiensis subsp. madiensis and subsp. milanjensis overlap broadly in southern D.R. Congo. Specimens with more or less intermediate characters, possibly of hybrid origin, are occasionally found, especially in savannas of Bas-Congo (e.g. Duvigneaud 252 Vi).

Lectotypification of Vitex camporum Büttn. Vitex camporum is based on three syntypes which have all been destroyed in Berlin (Büttner 427 & 428; Welwitsch 5728). Two duplicates of Welwitsch 5728 have been found in BM, and one duplicate of Büttner 427 has been found in K (K barcode K001008451); all the duplicates match the description in the protologue. Welwitsch 5728 is a better specimen and one of the two sheets is thus selected as the lectotype.

Lectotypification of Vitex camporum var. longipedicellata De Wild. De Wildeman cites one collection from Kwamou by E. & M. Laurent, s.n., which corresponds to two sheets in BR. The sheet with collecting data on the label is chosen as the lectotype.

Lectotypification of Vitex schweinfurthii Gürke. The protologue cites two collections i.e. Schweinfurth 2030 & 2848. These specimens have been destroyed in Berlin. A duplicate of Schweinfurth 2030 matching the description in the protologue exists in K, and is here selected as the lectotype.

11b. Vitex madiensis subsp. milanjensis (Britten) F.White (White 1962: 455); Verdcourt (1992: 61); Lebrun & Stork (1997: 524); Sales (2001: 197; 2005: 84); Coates Palgrave & Coates Palgrave (2005: 983); Meerts & Hasson (2016: 336); Meerts (2016: 231). – Type: Malawi, Malawi [Mulanje], 6000 ft [1800 m], Oct. 1891, Whyte 138 (syn.: BM barcode BM001124551); Malawi,
Zomba, Sept. 1891, Whyte s.n. (syn.: BM barcode BM000566972; K barcode K000249031).


Diffsers from the type subspecies by the following traits. A shrub. Twigs stout, often wine red. Leaves 5 foliolate; lamina abruptly contracted at tip and cuspidate, very coriaceous, entire; upper surface very scabrid, reticulum prominulent.

**Distribution** – Zambebian region, from Angola eastwards to Tanzania and Mozambique.

**Notes** – Dwarf, geofrutescent forms of *V. madiensis* subsp. *milanjiensis* occur throughout the distribution range of subsp. *milanjiensis*. They have been repeatedly described as *V. hockii* De Wild., *V. ringoetii* De Wild., *V. epidictyodes* W.Piep., *V. caespitosa* Exell. Such forms pose two different taxonomic problems. First, it is unclear if they are genetically fixed or if, alternatively, they represent pyrophytic forms induced by burning; Verdcourt (1992) favoured the former hypothesis. Secondly, assuming it is genetically fixed, it is not clear if that morph is monophyletic or, alternatively, if it has evolved several times independently in response to selection by fire or other environmental constraints. I have not been able to find differences between dwarf and tall morphs except size.

Lectotypification of *Vitex epidictyodes* Mildbr. ex W.Piep. Three syntypes are cited in the protologue (*Stolz 556; Stolz 1478; Trotha 95*). Pieper (1929) designated *Stolz 556* as the lectotype (see Verdcourt 1992). Many specimens of that gathering have been distributed and Pieper (1929) did not indicate a specific herbarium; therefore second-step lectotypification is necessary (art 9.17 of ICN; McNeill et al. 2012). Since Pieper worked in Berlin, I therefore select the specimen kept in Berlin as the lectotype.

Lectotypification of *Vitex grisea* Baker. The specimen of *Welwitsch 5759* deposited in K is chosen as the lectotype for two reasons. First it shows better the acute leaflet tips mentioned in the protologue; secondly, Baker worked at Kew Botanic Gardens after Welwitsch’s collections were split and, therefore, almost certainly used the duplicates deposited in K. This morphotype is a somewhat extreme variant in the phenetic variation space of the polymorphic *Vitex madiensis* subsp. *milanjiensis* not deserving formal taxonomic recognition.


A shrub or a small tree. Young twigs orange to fulvous tomentose. Leaflets 3–5, petiolule 0(–5) mm; lamina obtuse to rounded at tip, pubescent on both surfaces. Inflorescence of dichasia, few flowered, branches yellowish pubescent; calyx 4–7 mm, yellowish woolly tomentose, corolla cream, mauve tinged, 10–20 mm, stamens very long protruding; ovary hairy; fruit c. 35 mm long.

**Distribution** – E and S Africa, from Kenya southwards to South Africa and westwards to D.R. Congo.


A small tree. Twigs almost glabrous. Leaves 3–5-foliolate; petiole slender, with papilliform hairs, petiolules 5–18 mm, lamina long acuminate, coarsely serrate, thin and membranaceous, almost glabrous or with short papilliform hairs on veins. Inflorescence of dichasia, long pedunculate, few-flowered, branches with papilliform hairs; calyx campanulate 2–3 mm, teeth 0.5–1 mm broadly triangular, puberulent; ovary glabrous; fruit c. 8 mm long.

**Distribution** – Tropical W and C Africa, from Guinea southwards to Angola.

Volkens 1 (neo-: BM barcode BM000839710 designated by Verdecourt (1989); isoneo-: E00193459).

A shrub. Young twigs with woolly fulvous tomentum. Leaves 5-foliolate, petiolule 0; lamina rounded at tip, softly pubescent above, strongly discolorous, greyish floccose-tomentose beneath. Inflorescence of dichasia, greyish-beige tomentose; calyx 3–4 mm, greyish-beige tomentose; corolla 6–8 mm, whitish-mauve; stamens included, ovary hairy. Fruit 14–30 mm long.

**Distribution** – From Kenya southwards to Zimbabwe, and westwards to Angola.

15. Vitex rivularis Gürke (Gürke 1903: 297); Pieper (1928: 1956); Aubréville (1956: 233); Huber et al. (1963: 446); Moldenke (1968: 34); Lebrun & Stork (1997: 526). – Type: Cameroun, Bipinde, am Lokundje-Ufer, 80 m, Apr. 1897, Zenker 1333 (holo-: B†; iso-: P barcodes P00442317, P00442318 & P00442319, BM barcode BM000834558, E barcodes E00214021 & E00193458, G barcodes G00023655 & G00023656, W barcode W 1898-0006745, HBG barcode HBG513570, K barcode K000192753, WU barcode WU 0069994, KFTA barcode KFTA 0002112).

*Vitex vermoesenii* De Wild. (De Wildeman 1929a: 16; 1929b: 66) pro parte, excl. syntypes Pynaert 1696 (BR, BM), Sparano 129 (BR), *Vermoesen 1733* (BR). – Type: D.R. Congo, Mayombe, Temvo, 6 Mar. 1919, Vermoesen 1742 (lecto-: BR barcode BR000008906588, designated here; isoleceto-: BR barcode BR000008906595, BM barcode BM001209278), synon. nov.

A tree. Twigs almost glabrous except at nodes. Leaves 5–7-foliolate; petiole 10–20 cm, almost glabrous; petiolules 5–25 mm, lamina abruptly contracted into a long fine acumen, upper surface slightly scabrid, lower surface almost glabrous, with many yellow glands, (8–)11–20 pairs of secondary veins. Inflorescence of dichasia, much branched, long pedunculate, multi-torous; calyx 1.5–2 mm, with many yellow glands, corolla c. 4 mm, whitish, with lower lip purplish, ovary glandulate. Fruit 20–30 mm long.

**Distribution** – W tropical Africa, from Ghana southwards to Angola.

**Note** – Lectotypification of *Vitex vermoesenii* De Wild. Five syntypes are cited in the protologue (*de Briey 55, Pynaert 1696, Sparano 129, Vermoesen 1724, Vermoesen 1933*). They are an admixture of two species, *Pynaert 1696* (BR barcodes BR0000009861466 & BR0000009861794, BM barcode BM001209279), *Sparano 129* (barcode BR0000009862159), and *Vermoesen 1933* (barcodes BR0000009862180 & BR0000009861817) are *Vitex ferruginea* Schumach. & Thonn. On the other hand, *de Briey 55* (BR barcodes BR0000009861480 & BR0000009862173) and *Vermoesen 1742* (BR barcodes BR0000008906588 & BR0000008906595, BM barcode BM001209278) are *Vitex rivularis* Gürke. The protologue describes *Vitex vermoesenii* as having “... calice de env. 1 mm de long, ...” and “... inflorescence formant une panicule terminale ample...” “... inflorescences partielles axillaires atteignant 10 cm de diam.; ...” (De Wildeman 1929a); all these characters clearly point to *Vitex rivularis*. *Vermoesen 1742* (BR barcode BR0000008906588) is chosen as the lectotype because it has De Wildeman’s handwriting on the label.


A shrub, generally blackening in herbarium, almost glabrous in all its parts. Leaves 5-foliolate; petiolule 1–15 mm, lamina narrowly elliptic-oblancoelate, long attenuate at base, acuminate, 5–10 secondary veins. Inflorescence of dichasia, few-flowered, much shorter then subtending leaf, peduncle < 30 mm, branches puberulous, compressed; calyx 2–3.5 mm, sparingly puberulous, corolla orange or whitish, 10–12 mm. Fruit c. 22 mm long, yellow.

**Distribution** – Endemic to D.R. Congo.

**Notes** – The type specimens of *Vitex duboisii* De Wild. and *Vitex lebrunii* Moldenke show the characteristic traits of *Vitex rubroaurantiaca*, i.e. glabrous leaves blackening in herbarium, very short peduncle, few-flowered inflorescence, yellow fruits.

Lectotypification of *Vitex rubroaurantiaca* De Wild. One gathering is cited in the protologue (*Bequaert 6469*), represented in BR by two isotypes (BR barcodes BR0000008906236 & BR0000008906175). I select the sheet with De Wildeman’s handwriting on the label as the lectotype.


A liana. Twigs strongly quadrangular, hollow, myrmecophilous. Leaves 5-foliolate, petiolule 8–10 mm, lamina with a fine acumen, 7–8 pairs of secondary veins, upper surface scabrid, lower surface almost glabrous, with many yellow glands. Inflorescence of thyrses in the axis of leaves and grouped in a terminal panicule; calyx truncate, 2–3 mm, corolla white, 4–6 mm; fruit globose, c. 7 mm, orange to blackish, subtended by patelliform calyx.

**Distribution** – W tropical Africa, from Guinea to D.R. Congo.

**Note** – Lectotypification of *Vitex thyrsiflora* Baker. Baker (1895) cites two specimens: *Harrison* s.n. (K barcode K000192741), and *Rowland* s.n. (K barcode K000192742).
Both match the protologue. The latter is a better preserved specimen and is therefore chosen as the lectotype.

Doubtful records

For four species reported from D.R. Congo by WCSP (2018) (i.e. *V. chrysocarpa* Planch., *V. lokundiensis* W.Piep., *V. yaundensis* Gürke, *V. zenkeri* Gürke), no material was found and those records probably rely on identification errors.

Taxon excluded

*Vitex lukaufensis* De Wild. (De Wildeman 1903a: 121). – Type: D.R. Congo, Haut-Katanga, environs de Lukafu, Ver. dick 63 (holo.-: BR barcode BR0000005104642), is Schinzio phyton rautanenii (Schinz) Radcl.-Sm. (Euphorbiaceae).

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REFERENCES


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