

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

Pierre Meerts

Herbarium et bibliothèque de botanique africaine, Université Libre de Bruxelles, CP 265, Avenue F.D. Roosevelt 50, B-1050 Brussels, Belgium
Email: pmeerts@ulb.ac.be

Background and aims – The genus *Vitex* is revised for the Democratic Republic of the Congo (D.R. Congo), in order to prepare the treatment of the genus for the *Flore d’Afrique Centrale*.

Methods – Herbarium taxonomy. All the relevant material kept in BM, BR, BRLU, COI, K, P, POZG, WAG has been examined, supplemented with recent field observations in S Katanga.

Key results – A total of 21 taxa are reported 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 agelaeifolia* var. *rufula*, *V. discoideoglandulosa*, *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 is designated for one name. An identification key is included.

Key words – Taxonomy, *Vitex*, identification key, Central Africa, lectotypification, revision.

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 Wildeman (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 agelaeifolia* var. *rufula*, *V. discoideoglandulosa*, *V. djumaensis*, *V. rubroaurantiaca*). Two other taxa are subendemic, i.e. have most of their range in D.R. Congo (*Vitex congolensis* var. *thomasii*, *V. cuspidata*). Two new combinations are made (*Vitex congolensis* var. *thomasii*, *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*.

1. *Vitex agelaeifolia* Mildbr. ex W.Pieper. (Pieper 1928: 55; 1929: 162); Moldenke (1955a: 160); Lebrun & Stork (1997: 524). – Type: Equatorial Guinea, *Tessmann* 289 (lecto-, designated by Pieper (1929): B†; isolecto-: BM barcode BM001209283 (fragm.)).

1a. *Vitex agelaeifolia* var. *agelaeifolia*

Vitex phaseolifolia Mildbr. ex W.Pieper. (Pieper 1928: 55; 1929: 161); Moldenke (1957: 58); Lebrun & Stork (1997: 525). – Type: Cameroun, Südkameruner Waldgebiet, vor der Station Ebolowa auf freigeschlagenem Gelände, *Mildbraed* 7623 (lecto-, designated by Pieper (1929): B†).

Vitex wellensii De Wild. (De Wildeman 1929a: 19); Moldenke (1958b: 222); Lebrun & Stork (1997: 526). – Type: D.R. Congo, Kanga, 30 Apr. 1921, *Wellens* 110 (lecto-: BR barcode BR0000008905567, **designated here**), **synon. nov.**

A myrmecophilous liana, with quadrangular hollow twigs. Leaflets: 3; 4–5 pairs of secondary veins. Inflorescence thyrsoïd. 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.

1b. *Vitex agelaeifolia* var. *rufula* Moldenke (Moldenke 1952: 58). – Type: D.R. Congo, Kapanga, Mar. 1934, *Overlaet* 1263 (holo-: BR barcode BR0000008903655; iso-: BR barcode BR0000008903631, NY barcode NY00138416).

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

Distribution – Endemic to D.R. Congo.

2. *Vitex buchananii* Baker ex Gürke (Gürke 1895: 339); Baker (1900: 319); Pieper (1928: 53); White (1962: 371); Verdcourt (1992: 54); Lebrun & Stork (1997: 524); Sales (2001: 191; 2005: 75); Coates Palgrave & Coates Palgrave (2005: 981); Meerts (2016: 231). – Type: Malawi, *Buchanan* 782 (holo-: B†; iso-: G barcode G00016805, US barcode US00119244).

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*; isolecto-: 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, clasping fruit base.

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

3. *Vitex ciliata* Pierre ex Pellegr. (Pellegrin 1927: 268); Lebrun & Stork (1997: 524). – Type: Gabon, Région du Nyanga, Mayombé, Bayaka, Tchibanga, 2 Mar. 1914, *Le Testu* 1701 (lecto-: P barcode P00442307 **designated here**; isolecto-: P barcodes P00442308 & P00442309).

A tree. Twigs chocolate brown, with sparse yellow cilia. Leaflets 5; petiole 0–2(–3) mm; lamina strongly spathulate, cuspidate, 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 Wildeman 1899: 134); Baker (1900: 325); De Wildeman & Durand (1900: 50); Durand & Durand (1909: 437); De Wildeman (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**; isolecto-: BR barcode BR0000008905871).

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

Vitex aesculifolia Baker (Baker 1900: 325); Durand & Durand (1909: 436). – Type: D.R. Congo, Monbuttu, near Munsa, 7 Apr. 1870, *Schweinfurth* 3442 (holo-: K).

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. oxycuspis*
- 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. bucharanii*
- 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. discoideoglandulosa*
- 6'. Twigs glabrous to puberulous, hollow, inhabited by ants, strongly quadrangular; lower surface of leaflets almost glabrous..... 17. *V. thyriflora*
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 ferruginous 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 ferruginous 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 \geq 10 mm long, orange, more rarely white 16. *V. rubroaurantiaca*
- 14'. Leaves more or less pubescent; inflorescence 5–20 cm long, many-flowered, corolla < 10 mm long, white, purplish or bluish 15
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..... 10. *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..... 16
16. Upper surface of leaflets markedly scabrid, with reticulum prominent; leaflets very coriaceous; calyx 2.5–3.5 mm long with broadly triangular teeth; corolla 5–10 mm long, bluish or mauve with white throat; savanna shrub..... 11b. *V. madiensis* subsp. *milanjiensis*
- 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-cream sometimes with a blue tinge in lower lip (corolla unknown in *V. cuspidata*); trees of woodlands and forests..... 17
17. Leaflets softly tomentellose on veins and reticulum beneath, without conspicuous glands; inflorescence branches and petiole tomentellose; 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..... 5. *V. cuspidata*
- 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..... 18
18. Leaflets spatulate, broadly rounded at tip, cuspidate; petiolules 0–2(–3) mm; secondary veins 9–12 pairs; calyx with yellowish-fulvous hairs, without conspicuous glands; young twigs with golden yellow hairs 3. *V. ciliata*
- 18'. Leaflets elliptic or obovate, with a long fine acumen (5–20 mm); petiolules 5–25 mm; secondary veins 10–20 pairs; calyx pubescent, with conspicuous golden yellow glands; young twigs puberulent, without long golden yellow hairs..... 15. *V. rivularis*

Vitex seretii De Wild. (De Wildeman 1909: 130); Pieper (1928: 59); Lebrun & Stork (1997: 526). – Type: D.R. Congo, Nala, Mar. 1907, *Seret* 847 (lecto-: BR barcode BR0000008906229 **designated here**; isolecto-: BR0000008906212), **synon. nov.**

Vitex thonneri De Wild. (De Wildeman 1911: 246); De Wildeman (1912a: 467; 1912b: 216, 262; 1929a: 16); Pieper (1928: 59); Lebrun & Stork (1997: 526). – Type: D.R. Congo, Ubanguï, Banzyville [Mobayi-Mbongo], à 450 m d'altitude dans les broussailles, parmi les rochers, 8 Mar. 1909, *Thonner* 263 (lecto-: BR barcode BR0000008906540, **designated here**; isolecto-: BR barcodes BR0000008906243 & BR0000008906250, W barcode W 1911-0005189, K barcodes K000192755 & K000192756), **synon. nov.**

Vitex gillettii Gürke (Gürke 1903: 298); De Wildeman (1903b: 72; 1912a: 467; 1912b: 91, 242); Durand & Durand (1909: 437); Lebrun & Stork (1997: 524). – *Vitex congolensis* De Wild. & T.Durand var. *gillettii* (Gürke) W.Pieper. (Pieper 1928:

59). – Type: D.R. Congo, Kimuenza, May 1901, *Gillet* 2163 (lecto-: BR barcode BR0000008903662, **designated here**).

A tree. Young twigs, petiole and inflorescence with long spreading ferruginous or fulvous fine hairs. Leaflets 5; petiolule 0–5 mm; lamina softly fulvous pubescent beneath. Inflorescence a dichasium on a long peduncle; calyx 1.5–2.5 mm, ferruginous to fulvous pubescent; ovary glabrous; corolla 5–7 mm, cream with bluish lower lip. Fruit 10–15 mm long.

Distribution – W and C Africa, from Ivory Coast southwards to Angola and eastwards to Sudan.

Notes – Lectotypification of *Vitex congolensis* De Wild. The protologue cited only one collection (*Dewèvre* s.n.). The material stored at BR comprise *Dewèvre* 770a (2 sheets) and *Dewèvre* 926a (3 sheets); one sheet has locality description and notes handwritten by De Wildeman (BR0000008905918); it is here chosen as the lectotype. Re-

maining syntypes: sine loco, sine dato, *Dewèvre* 926a (BR barcodes BR0000008905406 & BR0000008905413).

Lectotypification of *Vitex thonneri* De Wild. The protologue cited *Thonner* 263, which has been widely distributed to several herbaria. Of the three sheets in BR, the one with De Wildeman's handwriting on the label is selected as the lectotype. The original material has the diagnostic characters of *V. congolensis*; it is unusual in having short leaflets, but this trait is variable within the species and I do not think this variant is worth taxonomic recognition.

Lectotypification of *Vitex gillettii* De Wild. Only one of the two syntypes has been found (*Gillet* 2163); the other syntype (*Pogge* 698) has probably been destroyed in Berlin and no duplicate could be traced. The type material of *V. gillettii* has leaflets 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. *thomasii* (De Wild.) Meerts, comb. nov.

Vitex thomasii De Wild., Contribution à la Flore du Katanga, Supplément 2: 106. 1929 (De Wildeman 1929b); Delevoy (1929: 185); Moldenke (1958a: 148); Lebrun & Stork (1997: 526). – Type: D.R. Congo, Kalonda, 20 Aug. 1923, *Thomas* 1324 (holo-: BR barcode BR0000008906267).

Vitex thomasii f. *kasaiensis* De Wild. (De Wildeman 1929b: 108); Moldenke (1958a: 149). – Type: D.R. Congo, Kasai, Bena-Dibele, *Luja* 259 (holo-: BR barcode BR0000013602093).

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 thomasii* 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 at varietal rank. The type specimen of *V. buchneri* has not been found. However, the protologue clearly indicates that this taxon belongs here (“...die Bracteen der Nebenachsen erster Ordnung lanzettlich in den Stiel verschmälert, mit dem Stiel bis 3 cm lang...”) (Gürke 1893).

5. *Vitex cuspidata* Hiern (Hiern 1900: 835); Baker (1900: 521); De Wildeman (1912a: 467; 1929a: 9); Pieper (1928: 70); Moldenke (1955b: 307; 1956: 357); Lebrun & Stork (1997: 524); Cabral (2013: 196). – Type: Angola, Golungo

Alto, Serra de Alto Queta, Apr. 1856, *Welwitsch* 5665 (lecto-: BM barcode BM000839706 inadvertently designated by Cabral (2013) (corrected from holotype); isolecto-: BM barcode BM000834573, LISU barcodes LISU254233 & LISU223679, COI barcode COI00077133, P barcode P00442303, K barcode K000735142).

Vitex kapirensis De Wild. (De Wildeman 1914a: 141; 1914c: 405; 1921: 164); Pieper (1928: 40, 60 & 83); Moldenke (1956: 420); Lebrun & Stork (1997: 524). – Type: D.R. Congo, Haut-Katanga, Vallée de Kapiri, Feb. 1913, *Homblé* 1152 (lecto-: BR barcode BR0000008905864 **designated here**; isolecto-: BR barcodes BR0000008905857, BR0000008905932 & BR00000089052925), **synon. nov.**

A tree. Twigs shortly pale brownish tomentellous. Leaflets 5; petiolules 3–17 mm; lamina narrowly obovate-elliptic, shortly acuminate-cuspidate, pale fulvous tomentellous on veins beneath, glabrous above. Inflorescence of dichasia, long pedunculate, much branched. Flowers unknown. Fruit 10–15 mm long.

Distribution – Subendemic to D.R. Congo, extending to Angola.

Notes – *Vitex cuspidata* Hiern is known from very few collections mostly from Angola, all of them in fruit (Cabral 2013). Pubescence of ovary is unknown and, accordingly, the species keys out in two groups in the key. Material from the Sudanian region has also been ascribed to that taxon (Aubréville 1950: 500) but it is certainly not conspecific. The type material of *Vitex kapirensis* is a good match of the type material of *Vitex cuspidata*, with a large inflorescence, relatively small fruits, long-petiolulate elliptic leaflets contracted into a short acumen. *V. kapirensis* was synonymized (Meerts 2016) with *V. fischeri*, but the latter has much larger leaflets and tertiary veins forming a more conspicuous ladder pattern.

Lectotypification of *Vitex kapirensis* De Wild. The type material of *Vitex kapirensis* consist of four sheets; the sheet with the most complete material and the most extensive collecting information is selected as the lectotype.

6. *Vitex discoideoglandulosa* De Wild. (De Wildeman 1929a: 10). – Type: D.R. Congo, Kasai, entre Lubue et Bena-Makima, May 1910, *Sapin* s.n. (lecto-: BR barcode BR0000018421408, **designated here**).

Vitex guerkeana De Wild. (De Wildeman 1909: 129) nom. illeg. non *Vitex guerkeana* Hiern.

A lianescent shrub. Twigs solid, not myrmecophilous, pubescent. Leaflets 5, petiolulate, lamina pubescent on both surfaces. Inflorescence of thyrses, grouped in a terminal panicle. Flowers whitish. Fruit globose, brownish, c. 5 mm, subtended by the patelliform calyx.

Distribution – Endemic to D.R. Congo.

Note – *V. discoideoglandulosa* is a member of the complex of *V. thyrsoflora*-*V. buchananii*, characterised by a thyrsoid inflorescence, more or less lianescent habit and small globose fruits (section *Terminales* W.Pieper.). Pieper (1928) regarded it as a synonym of *V. volkensii* Gürke, an East African plant now synonymized with *V. buchananii*. However, *V. dis-*

Table 1 – Trait comparison of *V. discoideoglandulosa*, *V. thyrsoiflora* and *V. b Buchananii* in D.R. Congo.

	<i>V. discoideoglandulosa</i>	<i>V. thyrsoiflora</i>	<i>V. b Buchananii</i>
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, clasping fruit base

coideoglandulosa lacks the diagnostic trait of *V. b 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 (*Claessens* 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. b Buchananii*.

7. *Vitex djumaensis* De Wild. (De Wildeman 1909: 128); Pieper (1928: 70); Moldenke (1955b: 321); Lebrun & Stork (1997: 524); Cabral (2013: 199). – Type: D.R. Congo, Vallée de la Djuma, Jul. 1902, *Gentil* s.n. (lecto-: BR barcode BR0000008905543 designated by Cabral (2013); isolecto-: BR barcode BR00000089055292).

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, petiolulate 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*.

8. *Vitex doniana* Sweet (Sweet 1826: 323); Baker (1900: 323); Pieper (1928: 64); White (1962: 371); Huber et al. (1963: 446); Verdcourt (1992: 62); Pauwels (1993: 216); (Beentje 1994: 622); Lebrun & Stork (1997: 524); van Wyk & van Wyk (1997: 476); Sales (2001: 192; 2005: 85); Coates Palgrave & Coates Palgrave (2005: 981); Latham & Konda ku Mbuta (2010: 326); Meerts & Hasson (2016: 335);

Meerts (2016: 231). – Type: Sierra Leone, *Don* s.n. (holo-: BM barcode BM000839716).

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

Vitex cienkowski Kotschy & Peyr. (Kotschy & Peyritsch 1867: t. 12); Durand & Durand (1909: 436); De Wildeman (1912a: 467; 1921: 164; 1926: 205); Delevoy (1931: 7). – Type: South Sudan, ad Mischra Req prope Bahr Ghasal, Apr. 1863, *von Heuglin* 41 [sphalm. “43” in protologue] (lecto-: W barcode W 2004-0012683 designated by Cabral (2013); isolecto-: W barcodes W 2004-0012682, W 2004-0012684 & W 2004-0012681).

? *Vitex lundensis* Gürke (Gürke 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* Gürke (Gürke 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.).

Vitex dewevrei De Wild. & T. Durand (Durand & De Wildeman 1899: 133); De Wildeman & Durand (1900: 50; 1901: 185); Baker (1900: 327); De Wildeman (1909: 128; 1912b: 91); Durand & Durand (1909: 437). – Type: D.R. Congo, Bas-Congo, Lukungu, 31 Oct. 1895, *Dewèvre* 459 (lecto-: BR barcode BR0000008905475 designated by Cabral (2013); isolecto-: BR barcodes BR0000008905437 & BR0000008905482).

Vitex homblei De Wild. (De Wildeman 1914a: 142; 1914c: 404; 1921: 164). – Type: D.R. Congo, Elisabethville [Lubumbashi], May 1912, *Homblé* 318 (lecto-: BR barcode BR0000005570850 designated by Cabral (2013); isolecto-: BR barcode BR0000005571185, BR0000005570867).

A tree. Twigs fulvous to greyish puberulent. Leaves glabrous; leaflets 5, long petiolulate; 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.

9. *Vitex ferruginea* Schumach. & Thonn. (Schumacher 1827: 228); Baker (1900: 324); Durand & Durand (1909: 437); Pieper (1928: 70); Huber et al (1963: 447); Verdcourt (1992: 66); (Beentje 1994: 622); Lebrun & Stork (1997: 524); Sales (2001: 193; 2005: 81); Coates Palgrave & Coates Palgrave (2005: 982); Cabral (2013: 211). – Type: Ghana, near Aquapim, *Thonning* 265 (lecto-: C barcode C10004696, **designated here**, isolecto-: C barcodes C10004697 & C10004695, FI barcode FI011043, S barcode S11-26315).

Vitex welwitschii Gürke (Gürke 1893: 166); Hiern (1900: 166); Baker (1900: 329); Pieper (1928: 69); De Wildeman (1929a: 20); Robyns (1947: 140); Moldenke (1958b: 223); Lebrun & Stork (1997: 526). – Type: Angola, Golungo Alto, *Welwitsch* 5644 (lecto-: K barcode K000249101 designated by Cabral (2013)).

Vitex laurentii De Wild. (De Wildeman 1909: 129; 1910a: 255; 1912b: 132). – *Vitex welwitschii* var. *laurentii* (De Wild.) W.Piep. (Pieper 1928: 69); Robyns (1947: 141); Moldenke (1958b: 223). – Type: D.R. Congo, Mogandjo, Mar. 1906, *Laurent* 1921 (lecto-: BR barcode BR0000008909305 designated by Cabral (2013), isolecto-: BR0000008909275).

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 admix-

ture of specimens collected at three dates, two with flowers and one with fruits (Hiern 1900). Therefore, as pointed out by Albuquerque et al. (2009), it is not recommended to consider sheets with the same number to be isolectotypes, in the case of Welwitsch's collections. All the other remaining original material has therefore to be considered as syntypes (BM barcodes BM000834750 & BM000566971, COI barcode COI00077134, LISU barcodes LISU254232 & LISU223678, PRE barcode PRE0590365-0, C barcode C10001498).

10. *Vitex fischeri* Gürke (Gürke 1893: 171); Baker (1900: 330); Pieper (1928: 60); White (1962: 371); Verdcourt (1992: 59); (Beentje 1994: 622); Lebrun & Stork (1997: 524); Sales (2001: 195, 2005: 82); Meerts (2016: 231). – Types: Tanzania, Seeengebiet [Mwanza District], Kayenzi [Kagehi], Nov. 1885, *Fischer* 476 (syn-: B†); Usindji [Uzinza], *Stuhlmann* 3576 (syn-: B†); Kimsani [Kimwani] Plateau, *Stuhlmann* 3394 (syn-: B†); Muansa, *Stuhlmann* 4137, *Stuhlmann* 4184 (syn-: B†).

10a. *Vitex fischeri* var. *fischeri*

Vitex bequaertii De Wild. (De Wildeman 1914a: 142; 1914c: 402; 1921: 164; 1929b: 101); Delevoy (1929: 478); Pieper (1928: 60). – Type: D.R. Congo, Haut-Katanga, Elisabethville [Lubumbashi], 4 Apr. 1912, *Bequaert* 314 [“319” in error in the protologue] (lecto-: BR barcode BR0000005570843, **designated here**; isolecto-: BR barcode BR0000005571178).

Vitex giorgii De Wild. (De Wildeman 1929b: 103); Moldenke (1956: 375). – Type: D.R. Congo, Haut-Katanga, Etoile du Congo, Jan. 1923, *De Giorgi* 391 (holo-: BR barcode BR0000008905826).

Vitex venulosa Moldenke (Moldenke 1952: 64; 1958b: 210); Lebrun & Stork (1997: 526). – Type: D.R. Congo, Maniema, Lumuna, Aug. 1932, *Lebrun* 5878 (holo-: BR barcode BR0000008905550; iso-: BR barcode BR0000008905574, P barcode P00442322).

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 *Homblé* 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 Africanæ* LXII: 47. 1915. (Turrill 1915); Pieper (1928: 60); Moldenke (1956: 420);

Verdcourt (1992: 58); (Beentje 1994: 622); Lebrun & Stork (1997: 525). – Type: British East Africa [Kenya], 1500–1800 m, *Grant* in herb. *Battiscombe* 846 (syn-: K barcodes K000192779 & K000192780; EA barcode EA000001114).

Distribution – Tropical E Africa from Kenya to Mozambique. *V. fischeri* var. *keniensis* is new to D.R. Congo, where it occurs in dense forests of Ituri region (Ituri, envitons 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.

11. *Vitex madiensis* Oliv. (Oliver 1875: 134, Pl. 131) Baker (1900: 322); Pieper (1928: 61). –Type: Uganda, Madi, Dec. 1862, *Grant* 649 (holo-: K barcode K000192783).

11a. *Vitex madiensis* subsp. *madiensis* Verdcourt (1992: 60); Pauwels (1993: 217); Lebrun & Stork (1997: 525); Sales (2001: 196; 2005: 84); Coates Palgrave & Coates Palgrave (2005: 983); Latham & Konda ku Mbuta (2010: 326); Meerts (2016: 231).

Vitex camporum Büttner. (Büttner 1890: 35); De Wildeman (1903a: 121; 1909: 127; 1910a: 255; 1912a: 467; 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**; isolecto-: BM barcode BM000839714, B†).

Vitex camporum var. *longipedicellata* De Wild. (De Wildeman 1909: 127); De Wildeman (1910b: 400; 1912b: 298). – Type: D.R. Congo, Mayombe, Kwamouth, 25 Oct. 1903, *E. & M. Laurent* s.n. (lecto-: BR barcode BR0000018430080, **designated here**; isolecto-: BR barcode BR0000018430097).

Vitex madiensis var. *baumii* W.Pieper. (Pieper 1928: 62); Moldenke (1956: 455). – Type: Angola, Quiriri, *Baum* 821 (holo-: B†).

Vitex madiensis var. *schweinfurthii* (Gürke) W.Pieper. (Pieper 1928: 63); Moldenke (1956: 458) – *Vitex schweinfurthii* Gürke (Gürke 1893: 170). – Type: South Soudan, Bahr-El-Ghasal, Seriba Ghattas, 7 Jul. 1869, *Schweinfurth* 2030 (lecto-: K barcode K000192766, **designated here**; isolecto-: B†).

Vitex madiensis var. *typica* W.Pieper. (Pieper 1928: 63); (Delevoy 1929: 483); De Wildeman (1929a: 11, 1929b: 105); Devred (1956: 113). – Type: same as *Vitex camporum* Büttner.

Vitex madiensis var. *glaberrima* Moldenke (Moldenke 1952: 63). Type: D.R. Congo, Uele, env. Bambesa, *Pittery* 819 (holo-: BR barcode BR0000008906205).

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.Pieper. (5 leaflets; e.g. *de Bergyck* 34, *Robyns* 3018), *V. madiensis* var. *baumii* W.Pieper. (leaflet margin entire; e.g. *Lebrun* 6748), *V. madiensis* var. *glaberrima* (glabrous in all parts; e.g. *Pittery* 819). These taxa are not recognized here.

The distribution ranges of *V. madiensis* subsp. *madiensis* and subsp. *milanjiensis* 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* 252Vi).

Lectotypification of *Vitex camporum* Büttner. *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 Kwamouth 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. *milanjiensis* (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). – *Vitex madiensis* var. *milanjiensis* (Britten) W.Pieper. (Pieper 1928: 63); De Wildeman (1929a: 12; 1929b: 105); Delevoy (1929: 483). – *Vitex milanjiensis* Britten (Britten 1894: 36); Baker (1900: 330). – Types: Malawi, Milanji [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).

Vitex grisea Baker (Baker 1900: 325). – Type: Angola, Distr. Huilla, in silvestribus alte dumetosis de Catumba, *Welwitsch* 5759 (lecto-: K barcode K001067050, **designated here**; isolecto-: BM barcode BM000839718), **synon. nov.**

Vitex huillensis Hiern (Hiern 1900: 837); De Wildeman (1914b: 191) nom. illeg.

Vitex hockii De Wild. (De Wildeman 1914b: 113; 1914c: 403; 1921: 164); Pieper (1928: 61); Delevoy (1929: 483). – Type: D.R. Congo, Haut-Katanga, Manika, Oct. 1911, *Hock* s.n. (holo-: BR barcode BR0000008906557).

Vitex ringoetii De Wild. (De Wildeman 1914a: 143; 1914c: 407; 1921: 165). – Type: D.R. Congo, Nieuwdorp, Oct. 1912, *Ringoet* 1 (holo-: BR barcode BR0000005571505).

Vitex epidictyodes Mildbr. ex W.Piep. (Pieper 1928: 61; 1929: 164). – *Vitex madiensis* subsp. *milanjiensis* var. *epidictyodes* (W.Piep.) Verdc. (Verdcourt 1992: 61); Lebrun & Stork (1997: 525). – Type: Malawi, Langenburg, am nordende des Nyassa, *Stolz* 556 (First-step lectotype designated by Pieper (1929); second-step lectotype: B barcode B 10 0279988, **designated here**; isolecto-: BM barcode BM001125198, G barcode G00366697, P barcode P00713461, U barcode U0040942, Z barcode Z-000067396).

Differs 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 prominent.

Distribution – Zambezi 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.

12. *Vitex mombassae* Vatke (Vatke 1882: 533); Baker (1900: 326); De Wildeman (1903a: 121; 1912b: 367; 1921: 165; 1929b: 106); Durand & Durand (1909: 437); Pieper (1928: 66); Delevoy (1929: 484); White (1962: 371); Verdcourt (1992: 64); (Beentje 1994: 623); Bredenkamp & Botha (1996: 146); Lebrun & Stork (1997: 525); van Wyk & van Wyk (1997: 476); Sales (2001: 197; 2005: 87); Smith & Allen (2004: 82); Coates Palgrave & Coates Palgrave (2005: 983); Meerts & Hasson (2016: 337); Meerts (2016: 231). – Type: “[Kenya] [Prope] Mombassa [in ora zanzibarensi], Jan. 1876, *Hildebrandt* 1972 (lecto-: BM barcode BM000839709 designated by Cabral (2013); isolecto-: K barcode K000192785, W barcode W 0008469).

Vitex mufutu De Wild. (De Wildeman 1914a: 142; 1914c: 406; 1921: 165). – Type: D.R. Congo, Haut-Katanga, Etoile du Congo, Dec. 1911, *Hock* s.n. (holo-: BR barcode BR0000008905451).

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.

13. *Vitex oxycuspis* Baker (Baker 1900: 326); Pieper (1928: 56); Moldenke (1957: 31; 1967: 314); Aubréville (1956: 232); Huber et al. (1963: 446); Lebrun & Stork (1997: 525). – Type: Nigeria, Old Calabar River, Feb. 1863, *Mann* 2243 (holo-: K barcode K000192745).

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.

14. *Vitex payos* (Lour.) Merr. (Merrill 1935: 334); Moldenke (1957: 45); Verdcourt (1992: 63); (Beentje 1994: 623); Lebrun & Stork (1997: 525); van Wyk & van Wyk (1997: 478); (Sales 2001: 200; 2005: 86); Coates Palgrave & Coates Palgrave (2005: 985); Cabral (2013: 238); Meerts (2016: 231), nom. conserv. – Type: Tanzania, Tanga, Jan. 1893,

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

A shrub. Young twigs with woolly fulvous tomentum. Leaves 5-foliolate, petiolule 0; lamina rounded at tip, softly pubescent above, strongly discolourous, 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 vermoesonii 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 BR0000008906588, **designated here**; isolecto-: BR barcode BR0000008906595, 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, multiflorous; calyx 1.5–2 mm, with many yellow glands, corolla c. 4 mm, whitish, with lower lip purplish, ovary glandulose. Fruit 20–30 mm long.

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

Note – Lectotypification of *Vitex vermoesonii* De Wild. Five syntypes are cited in the protologue (*de Briey* 55, *Pynaert* 1696, *Sparano* 129, *Vermoesen* 1742, *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 vermoesonii* 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.

16. *Vitex rubroaurantiaca* De Wild. (De Wildeman 1929a: 15, as “*rubro-aurantiaca*”). – Type: D.R. Congo, entre Masisi et Walikale, 3 Jan. 1915, forêt vierge, *Bequaert* 6469 (lecto-: BR barcode BR0000008906236, **designated here**; isolecto-: BR barcode BR0000008906175).

Vitex duboisii Moldenke (Moldenke 1952: 60); Moldenke (1955b: 327); Lebrun & Stork (1997: 524). – Type: D.R. Congo, Kutu, Ekota territ., Tshuapa distr., Sept. 1934, *Dubois* 608 (holo-: BR barcode BR0000008906182; iso-: BR barcode BR0000008906199), **synon. nov.**

Vitex lebrunii Moldenke (Moldenke 1952: 62); Moldenke (1956: 435); Lebrun & Stork (1997: 525). – Type: D.R. Congo, Entre Walikale et Koleke, Mar. 1932, *Lebrun* 5303 (holo-: BR barcode BR0000008905581; iso-: BR barcode BR0000008905604, K barcode K000192764, P barcode P00464225), **synon. nov.**

A shrub, generally blackening in herbarium, almost glabrous in all its parts. Leaves 5-foliolate; petiolule 1–15 mm, lamina narrowly elliptic-oblongate, long attenuate at base, acuminate, 5–10 secondary veins. Inflorescence of dichasia, few-flowered, much shorter than subtending leaf, peduncle < 30 mm, branches puberulous, compressed; calyx 2–3.5 mm, sparsely 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.

17. *Vitex thyrsoflora* Baker (Baker 1895: 152; 1900: 319); Pieper (1928: 54); Moldenke (1958a: 152); Huber et al. (1963: 446); Lebrun & Stork (1997: 526). – Type: Nigeria, Interior of western Lagos, 1893, *Rowland* s.n. (lecto-: K barcode K000192742, **designated here**).

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 axils of leaves and grouped in a terminal panicle; calyx truncate, 2–3 mm, corolla whitish, 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 thyrsoflora* 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. lokundjiensis* W.Piep., *V. yaundensis* Gürke, *V. zenkeri* Gürke), no material was found and those records probably rely on identification errors.

Taxon excluded

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

ACKNOWLEDGEMENTS

I am grateful to the curators of all the herbaria that have welcomed me and that sent me material on loan, and to two reviewers for useful comments.

REFERENCES

Ahenda J.O. (1999) Taxonomy and genetic structure of Meru Oak populations, *Vitex keniensis* Turrill and *Vitex fischeri* Gürke, in East Africa. PhD. thesis, University of Wageningen, Wageningen, The Netherlands.

Albuquerque S., Brummitt R.K., Figueiredo E. (2009) Typification of names based on the Angolan collections of Friedrich Welwitsch. *Taxon* 58: 641–646.

Aubréville A. (1950) Flore forestière soudano-guinéenne. Paris, Société d'Éditions géographiques, maritimes et coloniales.

Aubréville A. (1956) Flore forestière de Côte d'Ivoire. 3. Nogent-sur-Marne, Centre technique forestier tropical.

Baker J.G. (1895) *Vitex thyrsoflora*. In: Diagnoses Africanæ, VI. Bulletin of Miscellaneous information 1985(102–103): 141–153. <https://doi.org/10.2307/4114935>

Baker J.G. (1900) *Vitex*. In: Thiselton-Dyer W.T. (ed.) Flora of tropical Africa 5(2): 315–332. London, Lovell Reeve & Co.

Beentje H.J. (1994) Kenya trees, shrubs and lianas. Nairobi, National Museums of Kenya.

Bredenkamp C.L., Botha D.J. (1996) FSA contributions 7: Verbenaceae: *Vitex*. *Bothalia* 26: 141–151. <https://doi.org/10.4102/abc.v26i2.698>

Briquet J. (1895) Verbenaceae. In: Engler A., Prantl K. (eds) Die natürlichen Pflanzenfamilien IV(3a): 132–182. Leipzig, W. Engelmann.

Britten J. (1894) Monopetalae. In: The Plants of Milanji, Nyasaland. Transactions of the Linnean Society of London, Series 2, Botany 4: 16–37.

Büttner R. (1890) Neue Arten von Guinea, dem Kongo und dem Quango. II. Verbenaceae. Verhandlungen des Botanischen Vereins für die Provinz Brandenburg 32: 35–37.

Cabral C. (2013) Multidisciplinary taxonomic revision in the genus *Vitex* L. in Africa. Saarbrücken, Lambert Academic Publishing.

Coates Palgrave K., Coates Palgrave M. (2005) Trees of Southern Africa. 3rd Ed. Cape Town, Struik Nature.

Delevoy G. (1929) La question forestière au Katanga. II. Les essences forestières au Katanga. Bruxelles, Comité Spécial du Katanga.

Delevoy G. (1931) Etudes systématiques sur les bois du Katanga. VI. Bruxelles, Comité spécial du Katanga.

Devred R. (1956) Les savanes herbeuses de la région de Mvuazi (Bas-Congo). Bruxelles, Institut national pour l'étude agronomique du Congo.

De Wildeman E. (1903a) Etudes sur la flore du Katanga. Annales du Musée du Congo Belge, Botanique, Série IV, vol. 3: 81–241.

De Wildeman E. (1903b) Etudes de systématique et de géographie botaniques sur la Flore du Bas- et Moyen-Congo. Annales du Musée du Congo, Botanique, Série V, vol. 1(1).

De Wildeman E. (1909) Etudes sur la flore du Bas- et du Moyen-Congo. Annales du Musée du Congo, Botanique, Série V, vol. 3(1): 1–147.

De Wildeman E. (1910a) Etudes sur la flore du Bas- et du Moyen-Congo. Annales du Musée du Congo, Botanique, Série V, vol. 3(2): 149–316.

De Wildeman E. (1910b) Compagnie du Kasai. Mission permanente d'études scientifiques. Résultats de ses recherches botaniques et agronomiques. Bruxelles, Lesigne.

De Wildeman E. (1911) Etude sur la Flore des districts des Bangala et de l'Ubangi (Congo belge). Plantae Thonnerianae Congo-lenses. Série II. Bruxelles, Misch & Thron.

De Wildeman E. (1912a) Etudes sur la flore du Bas- et du Moyen-Congo. Annales du Musée du Congo, Botanique, Série V, vol. 3(3): 317–533.

De Wildeman E. (1912b) Documents pour l'étude de la géobotanique congolaise. Bulletin de la Société Royale de Botanique de Belgique 51(3): 1–406.

De Wildeman E. (1914a) Decades novarum specierum florae Katangensis. XIX–XXI. Repertorium specierum novarum regni vegetabilis 13: 137–147. <https://doi.org/10.1002/fedr.19140130904>

De Wildeman E. (1914b) Additions à la Flore du Congo. Bulletin du Jardin botanique de l'État à Bruxelles 4: 1–241. <https://doi.org/10.2307/3666479>

De Wildeman E. (1914c) Notes sur la flore du Katanga. Annales de la Société scientifique de Bruxelles 38: 353–465.

De Wildeman E. (1921) Contribution à l'étude de la flore du Katanga. Bruxelles, Comité spécial du Katanga. <https://doi.org/10.5962/bhl.title.11020>

De Wildeman E. (1926) Les forêts congolaises et leurs principales essences économiques. Bruxelles, Goemaere.

De Wildeman E. (1929a) Plantae Bequaertianae 5(1). Paris, Lechevalier.

De Wildeman E. (1929b) Contribution à la flore du Katanga. Supplément 2. Bruxelles, Comité spécial du Katanga.

De Wildeman E., Durand T. (1900) Contributions à la flore du Congo. Annales du Musée du Congo, Botanique, Série II, vol. 1: 1–95.

De Wildeman E., Durand T. (1901) Reliquiae Dewevreanae. Annales du Musée du Congo, Botanique, Série III, vol. 2: 81–291.

Durand E., De Wildeman E. (1898) Matériaux pour la flore du Congo. 2. Bulletin de la Société Royale de Botanique de Belgique 37: 44–128.

Durand E., De Wildeman E. (1899) Matériaux pour la flore du Congo. 5. Bulletin de la Société Royale de Botanique de Belgique 38: 120–151.

- Durand T., Durand H. (1909) Sylloge Florae Congolanae [Phanerogamae]. Bulletin du Jardin botanique de l'État à Bruxelles 2: 1–716. <https://doi.org/10.2307/3666516>
- Durand T., Schinz H. (1896) Etudes sur la flore de l'état indépendant du Congo. 1. Bruxelles, Académie royale des sciences des arts et des belles lettres.
- Gürke R.L.A.M. (1893) Verbenaceae africanae. Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie 18: 165–183.
- Gürke R.L.A.M. (1895) Verbenaceae. In: Engler A. (ed.) Die Pflanzenwelt Ost-Afrikas und der Nachbargebiete: 339–340. Berlin, Dietrich Reimer.
- Gürke R.L.A.M. (1903) Verbenaceae africanae 3. Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie 33: 292–300.
- Harley R.M., Atkin S., Budansteve A.L., Cantino P.D., Conn B.J., Grayer R., Harley M.M., de Tok R., Krestovskaja T., Morales R., Paton A. J., Ryding, O., Upson T. (2004) Labiatae. In: Kubitzki K. (ed.), The families and genera of vascular plants, vol. 7: 167–275. Berlin, Springer Verlag.
- Hepper F.N. (1976) West African Herbaria of Isert and Thonning. Kew, Bentham-Moxon Trust.
- Hiern W.P. (1900) Catalogue of African plants collected by Dr Friedrich Welwitsch in 1853–1861. Dicotyledons. IV. London, Longmans.
- Huber H., Hepper F.N., Meikle R.D. (1963) Verbenaceae. In: Hepper F.N. (ed.) Flora of West Tropical Africa, 2nd Ed., vol. 2: 432–448. London, Crown Agents for Oversea Governments and Administrations.
- Kotschy T., Peyritsch I. (1867) Plantae Tinneanae: sive descriptio plantarum in expeditione tinneana ad flumen Bahr-el-Ghasal eiusque affluentias in septentrionali interioris Africae parte collectarum. Vindobonae (Vienna), Caroli Gerold Filii. <https://doi.org/10.5962/bhl.title.695>
- Latham P., Konda ku Mbuta A. (2010) Plantes utiles du Bas-Congo, République Démocratique du Congo. 2nd Ed. Mystole, Mystole Publications.
- Lebrun J.-P., Stork A. (1997) Enumération des plantes à fleurs d'Afrique. IV. Genève, Conservatoire et Jardin botaniques de la ville de Genève.
- Li B., Cantino P.D., Olmstead R.G., Bramley G.L.C., Xiang C.-L., Ma Z.-H., Tan Y.-H., Zhang D.-X. (2016) A large-scale chloroplast phylogeny of the Lamiaceae sheds new light on its subfamilial classification. Scientific Reports 6: 34343. <https://doi.org/10.1038/srep34343>
- Linnaeus C. (1753) Species Plantarum. 2. Stockholm, Laurentius Salvius.
- Mabberley D.J. (2017) Mabberley's Plant-book. 4th Ed. Cambridge, Cambridge University Press. <https://doi.org/10.1017/9781316335581>
- McNeill J., Turland N.J., Barrie F.R., Buck W.R., Greuter W., Wiersema J.H. (2012) International Code of Nomenclature for Algae, Fungi, and Plants. Regnum Vegetabile 154. Königstein, Koeltz Scientific Books.
- Meerts P. (2016) An annotated checklist to the trees and shrubs of the Upper Katanga (D.R. Congo). Phytotaxa 258: 201–250. <https://doi.org/10.11646/phytotaxa.258.3.1>
- Meerts P., Hasson M. (2016) Arbres et arbustes du Haut-Katanga. Meise, Agentschap Plantentuin Meise.
- Merrill E.D. (1935) A commentary on Loureiro's "Flora Cochinchinensis". Transactions of the American Philosophical Society, New Series 24(2): 1–445. <https://doi.org/10.2307/1005470>
- Moldenke H.N. (1952) Notes on new and noteworthy plants. XIII. Phytologia 4: 41–64.
- Moldenke H.N. (1955a) Materials towards a monograph of the genus *Vitex*. I. Phytologia 5: 142–176.
- Moldenke H.N. (1955b) Materials towards a monograph of the genus *Vitex*. IV. Phytologia 5: 293–336.
- Moldenke H.N. (1956) Materials towards a monograph of the genus *Vitex*. VI. Phytologia 5: 404–464.
- Moldenke H.N. (1957) Materials towards a monograph of the genus *Vitex*. VIII. Phytologia 6: 13–64.
- Moldenke H.N. (1958a) Materials towards a monograph of the genus *Vitex*. X. Phytologia 6: 129–192.
- Moldenke H.N. (1958b) Materials towards a monograph of the genus *Vitex*. XI. Phytologia 6: 197–231.
- Moldenke H.N. (1967) Additional notes on the genus *Vitex* V. Phytologia 15: 304–325.
- Moldenke H.N. (1968) Additional notes on the genus *Vitex* VIII. Phytologia 17: 8–56.
- Oliver D. (1875) Dicotyledones (concluded). In: The botany of the Speke and Grant expedition. III. Transactions of the Linnean Society of London 29: 103–151. <https://doi.org/10.1111/j.1096-3642.1875.tb00234.x>
- Pauwels L. (1993) Nzayilu N'ti. Guide des arbres et arbustes de la région de Kinshasa-Brazzaville. Meise, Jardin botanique national de Belgique.
- Pellegrin F. (1927) Plantae Letestuanæ novæ ou plantes nouvelles récoltées par M. Le Testu de 1907 à 1911 dans le Mayombe congolais. XIII. Loganiaceae (suite). Bulletin du Muséum national d'Histoire naturelle, Paris 33: 267–269.
- Pieper W. (1928) Vorarbeiten zu einer Revision der afrikanischen *Vitex*-Arten mit Berücksichtigung der übrigen. Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie 62, Beibl. 141 ("142"): 1–91 (+ XIII tables).
- Pieper W. (1929) Neue und noch nicht beschriebene Arten der Gattung *Vitex* aus Afrika. Feddes Repertorium Specierum novarum regni vegetabilis 26: 161–166. <https://doi.org/10.1002/fedr.19290260704>
- Robyns W. (1947) Flore des Spermatophytes du Parc national Albert. II. Sympétales. Bruxelles, Institut des Parcs Nationaux du Congo belge.
- Sales F. (2001) A synopsis of *Vitex* L. in the Flora Zambesiaca area. Kew Bulletin 56: 189–207. <https://doi.org/10.2307/4119435>
- Sales F. (2005) *Vitex*. In: Pope E.V., Martins E.S. (eds) Flora Zambesiaca 8(7): 73–92. Kew, Royal Botanic Gardens.
- Schumacher C.F. (1827) Beskrivelse af Guineiske Planter som ere Fundne af Danske Botanikere, Isæet af Etatsraad Thonning ved F. C. Schumacher. Copenhagen, Popp.
- Smith P., Allen Q. (2004) Field guide to the trees and shrubs of the miombo woodlands. Kew, Royal Botanic Gardens.
- Sosef M.S.M. (2016) Producing the Flore d'Afrique Centrale, past, present and future. Taxon 65: 937–939. <https://doi.org/10.12705/654.54>
- Sweet R. (1826) Sweet's Hortus Britannicus. Part 2. London, James Ridgway. <https://doi.org/10.5962/bhl.title.43792>
- Turrill W.T. (1915) 1538. *Vitex keniensis*. In: Diagnoses Africanæ LXII. Bulletin of Miscellaneous Information, Kew 1915: 44–48. <https://doi.org/10.2307/4115448>
- van Wyk B., van Wyk P. (1997) Field guide to trees of southern Africa. Cape Town, Struik nature.
- Vatke W. (1882) Plantas in Itinere Africano ab J.M. Hildebrandt collectas determinare pergit. Verbenaceae. Linnaea 43: 526–540.

Verdcourt B. (1989) (924) Proposal to Conserve the Name *Vitex payos* (Lour.) Merr. with a New Type (Verbenaceae). *Taxon* 38: 155–156. <https://doi.org/10.2307/1220926>

Verdcourt B. (1992) Verbenaceae. In: Polhill R.M. (ed) *Flora of Tropical East Africa*. Rotterdam, A.A. Balkema.

WCSP (2018) World Checklist of Selected Plant Families. Facilitated by the Royal Botanic Gardens, Kew. [online]. Available from <http://wcsp.science.kew.org/> [accessed 9 Mar. 2018].

White F. (coll. Angus A.) (1962) *Forest flora of Northern Rhodesia*. Oxford University Press, Oxford.

Manuscript received 19 Mar. 2018; accepted in revised version 13 Jun. 2018.

Communicating Editor: Elmar Robbrecht.