Plant Ecology and Evolution 143(1): 70–99, 2010
doi:10.5091/plecevo.2010.369

PLANT ECOLOGY EVOLUTION

REGULAR PAPER

Revision of the African genus *Anthonotha* (Leguminosae, Caesalpinioideae)

Frans J. Breteler

Herbarium Vadense, Biosystematics Group, Wageningen University, Foulkesweg 37, NL – 6703 BL, Wageningen, the Netherlands
Email: frans@breteler.demon.nl

Background and aims – The African genus *Anthonotha* (Leguminosae, Caesalpinioideae) is poorly known. The species are revised.
Methods – Normal practices of herbarium taxonomy have been applied to study all herbarium material available, mainly at BM, BR, BRLU, COI, FHO, G, K, LBV, LISC, LISU, MA, MO, P, WAG and YA.
Key results – Seventeen species are recognized, including three new ones: *A. mouandzae* from Gabon and *A. wijmacampensis* and *A. xanderi* from Cameroon. The species are almost completely confined to the Guineo-Congolian region. A full taxonomic treatment with key to species is given. Some important characters which are used in this key are depicted. The new species are fully illustrated. The fruits of all species are illustrated as well. Distribution maps of all taxa are given. *Anthonota cladantha* is neotypified. For four other species (*A. ferruginea, A. lamprophylla, A. noldeae* and *A. trunciflora*), a lectotype is designated.

Key words – *Anthonotha*, Caesalpinioidea, Leguminosae, taxonomy, three new species, tropical Africa.

INTRODUCTION

In the framework of the taxonomic study of the African Leguminosae, Caesalpinioideae (Breteler & Nguema 2008), the revision of the genus *Anthonotha* in its narrow circumscription (Breteler 2008) is presented. The genus was described in 1806 by Palisot de Beauvois and based on *Anthonotha macrophylla* P.Beauv. collected in West Africa. Long time it was not recognized as distinct and Baillon (1865) transferred the type species to the American *Vouapa* Aublet (1775), which name was later rejected against the conserved synonym *Macrolobium* Schreber (1789). Most species now recognized in *Anthonotha* were originally described in this American genus *Macrolobium,* and *Anthonotha macrophylla* became known by the illegitimate name *Macrolobium palisotii* Benth. (1865) and later by the correct name *M. macrophyllum* (P.Beauv.) Macbride (1919). Léonard (1955) reinstalled *Anthonotha* for the remainder of the African *Macrolobium* species, the other species having been transferred to his new genera *Gilbertiodendron, Paramacrolobium* and *Pellegrineodendron* (Breteler 2006). The variation in the reinstalled *Anthonotha* with 26 species was visualized by Léonard (1957, 1996) in five sections. *Anthonotha* section *Anthonotha* became the genus *Anthonotha* in a new, narrow sense (Aubréville & Pellegrin, in Aubréville 1959: 280; Breteler 2008). The revision of its species is presented in this paper. The species of the other four sections of *Anthonotha* are, all but two (Breteler 2006), placed in the genus *Isomacrolobium* (Breteler 2008).

RESULTS

Chorology

The seventeen species of *Anthonotha* are almost completely confined to the Guineo-Congolian region (White 1979), only *A. crassifolia, A. noldeae* and *A. pynaertii* are also present in the part of Angola South of the Congo River (figs 1 & 2). The remarkable disjunct distribution of *Anthonota noldeae*, which is also present in western Tanzania, will be discussed with the taxonomic treatment of this species. The areas of *Anthonotha cladantha* and *A. crassifolia* are also remarkable disjunct. Further exploration in Gabon and Republic of the Congo might reveal their presence in the large gap in their distributions. All seventeen species are present in the subdivision Lower Guinea of which eight species are endemic. Gabon is most species-rich with twelve species present of which five are endemic, followed by Cameroon with ten species including two endemics. The subdivisions Congolia and Upper Guinea, with respectively eight and four species, have no endemics. Most species of *Anthonotha* are confined to altitudes of up to 1200 m, *A. noldeae* excepted, which has an altitudinal range of 900–2000 m.

All rights reserved. © 2010 National Botanic Garden of Belgium and Royal Botanical Society of Belgium – ISSN 2032-3913

Estrella & al. (2006) cited the occurrence of six *Anthonota* species in Equatorial Guinea. In the material revised by me, I only encountered *A. macrophylla* and *A. stipulacea*. I was unable to verify the presence of *A. acuminata, A. fragrans, A. lamprophylla* and *A. pynaertii* in that country.

Morphology

There is a lack of easy characters, i.e. characters that do not need dissection of a flower to distinguish one *Anthonotha* species from another. Stipules are usually very early caducous and their features can therefore rarely be used as a key character. The leaves differ usually only statistically, i.e. as regards the number of leaflets, their shape or size, or their number of lateral nerves. However, these elements are often used in the key to the species to help avoiding flower dissection or for the identification of incomplete material. The persistent indumentum on the lower surface of the leaflets (deciduous in *A. trunciflora*) and usually the same as present on branchlets, stipules, petioles, and leaf rachis, shows some differences between species. However, these differences are not always constant and difficult to describe and therefore not fully reliable. Sometimes, e.g. in *Anthonotha crassifolia* and to a lesser extent in *A. macrophylla*, this indumentum is so closely appressed that individual hairs, even with a strong (40 ×) lens, are difficult to distinguish and the surface appears to be glabrous. The bracteole feature, whether with glabrous or hairy edges (see fig. 3A–E) is very useful for species distinction and has not been used before. Its use needs careful observation because the glabrous edge may be restricted to a narrow zone between the indumentum of the outside and the inside. The pistil in many flowers and, of various species is reduced having a smaller ovary with a much shorter, incurved style. These flowers are functionally male only. This phenomenon is also seen in other genera of the Leguminosae, Caesalpinioideae and has been discussed by Ngok Banak & Breteler (2004) for *Oddoniodendron* and by Obiang Mbomio & Breteler (2007) for *Eurypetalum.*The fruits of *Anthonotha,* like the leaves, offer very restricted possibilities for specific distinction. The pods of *Anthonotha crassifolia* and *A. fragrans* with distinctly enlarged ventral sutures are easy to recognize. Those of the cauliflorous species *A. ferruginea, A. lamprophylla, A. stipulacea*, and also of *A. trunciflora* show remarkable darker patches (see figs 4G, J & 5G–H).

Taxonomic treatment

Anthonotha P.Beauv. (Palisot de Beauvois 1806: 70, t. 42); Léonard (1957: 215, quoad section *Anthonotha*); Aubréville & Pellegrin in Aubréville (1959: 280); Aubréville (1968: 98 & 1970: 198). – Type: *Anthonotha macrophylla* P.Beauv.

Vouapa auct. florae africanae non Aublet 1775: Taubert (1892: 142), quoad *V. macrophylla* (P.Beauv.) Baill & *V. stipulacea* (Benth.) Taub.

Macrolobium auct. florae africanae non Schreber 1789, quoad species transferred to *Anthonotha* sensu stricto: Oliver (1871: 297), Pellegrin (1948: 41), Léonard (1952: 409).

Trees or shrubs, evergreen to deciduous. Stipules usually very early caducous, united, almost completely so or only at the base. Leaves paripinnate, sometimes with an odd terminal leaflet, (1–) 3–8(–9)-jugate; leaflets opposite to subopposite, sometimes alternate in the lowest pair(s), lower surface covered by a dense, whitish, silverish, or golden-brown, often lustrous, usually persistent indumentum (soon deciduous in *A. trunciflora*), glands on the lower surface only, small, usually hidden by the indumentum. Inflorescence a panicle (compound raceme), usually loose, axillary on the leafy branch and/or below the leaves, or on the trunk. Bracts usually very early caducous. Bracteoles valvate, covering the flower in bud. Hypanthium (0.5–)1–2(–2.5) mm long. Flowers 5-merous, odoriferous. Sepals 5, the two adaxial ones variously united, rarely free. Adaxial petal well-developed, conspicuous, with a distinct, firm, gutter-shaped claw and a usually spreading, bilobed lamina, the remaining petals rudimentary or absent. Stamens 3(–5) well-developed of the outer whorl, filaments often very shortly united at base, pubescent to puberulous at least at base; remaining stamens of the outer whorl and the four stamens of the inner whorl staminodial or absent. Ovary shortly stipitate, velutinous to villous, the indumentum often more or less extending on the style, stigma capitate. Pods ± circular to elliptic to oblong in outline, sutures ± equal to very unequal in width; valves ±

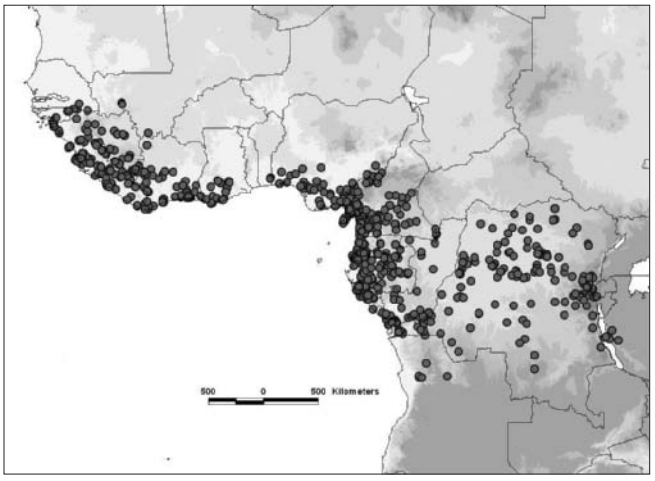

Figure 1 – Distribution of *Anthonotha* in Africa.

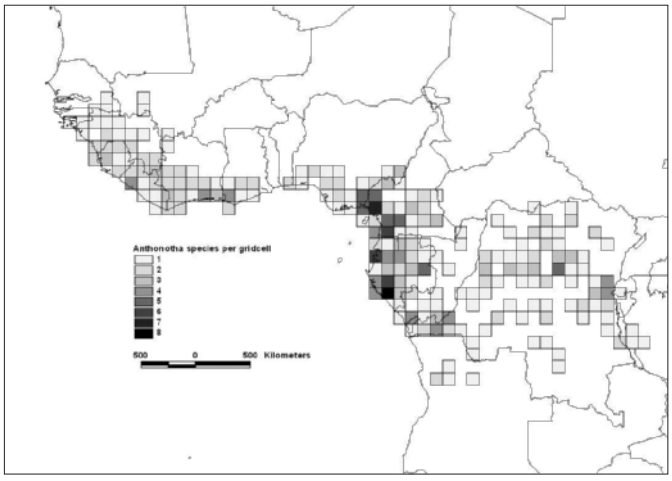

Figure 2 – Species density of *Anthonotha* in Africa.

Key to the species of *Anthonotha*

1. Flowers with 4–5 long stamens (fig. 19); montane species of fertile (volcanic) soils in eastern Nigeria, West Cameroon, Central Angola, eastern D.R.Congo, Burundi, and western Tanzania... 11 *A. noldeae*
1. Flowers with three long stamens only (figs 7, 15, 21 & 25) 2
2. Edges of bracteoles hairy (see fig. 3E)..... 3
2. Edges of bracteoles glabrous, at least with a narrow, glabrous zone between the indumentum of the outside and inside (see fig. 3A–D)..... 6
3 Bracteoles thick, spongy; hypanthium outside and claw of large petal dorsally appressed short-hairy, at least partly so (fig. 3H); from Cameroon to D.R.Congo..... 1 *A. acuminata*
3. Bracteoles not spongy; hypanthium glabrous; claw of large petal dorsally glabrous..... 4
4. Claw of large petal pubescent along its margins (figs 3F & G); from Liberia to Angola..... 13 *A. pynaertii*
4. Claw of large petal glabrous 5
5. Leaflets with 8–11 pairs of main lateral nerves; inflorescence up to 50 cm long, usually on the trunk and/or the thick branches; pods (7–)11–18(–22) × 3–4 cm, finely, obliquely, prominently veined; Republic of the Congo, D.R.Congo (see note) ..... 7 *A. gilletii*
5. Leaflets with (10–)12–13(–15) pairs of main lateral nerves; inflorescence 8–13 cm long, axillary or just below the leaves; pods 16–25 × 5–6 cm, smooth, not distinctly prominently veined; Gabon..... 10 *A. mouandzae*
6. Inflorescences borne on the trunk 7
6. Inflorescences borne on the leafy shoot, in the leaf axils and/or below the leaves, very rarely also on the trunk..... 9
7. Pedicel 17–20 mm long; Equatorial Guinea, West Gabon..... 14 *A. stipulacea*
7. Pedicel < 11 mm long 8
8. Branches, petiole, leaf rachis and petiolules villous; leaves (6–)7–9-jugate; petiole (1–)1.5–2.5(–3) cm long; claw of large petal 8–12 mm long; West Gabon..... 5 *A. ferruginea*
8. Branches, petiole, leaf rachis and petiolules densely, ± appressed short-hairy; leaves (4–)5–6(–8)-jugate; petiole 0.5–1.5 cm long; claw of large petal 5–8 mm long; eastern Nigeria, Cameroon, northern Gabon..... 8 *A. lamprophylla*
9. Leaflets appressed arachnoid-hairy beneath when young, soon glabrescent; West Gabon ..... 15 *A. trunciflora*
9. Leaflet indumentum beneath not arachnoid, persistent..... 10
10. Indumentum of leaflets beneath suberect, villous-velutinous to woolly..... 11
10. Indumentum of leaflets beneath appressed, usually short-hairy 12
11. Stipules ± persistent, c. 8 × 3–4 mm; leaves (3–)5–7-jugate; bracteoles 7 × 4–5 mm; pod finely tuberculate; Gabon..... 12 *A. pellegrinii*
11. Stipules very early caducous, c. 2 mm long; leaves (2–)4–5-jugate; bracteoles 4–5 × 3–4 mm; pod ± prominently, densely nerved; southern Cameroon …..... 16 *A. wijmacampensis*
12. Leaves (5–)7–8-jugate; leaflets pubescent above, soon glabrescent, remnants of the indumentum usually present on the impressed midrib; Cameroon, western D.R.Congo ..... 3 *A. cladantha*
12 Leaves (1–)3–5(–6)-jugate; leaflets glabrous above 13
13. Inflorescence glomerate-fasciculate in appearance, up to 3(–4) cm in diam., consisting of several short panicles (rachis < 1 cm long); bracteoles 4–6 × 3–4 mm; lamina of large petal 2–3 × 4–6 mm; ovary 2-ovulate; leaves (2–)3(–4)-jugate; from Cameroon to D.R.Congo ..... 2 *A. brieyi*
13. Inflorescence different in appearance, when several panicles together their rachises longer than 1 cm; other characters, all or in part, not associated..... 14
14. Leaves 4–5(–6)-jugate; lamina of large petal ± plane, ≥ 10 mm wide; lower half of filaments of the long stamens and of the style distinctly pubescent; anthers 2.5 mm long; South West Cameroon..... 17 *A. xanderi*
14. Leaves (1–)2–4(–5)-jugate; lamina of large petal up to 8 mm wide, usually slightly or strongly folded; filaments of long stamens only pubescent at base; style glabrous or nearly so; anthers 1–1.5 mm long 15
15. Bracteoles firm, 0.5–1 mm thick (fig. 3A & B); ovary (5–)6–7-ovulate; pods ± flat, (8–)15–26(–34) × 5–7 cm, (1–)4–7-seeded, both sutures c. 5 mm broad; from Guinea to D.R.Congo....9 *A. macrophylla*

15. Bracteoles thin, at most 0.3 mm thick (fig. 3C & D); ovary 2–4(–5)-ovulate; pods 5.5–16 × 4–7 cm, 1–3(–4)-seeded, ventral suture 1.2–3(–4) cm broad, much broader than the dorsal one 16
16. Leaflets elliptic to obovate, rarely ovate, rounded to cuneate to (sometimes) obtuse at base, with (8–)11–13(–16) pairs of main lateral nerves; petiolules 1–2 mm thick; indumentum on lower surface silverish to pale brown, usually firmly appressed, short-hairy, individual hairs usually very difficult to distinguish with a hand lens (10x) and leaflet surface appearing glabrous, especially so in older leaves; from Senegal to Angola ..... 4 *A. crassifolia*
16. Leaflets elliptic to oblong, rounded to obtuse or cordate at base, with (11–)13–18(–26) pairs of main lateral nerves; petiolules (2–)3–5 mm thick; indumentum on lower surface ± appressed, dense, brown, usually remaining so in older leaves, individual hairs well visible with hand lens (10x); from Guinea to D.R.Congo ..... 6 *A. fragrans*

---

smooth to obliquely, ± reticulately, prominently transversely veined, rarely pustulate, appressed short-hairy, rarely (sub) glabrous, dehiscent on the tree or tardily on the ground. Seeds irregular in outline, laterally compressed, usually with a brittle testa.

1. *Anthonotha acuminata* (De Wild.) J.Léonard (Léonard 1957: 218); Aubréville (1968: 212 & 1970: 212); Breteler (2008: 142). – *Macrolobium acuminatum* De Wild. (1925: 224); Léonard (1952: 426). – Type: D.R.Congo, Walikale–Lubutu, 16 Jan. 1915, *Bequaert* 6631 (holo-: BR).

Shrub to small tree, 4–20(–28) m tall and up to 15(–70) cm dbh. Branchlets closely appressed short-hairy, glabrescent with age, the same indumentum present on stipules, rachis and petiolules. Stipules very early caducous, completely united into a single, boat-shaped entity, 5–6 × c. 2 mm, the remaining basal part transversely triangular, c. 1 mm long. Leaves (2–)3–4-jugate; petiole and rachis subterete to shallowly grooved lengthwise, respectively 1.5–2(–4) and 2.5–7 cm long; leaflets obovate to elliptic, rarely ovate, 1.3–2.5(–3) times as long as wide, (4–)8–11 × 4–5 cm, rounded to obtuse at base, with a narrow, (0.5–)1–1.5(–25) cm long acumen apically; petiolules subterete, (3–)4–6(–7) mm long; glabrous and prominently reticulately veined above with an impressed midrib, beneath very closely appressed, lustrous, silverish-brown short-hairy, with prominent midrib and (7–)8–10(–11) main lateral nerves, tertiary venation prominent as well. Inflorescence an axillary, compound raceme (compound in

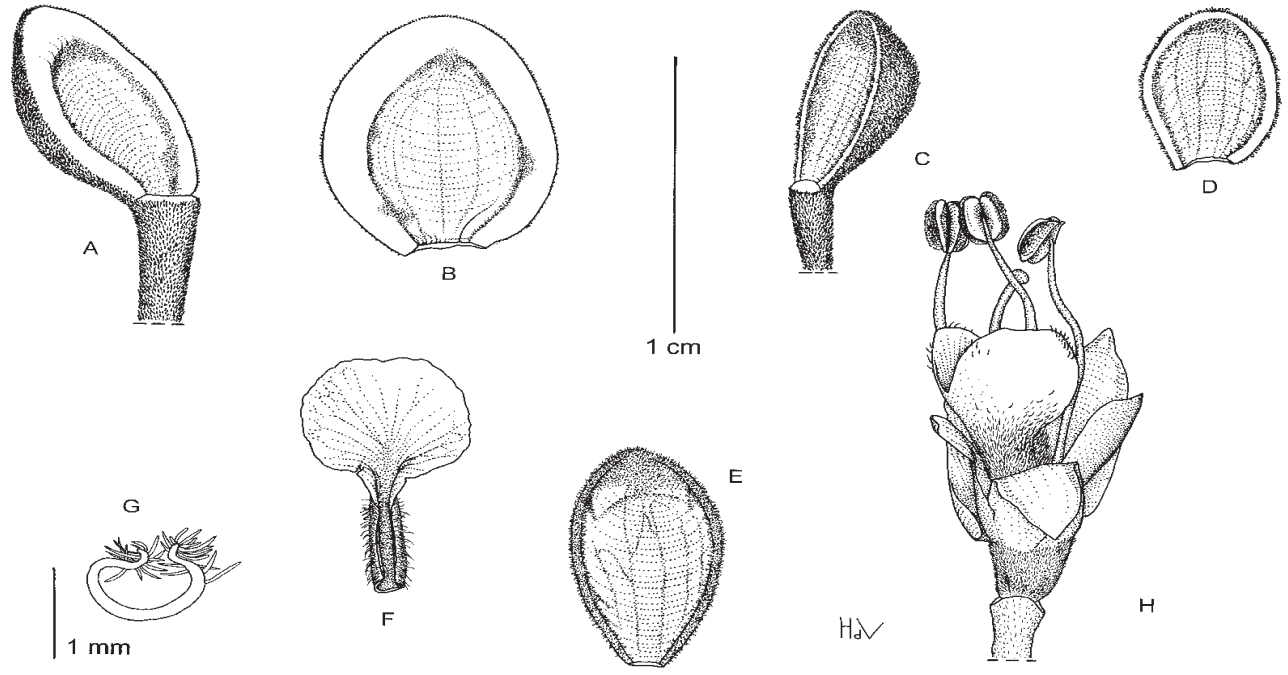

Figure 3 – Some morphological characters of *Anthonotha* flowers: A, B, *Anthonotha macrophylla*, bracteoles inside showing glabrous edges; C, D, *Anthonotha fragrans*, idem; E, *Anthonotha pynaertii*, bracteole inside showing hairy edge; F, G, *Anthonotha pynaertii*, showing indumentum on claw of large petal; H, *Anthonotha acuminata*, flower showing hairy hypanthium and hairy claw of large petal (A, B, *Wieringa* 3214; C, D, *van der Burgt* 743; E-G, *Bokdam* 3226; *H, J.J. de Wilde* 7623). Drawn by H. de Vries.

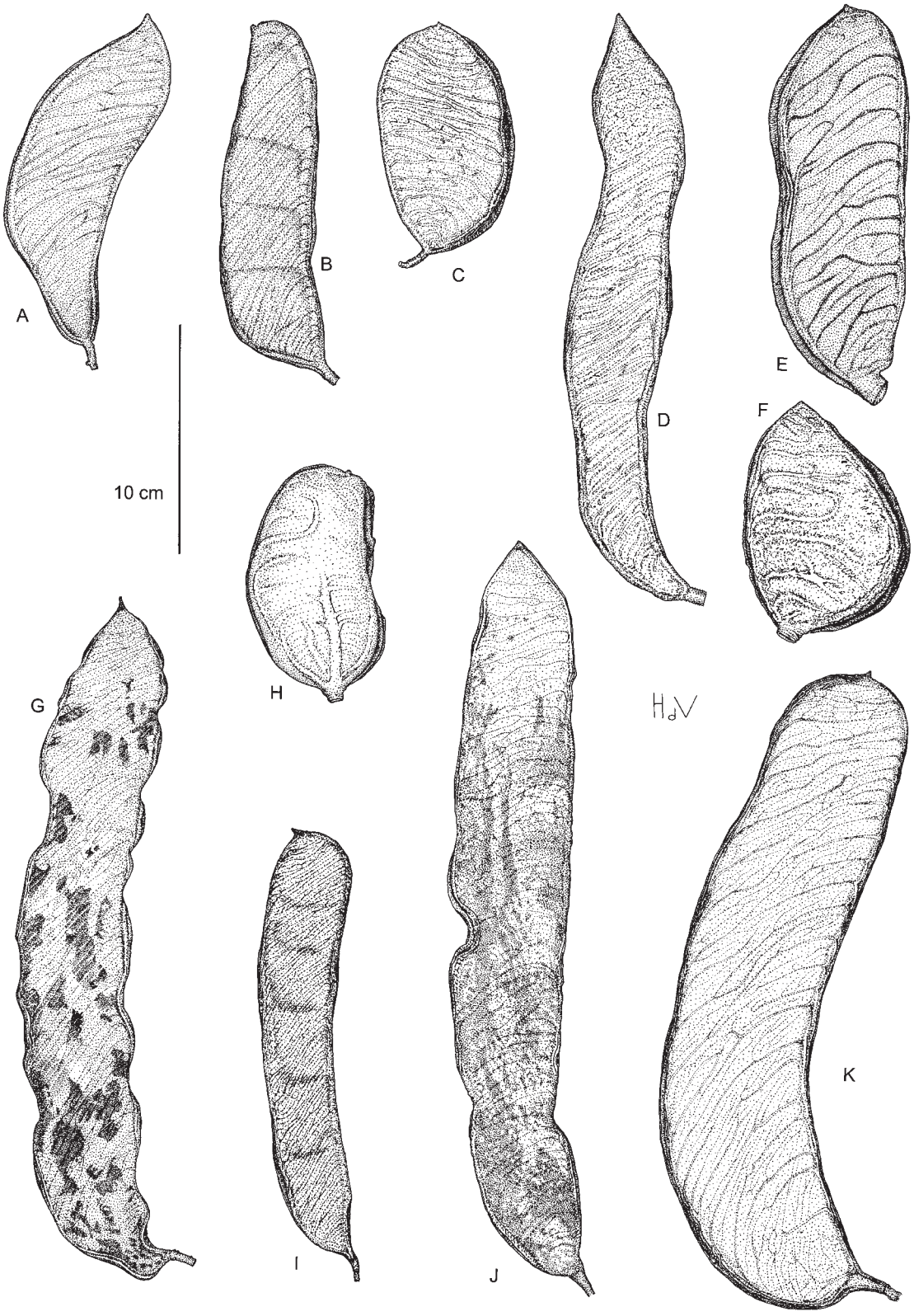

Figure 4 – *Anthonotha* pods: A, B, *Anthonotha acuminata*; C, *Anthonotha brieyi*; D, *Anthonotha cladantha*; E, F, *Anthonotha crassifolia*; G, *Anthonotha ferruginea*; H, *Anthonotha fragrans*; I, *Anthonotha gilletii*; J, *Anthonotha lamprophylla*; K, *Anthonotha macrophylla* (A, *Pierlot* 2696; B, *Evrard* 4566; C, *de Briey* 6; D, *Devred* 797; E, *Jongkind et al.* 4758; F, *van der Burgt et al.* 695; G, *Arends et al.* 373, H, *Breteler et al.* 9766; I, *Breyne* 557; J, *Bos* 3626; K, *Bos* 4017). Drawn by H. de Vries.

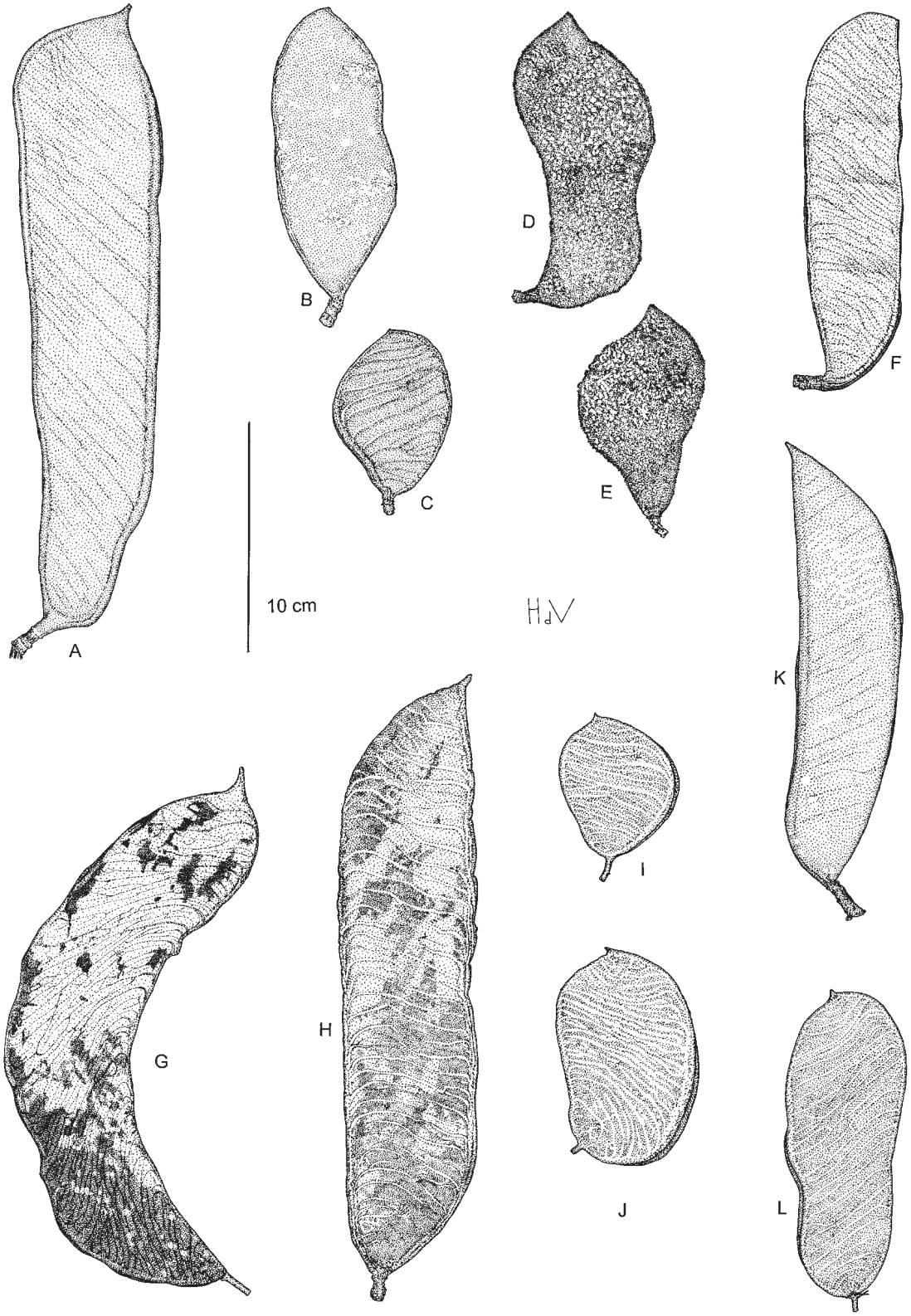

Figure 5 – *Anthonotha* pods: A, *Anthonotha mouandzae*; B, C, *Anthonotha noldeae*; D, E, *Anthonotha pellegrinii*; F, *Anthonotha pynaertii*; G, *Anthonotha stipulaceae*; H, *Anthonotha trunciflora*; I, J, *Anthonotha wijmacampensis*; K, L, *Anthonotha xanderi* (A, *Breteler et al.* 11537; B, C, *A. Léonard* 2651; D, E, *Floret &. Louis* 1395; F, *W.J. de Wilde c.s.* 2252; G, *Sosef et al.* 2380; H, *A.M. Louis et al.* 1380; I, J, *J.J. de Wilde* 8272; K, *Bos* 6269; L, *van der Burgt* 729). Drawn by H. de Vries.

lower part, simple apically), single or geminate, up to 9 cm long, occasionally larger and twice compound when supporting leaves are missing, closely, minutely, dark-brown, appressed short-hairy; bracts very early caducous, ± boat-shaped, 2–3 × 1.5–2.5 mm, glabrous inside. Pedicel (5–)6–8(–9) mm long, hairy as inflorescence. Bracteoles thick, spongy, (6–)7–9(–11) × (5–)6–7 mm, outside hairy as inflorescence, tomentellous, rarely glabrous inside, the 1–1.5(–2) mm wide edges tomentellous as well. Hypanthium 1.5–2.5 mm long, somewhat grooved lengthwise, appressed short-hairy outside, at least partly so. Sepals ovate-lanceolate to oblong, 5–7 × 1.5–2.5 mm, glabrous, apex rounded to acute, the adaxial sepals nearly free to almost completely united. Petals: large one (6–)7–9 mm long, 5–7(–8) mm wide; claw appressed short-hairy outside, at least partly, the indumentum sometimes extending on the lamina; four small petals present, oblong-elliptic, 1–2 mm long, glabrous. Stamens: 3 large, 9–12 mm long, filaments puberulous in lower 2–3 mm, anthers ellipsoid in outline, 2–2.5 mm long; staminodes 1–2(–3) mm long puberulous, anthers ≤ 0.5 mm long. Pistil c. as long as the large stamens; ovary 4–5 mm long, ± appressed velutinous, 6–7-ovuled. Pods narrowly oblong, slightly falcate or not, 14–23 × 4–4.5(–6) cm, broadly rounded or tapering to a ± narrowly rounded base, yellowish to pale-brown, densely subappressed short-hairy, slightly prominently, obliquely veined, sutures prominent, the ventral one slightly thicker than the dorsal one, up to c. 6-seeded. Seeds irregular in shape, subquadrangular to shortly elliptic to subtriangular in outline, 3–4 × 2.5–3.5 cm, c. 0.5 cm thick, smooth, glabrous. Figs 3H, 4A & B.

Habitat and distribution – Rain forest, from Cameroon to D.R.Congo. Alt. 0–1200 m. Fig. 6.

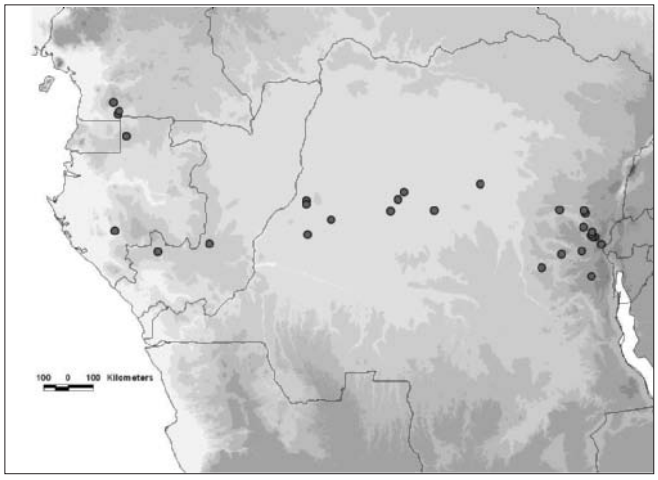

Figure 6 – Distribution of *Anthonotha acuminata*.

Additional specimens studied – Cameroon: N'Koemvone, 9 Oct. 1974, *J.J. de Wilde* 7623 (BR, K, MA, P, WAG); Mendjimi-Nselang, 31 Aug. 1978, *Koufani* 178 (P, YA); 20 km WSW Ambam, 9 Feb. 1970, *Letouzey* 10057 (BR, K, P, WAG, YA).

Gabon: Bandi, 6 Oct. 1925, *Le Testu* 5569 (BM, BR, MO, P, WAG); Oyem, 3 Jun. 1933, *Le Testu* 9165 (BM, BR, MO, P); 17 Mar. 1934, *Le Testu* 9517 (BM, BR, MO, P WAG).

Republic of the Congo: Mayoko, 22 May 1965, *Bouquet* 1386 (P); Lekana, 22 Oct. 1951, *Trochain* 8575 (P).

D.R.Congo: Bokandji, 22 Apr. 1959, *De Wanckel* 38 (BR); 16 Jun. 1959, *De Wanckel* 96 (BR); Yolofete, 19 Jul. 1958, *Evrard* 4398 (BR, K); piste Nganda Efeka-Amateka, *Evrard* 4566 (BR); between Yakoko and Yahisuri, Jun. 1949, *Germain* 4985 (BR); Kiri, Jul. 1925, *Goossens* 6187 (BR); Wema, Sep. 1953, *Gorbatoff* 14 (BR, FHO); Mishembe, 16 Sep. 1957, *Gutzwiller* 2031 (BR); Busibasiba, 23 Sep. 1957, *Gutzwiller* 2037 (BR); Mushenge, 22 Oct. 1957, *Gutzwiller* 2345 (BR, WAG); Biahira, 1 Nov. 1957, *Gutzwiller* 2409 (BR); Turole, 14 Dec. 1957, *Gutzwiller* 2418 (BR); Kembe, 4 Feb. 1958, *A. Léonard* 1475 (BR, WAG); Kabunga, 19 Feb. 1958, *A. Léonard* 1765 (BR, WAG); Bunyakiri, 8 Feb. 1959, *A. Léonard* 2924 (BR, WAG); Nzowo, 13 Apr. 1959, *A. Léonard* 3849 (BR); Kibole, 8 Jul. 1959, *A. Léonard* 4888 (BR,WAG); Shabunda, 30 Jul. 1959, *A. Léonard* 5169 (BR, WAG); Kampene, 7 Aug. 1959, *A. Léonard* 5613 (BR, WAG); Bikoro, 27 Mar. 1984, *Nsole* 565 (BR); Shabunda, 15 Aug. 1955, *Pierlot* 702 (BR); Kembe, 23 May 1958, *Pierlot* 2113 (BR) & 2116 (BR, WAG); Bwenba, 25 Oct. 1958, *Pierlot* 2611 (BR); Nyamiro, 19 Feb. 1959, *Pierlot* 2696 (BR); Lwalimba, 26 May 1959, *Pierlot* 2916 (BR, WAG); Makwe, 25 Nov. 1959, *Pierlot* 3269 (BR); Kabega, 17 Dec. 1959, *Pierlot* 3313 (BR); IRSAC Mabali, 25 Oct. 1958, *Thonet* 259 (BR, WAG); km 110 Kavumu–Walikale, 29 Jul. 1957, *Troupin* 3906 (BR, K); ibid., 14 Aug. 1957, 4027 (BR, K, WAG); ibid., 26 Aug. 1957, 4257 (BR, K, WAG); ibid., 4 Sep. 1959, 4316 (BR, K); ibid., 10 Sep. 1957, 4357 (BR, K); ibid., 18 Sep. 1957, 4402 (BR, K, WAG); ibid., 20 Sep. 1957, 4416 (BR); ibid., 23 Sep. 1957, 4431 (BR, K); ibid., 26 Sep. 1957, 4453 (BR, K, WAG); ibid., 26 Oct. 1957, 4588 (BR, K, WAG); ibid., 30 Oct. 1957, 4619 (BR, WAG); ibid., 4 Nov. 1957, 4630 (BR, WAG); ibid., 8 Nov. 1957, 4669 (BR, WAG); ibid., 12 Nov. 1957, 4684 (BR, WAG); ibid., 26 Nov. 1957, 4737 (BR, WAG); ibid., 12 Dec. 1957, 5418 (BR); 9 Apr. 1958, 7270 (BR); ibid., 7 Jul. 1958, 7749 (BR, WAG); ibid., 2 Dec. 1958, 9274 (BR, WAG); ibid., 16 Feb. 1959, 10041 (BR, WAG); ibid., 15 Apr. 1959, 10166 (BR); ibid., 20 May 1959, 10247 (BR); ibid., 21 Jun. 1959, 10325 (BR); ibid., 24 Aug. 1959, 10687 (BR); ibid., 30 Sep. 1959, 10846 (BR); ibid., 20 Apr. 1960, 12103 (BR); ibid., 17 Jun. 1960, 12175 (BR); ibid., 7 Jul. 1960, 12499 (BR); ibid., 3 Aug. 1960, 12603 (BR).

Note – *Thonet* 259 from D.R.Congo is reported as a liana of 5 m high.

2. *Anthonotha brieyi* (De Wild.) J.Léonard (Léonard 1957: 218); Breteler (2008: 142). – *Macrolobium brieyi* De Wild., (De Wildeman 1914: 371); Léonard (1952: 421, fig. 34 F-G). – Type: D.R.Congo, Mayumbe, Ganda Sundi, 1913, *de Briey* 6 (holo-: BR).

A. pynaertii auct. non (De Wild.) Exell & Hillc.: Aubréville (1968: 208, fig. 51 & 1970: 208, fig. 51) p.p. as regards material from Gabon and illustration.

M. pynaertii auct. non De Wild.: Pellegrin (1948: 50), p.p. as regards material from Gabon.

Shrubby low-branched to medium-sized tree up to 30 m tall and 60 cm dbh. Bark finely, shallowly fisured. Branches densely appressed, brown short-hairy, the same indumentum present on petiole, leaf rachis, and petiolules. Stipules very early caducous, not seen. Leaves 3-jugate, rarely 2- or 4-jugate; petiole ± terete, 1–2.5(–3) cm long; rachis (1–)5–7.5(–12.5) cm long; leaflets: petiolules (3–)4–6(–7) mm long; lamina obovate-elliptic, (1.5–)2–2.5(–3) times as long as wide, (4–)8–12(–18.5) × (2–)3–5.5(–7) cm, rounded at base, (0.5–)1–1.5(–2.5) cm long acuminate at apex, glabrous above with ± plane to impressed midrib, beneath silverish to brown, appressed short-hairy with prominent midrib and 9–13(–17) pairs of main lateral nerves. Inflorescence axillary or below the leaves, glomerate-fasciculate, up to 4 cm in diam., ± appressed brown short-hairy; bracts early caducous, elliptic, c. 2 mm long, glabrous inside. Pedicel 2.5–5(–7) mm long. Bracteoles elliptic, concave, 4–6 × 3–4 mm, puberulous-tomentellous inside or only so along inner margin, edge with a small glabrous zone. Hypanthium ≤ 1 mm long, glabrous. Sepals glabrous, ovate-triangular 2–3 × 1.5–2 mm, the two adaxial sepals completely united to nearly completely free. Large petal: claw 3–5(–7) mm long; lamina bilobed, 2–3 × 4–6 mm; small petals 0–2 present, ≤ 1 mm long. Stamens 3 large, 9–10 mm long; filaments sparsely pubescent in lower half; anthers ≤ 1.5 mm long; staminodes up to 5(–6) present, up to 1.5 mm long, pubescent at base, with a minute closed anther or not. Pistil 8–10 mm long; ovary velutinous c. 2 mm long, 2-ovulate; style pubescent in basal part. Fruit obliquely elliptic to oblong to orbicular in outline, 4–10.5 × 3–6.5 cm, up to 1 cm thick, rounded at base, mostly apiculate to rarely, shortly (≤ 1 cm) beaked at apex; sutures prominent, the ventral one slightly thicker than the dorsal one; valves very shortly brown-velutinous, ± transversely to obliquely to somewhat reticulately, prominently nerved, 1–2-seeded. Mature seeds not seen. Seedling: hypocotyle ± 0; epicotyle ± 0; first stem till the first (alternate), of the 2-jugate leaves, 15–16 cm long, sometimes lowly branched at 1.5–2 cm from its base, subappressed, brown short-hairy; stipules linear, c. 6 × 0.5 mm, united for ⅔ of their length; leaflets obovate, long-acuminate. Figs 4C & 7.

Habitat and distribution – Old secondary to primary rain forest in western Central Africa. Alt. 0–600 m. Fig. 8.

Additional specimens studied – Cameroon: Biboulemen, 14 Jul. 1994, *Breteler* 12781 (WAG).

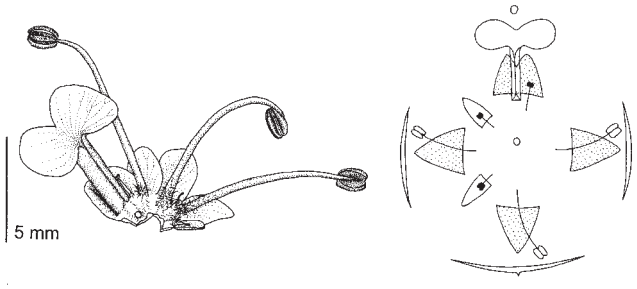

Figure 7 – Opened flower and diagram of *Anthonotha brieyi* (*Breteler & Jongkind* 10833). Drawn by H. de Vries.

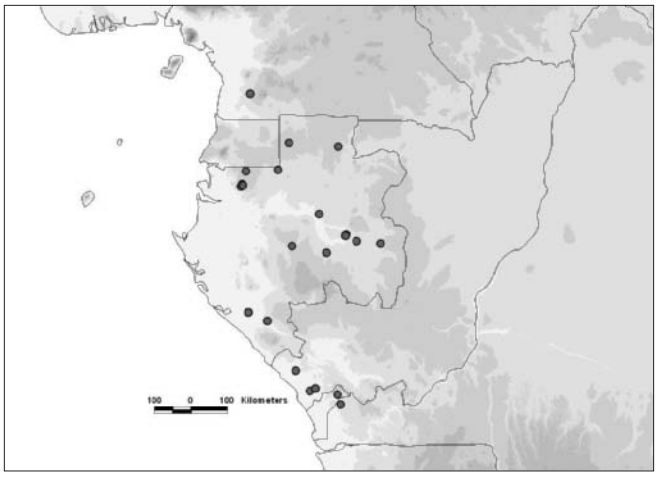

Figure 8 – Distribution of *Anthonotha brieyi*.

Gabon: 30 km E of Lastoursville, 30 Nov. 1991, *Breteler & Jongkind* 10833 (G, WAG); 55 km E of Lastoursville, 22 Nov. 1993, *Breteler c.s.* 12259 (WAG); Lopé-Okanda Res., 6 Dec. 1995, *Doucet* 266 (BR); Tchibanga, 18 May 1914, *Le Testu* 1737 (BM, BR, K, MO, P, WAG); Koulamotou, 18 Apr. 1931, *Le Testu* 8759 (BM, BR, K, LISC, P); Oyem, 2 May 1934, *Le Testu* 9564 (BM, BR, FHO, MO, P, WAG); Oveng, 5 May 1986, *A.M. Louis* 2150 (WAG); Ivindo Nat. Park, Massouna 2000, 5 May 2004, *Moungazi* 1629 (BR, WAG); Mts de Cristal, 24–27 Nov. 2000, *Nguema Miyono* 1448 (WAG), 1467 (WAG) & 1475 (WAG); 65 km SSW Doussala, 17 May 1985, *Reitsma et al.* 1015 (WAG); 50 km SW Doussala, 14 Jun. 1985, *Reitsma c.s.* 1157 (WAG); ibid., 21–22 Aug. 1985, *Reitsma c.s.* 1349 (MA, WAG) & 1353 (WAG); Bambidie, 30 km ENE Lastoursville, 22 Jan. 2008, *Wieringa* et al. 6082 (WAG) & 6083 (WAG); NW de Mbe Akelayong, 27 Jan. 2001, *Wilks* 3209 (WAG); Mts de Cristal, 6 May 2001, *Wilks* 3498 (BR, WAG).

Republic of the Congo: Kouilou, Nov. 1990, *Dowsett-Lemaire* 1566 (BR); Boku Situ, 4 Aug. 1951, *Koechlin* 1513 (P); Fourastié, 21 Jun. 1947, *Normand* 35 (P).

D.R.Congo: Kai-Tuala, Jan. 1949, *Flamigni* 10155 (BR); sine loco, *Hauzer* 47 (BR).

Angola: Cabinda, Belize, 1 Mar. 1917, *Gossweiler* 7012 (BM, BR, COI, LISC, LISU).

3. *Anthonotha cladantha* (Harms) J.Léonard (Léonard 1955: 201 & 1957: 219, photo 20); Breteler (2008: 142). – *Macrolobium cladanthum* Harms (Harms 1922: 149). – Types: Cameroon, c. 10 km NW of Yaoundé, Jan. 1914, *Mildbraed* 8008 (holo-: B†); Cameroon, Deng Deng – Kongola, Apr. 1914, *Mildbraed* 8933 (neo-: K, **designated here**; isoneo-: BM).

Tree to at least 35(–45?) m tall and up to 120 cm dbh. Trunk with 4–5 buttresses of up to 2 m high and 1 m wide at base, 20–30 cm thick. Bark peeling off in flakes of different shapes. Heavy branches sinuous. Branches densely rusty villous-velutinous, glabrescent with age, the same indumentum present on petiole, leaf rachis, petiolules, and midrib of leaflets beneath. Stipules very early caducous, not seen. Leaves (5–)7–8-jugate; petiole terete, 1–2 cm long; rachis 7–16 cm

long; leaflets: petiolule 2–3(–4) mm long; lamina oblong-elliptic to ovate-elliptic or obovate-ellipitic, (1.5–)2.5–4(–4.5) times as long as wide, (4–)8–13 × (1.5–)2–4 cm, ± rounded at base, 5–10 mm long acuminate at apex, pubescent above, soon glabrescent, remnants often present on the impressed midrib, silverish to pale-brown, appressed short-hairy beneath with prominent midrib and (10–)11–14(–17) pairs of prominent main lateral nerves. Inflorescence a loose panicle on the leafy branch, axillary or just below the leaves, up to 30 cm long, brown-velutinous, the racemes up to c. 3 cm long; bracts early cadudous, broadly ovate-deltoid, 1–2 × 1–2 mm, glabrous inside. Pedicel 3–5 cm long. Bracteoles ± elliptic, 6–9 × 5–7 mm, sparsely tomentellous inside, edges with a glabrous zone. Hypanthium c. 1.5 mm long, glabrous. Sepals 5–6 × 2 mm, ± acute and ciliate at apex, the adaxial sepal larger, ± entire or emarginate at apex. Large petal: claw 5–6 mm long, lamina 5–7 × 10 mm, bilobed at apex; small petals minute. Large stamens 3, 9–12 mm long with 2 mm long anthers and filaments pubescent at base. Staminodes most probably all present, some with a small anther of c. 0.5 mm long. Pistil shortly stipitate; ovary velutinous; style velutinous in lower part, glabrous in upper part. Pod oblong in outline, slightly falcate or not, 10–25 × 3–4.5 cm, cuneate to rounded at base, obliquely acute at apex, densely brown-velutinous, obliquely to ± reticulately, slightly prominently veined, the sutures slightly prominent, up to c. 4-seeded. Seed irregular in shape, subtriangular in outline, laterally compressed, 4 × 3.5 × 1–1.5 cm, seed coat wrinkled, dull. Fig. 4D.

Habitat and distribution – Rain forest in Cameroon and in western D.R.Congo. Alt. 0–1200 m. Fig. 9.

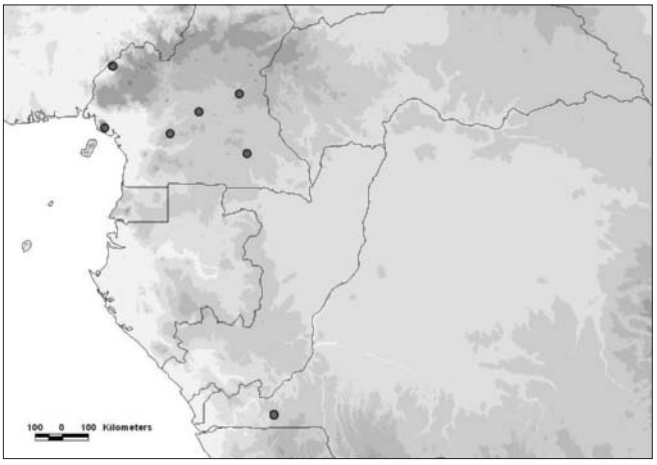

Figure 9 – Distribution of *Anthonotha cladantha*.

Additional specimens studied – **Cameroon**: Between Betaradi and Niadaba, 26 Jun. 1959, *Letouzey* 2249 (P); 50 km ENE of Lomié, 14 Aug. 1963, *Letouzey* 5621 (BR, K, P, WAG); piste Akwaya–Mamfé, 15 km S of Akwaya, 26 Jul. 1975, *Letouzey* 14113 (K, P); British Cameroons, sine loco, *Maitland* 1076 (K); Buea, Apr. 1930, *Maitland* 1147 (K) (2 sheets; the second sheet gives Victoria as the collecting locality).

D.R.Congo: Forêt de M'buami (Kimpimpa), 30 Jan. 1956, *J. Dubois* 87 (BR, K, MO); Mvuazi, forêt de Mikaye, 29 Sep. 1951, *Devred* 797 (BR); ibid., 27 Feb. 1952, *Devred* 996 (BR).

4. ***Anthonotha crassifolia*** (Baill.) J.Léonard (Léonard 1955: 202 & 1957: 219); Keay (1958: 473); Aubréville (1959: 282); de Koning (1983: 189); Keay (1989: 223); Aké Assi (2001: 286); Akoègninou et al. (2006: 610); Hawthorne & Jongkind (2006: 838); Breteler (2008: 142). – *Vouapa crassifolia* Baill. (Baillon 1865: 179). – Type: Guinea, 1837, *Heudelot* 753 bis (holo-: P).

Vouapa macrophylla (P.Beauv.) Baill. var. *heudelotiana* Baill. (Baillon 1865: 179); Keay (1958: 473), in synonymy of *Anthonotha macrophylla* (see note). – *Macrolobium heudelotianum* (Baill.) Aubrév. (Aubréville 1936: 230, fig. 85 C). – Type: Guinea, rio Nunez, Jan. (1837) 1838, *Heudelot* 753 (holo-: P; iso-: BR, K, OXF).

Macrolobium crassifolium (Baill.) J.Léonard not of A. Chevalier (see note): Léonard (1954: 61).

Macrolobium palisotii Benth. var. *heudelotianum* (Baill.) A. Chev. (Chevalier 1920: 229, quoad nomen, the specimen cited is *Anthonotha macrophylla* P.Beauv.); Pellegrin (1924: 102, quoad nomen, the specimen cited is *Anthonotha macrophylla* P.Beauv.).

Macrolobium macrophyllum (P.Beauv.) J.F.Macbr. var. *heudelotianum* (Baill.) Baker f. (Baker 1930: 672, quoad nomen).

Macrolobium bipindense Harms, nomen in sched., Herb. *Zenker* 3020 & 3155.

Anthonotha sassandraensis Aubrév. & Pellegr. (Aubréville & Pellegrin 1958: 497); Aubréville (1959: 284, fig. 90A); Aké Assi (2001: 287); Hawthorne & Jongkind (2006: 838). – Type: Côte d'Ivoire, Tabou, Apr. 1933, *Aubréville* 1668 (holo-: P).

Deciduous tree up to 40 m tall and 150 cm dbh, rarely shrub-like. Buttresses poorly developed for size of tree; bole cylindrical. Branches ± appressed, brown short-hairy, glabrescent, the same for stipules, petiole, leaf rachis and petiolules. Stipules united, very early caducous, ovate-elliptic, 1–2 mm long, glabrous inside. Leaves (1–)2–4(–5)-jugate; petiole subterete, 0.5–3(–7) cm long; rachis subterete, (0–)4–13(–16.5) cm long. Leaflets: petiolules (2–)3–6(–8) mm long, 1–2 mm thick; lamina elliptic to obovate, rarely ovate, (1.5–)2–3(–3.5) times as long as wide, (4–)10–15(–31) × (1.5–)4–7(–12) cm, rounded to cuneate to (sometimes) obtuse at base, apex acute or obtuse, often appearing rounded by destruction of the tip, or up to 10(–15) mm long acuminate, glabrous and often glossy above, midrib usually impressed, the lateral nervation reticulate and prominent, beneath silverish to pale-brown, usually very appressed short-hairy, individual hairs often only distinguishable with very strong lens (≥ 40x) and leaf surface appearing glabrous; midrib and the (8–)11–13(–16) pairs of main lateral nerves prominent beneath. Inflorescence an up to 3(–15) cm long panicle on the branches below the leaves, sometimes in the axil of old leaves, usually up to 6 together; bracts early caducous, ovate-elliptic, to deltoid, 1–2 mm long, glabrous inside. Pedicel (3–)4–8 mm long. Bracteoles elliptic, 5–6(–7) × 3–5 mm, ≤ 0.3 mm thick, tomentellous inside along the margin, edges with a small, usually distinct, glabrous zone.

Hypanthium 1–1.5 mm long, glabrous. Sepals oblong-elliptic, (3–)4–5(–6) × 1–2 mm, apex acute, the two adaxial ones completely united or up to 1 mm free at apex, glabrous, rarely ciliate near base. Large petal: claw 3–5(–6) mm long, bearded at base ± at the inside, or ± appressed puberulous all along, or only with a very few, small, almost invisible hairs near base; lamina 3–5 × 5–8 mm, deeply bilobed; small petals usually all present, 1–1.5 mm long. Long stamens 3, 12–20 mm long; filaments pubescent in basal part; anthers c. 1 mm long; staminodes usually all present, 1–1.5 mm long, with or without a minute, closed or dehiscent anther. Pistil up to c. 20 mm long; ovary 3–4(–5)-ovulate; style ± glabrous. Pods broadly elliptic to oblong to ± oblanceolate in outline, 9–16 × 4.5–7 cm, 1.5–2.5(–4) cm thick, on a stout, 0.5 cm long and ± 1 cm thick stipe, 1–3(–4)-seeded very shortly velutinous to ± appressed puberulous to glabrous or nearly so (indumentum sometimes easily rubbed off); valves usually very prominently, transversely to ± reticulately veined; ventral suture distinctly broader than the dorsal one, up to 4 cm wide, ridged, ± flat, or with protruding edges rendering it deeply sulcate. Seeds irregularly shaped, triangular-ovate to subquadrate in outline, 3.5–4.5(–6) cm long and broad, 1–1.2 cm thick; seed coat thick, very brittle when dry; cotyledons very hard. Figs 4E & F.

Habitat and distribution – Evergreen to semi-deciduous forest, gallery forest, savannah woodland from Senegal to Angola. Alt. 0–800 m. Fig. 10.

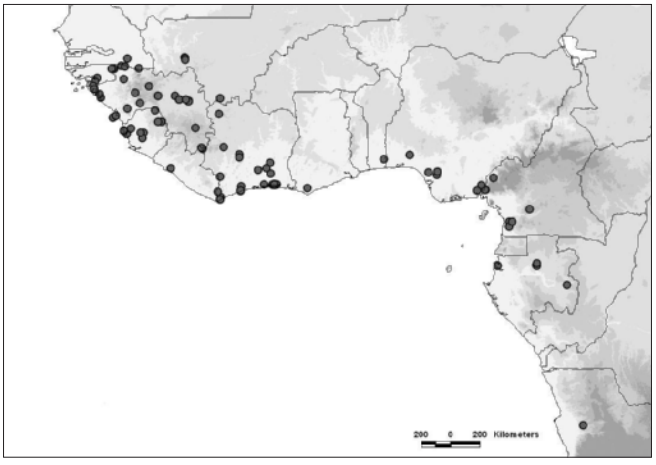

Figure 10 – Distribution of *Anthonotha crassifolia*.

Additional specimens studied – **Senegal**: Niokolo-Kola, 6 Feb. 1960, *Adam* 17520 (MO); Ségou, 14 Nov. 1964, *Adam* 19954 (P).

Guinea Bissau: Cacine, 3 May 1961, *Alves Pereira* 1843 (LISC); 30 Jan. 1954, *Brigada de Estudios Florestais da Guiné* 268 (LISC); 30 Jan. 1954, *d'Orey* 263 (K) & 266 (K); Buba, 2 Nov. 1940, *Espirito Santo* 1280 (K, LISC, MO, WAG); between Catio and Quebu, 15 Jun. 1945, *Espirito Santo* 2081 (WAG); Chitole, Candama, 8 Feb. 1951, *Espirito Santo* 2884 (K, LISC, P, WAG); Gabu, 6 Dec. 1955, *Espirito Santo* 3763 (BR, LISC, MO, P, WAG) & 3770 (BR, LISC, MO, P, WAG).

Guinea: Sambailo, 11 Dec. 1948, *Adam* 2470 (MO); Gaoual, 18 Dec. 1948, *Adam* 2691 (MO); Dabola, 19 Apr. 1949, *Adam* 4498 (MO); Dalaba, 21 Apr. 1949, *Adam* 4559 (MO); Tougué, 29 Jun. 1958, *Adam* 14736 (MO); Youkoukoun, Jan. 1952, *Berhaut* s.n. (P); between Sanguiana and Moussai, 23 Feb. 1899, *Chevalier* 465 (P); Conakry, 27 Jun. 1902, *Chevalier* 4428 (P); Ile de Los, 25 feb. 1905, *Chevalier* 13014 (P) & 13048 (P); Beyla, 9 Mar. 1907, *Chevalier* 20868 (K, P); Friguiabé, 16 Apr. 1937, *Chillou* 230 (P); Kouroussa, Nov. 1935, *Jaques Felix* 537 (P); NE of Kankan, 2 Dec. 1966, *Lisowski* 66235 (BR, WAG); N of Kankan, 2 Jan. 1967, *Lisowski* 91679 (BR, WAG); near Karifamorya, 28 Jan. 1967, *Lisowski* 91682 (BR, WAG); Conakry, Jan. 1897, *Maclaud* 231 (P); Kouroussa, Nov. 1900, *Pobéguin* 588 (K, P); sine loco, *Pobéguin* 840 (K, P); Conakry, Nov. 1906, *Pobéguin* 1487 (P); Dongbol, Oct. 1909, *Pobéguin* 2207 (P); Kankan, Jan. 1950, *Schnell* 4242 (P).

Mali: Diassa, 18 Nov. 1974, *Andru* 5900 (P); Seguirie, May–Jun. 1934, *R. Dubois* 185 (K, P); Kalena, 21 Sep. 1934, *Dubois* 185 bis (P); Kita, *Dubois* 185 (K); between Koubikora and Sanafinan, Oct. 1944, *Jaeger* 40 (P); Massif de Kita, 25 Oct. 1943, *Jaeger* 44 (WAG).

Sierra Leone: Makene, 18 Mar. 1940, *Deighton* 3898 (K, P); Njala, 11 Apr. 1947, *Deighton* 4618 (K); 24 Nov. 1947, *Deighton* 4682 (K, P); Musaia, 5 Apr. 1951, *Deighton* 5414 (BR, K, MO, P); Loma Mt, 29 Nov. 1964, *Jaeger* 7742 (P); Rokupr, Magbema, 9 Mar. 1951, *Jordan* 405 (K); ibid., 6 Dec. 1951, *Jordan* 714 (BR, K, LISC, MO, P); ibid., 10 Dec. 1951, *Jordan* 717 (K); Port Loko, 1 Nov. 1949, *King* 224 (K); Kenduma, 19 Jan. 1951, *King* 318 (K); Musaia, 18 Nov. 1952, *Miszewski* 20 (K); Falaba Rest House, 26 Nov. 1965, *Morton* 2847 (K, WAG).

Liberia: Nimba Mt, Yekepa, 15 Jan. 1965, *Adam* 20583 (K, MO, P); sine loco, 1926, *Linder* 62 (K).

Côte d'Ivoire: Abidjan, Jardin Botanique, 8 Oct. 1979, *Aké Assi* s.n. (BR) ; Besselé, 22 Nov. 1977, *Andru* 6442 (P); Abidjan, Jardin Botanique, 14 Dec. 1998, *Assi Yapo* s.n. (WAG); Banco, 24 Nov. 1931, *Aubréville* 506 (P); 512 (P); Bingerville, 26 Nov. 1931, *Aubréville* 516 (P); Banco, 29 Dec. 1931, *Aubréville* 618 (P); Ht. Côte d'Ivoire, Dec. 1931, *Aubréville* 626 (P); Bouaké–Tiébrissou Rd., 2 Feb. 1932, *Aubréville* 830 (P); Dakpadou, 15 Apr. 1932, *Aubréville* 854 (P); Grabo, 28 May 1932, *Aubréville* 1319 (P); Nuon, Dec. 1934, *Aubréville* 2090 (P); Semien, Jan. 1935, *Aubréville* 2111 (P); Tabou, 18 Dec. 1957, *Aubréville* 4117 (P); sine loco, Mar. 1957, *Aubréville* 4161 (P, WAG); Bouroukrou, Dec. 1906–Jan. 1907, *Chevalier* 16747(P); Sassandra, 1–5 May 1907, *Chevalier* 16327 (P); Bingerville, 14–18 Dec. 1906, *Chevalier* 17303 (P); ibid., 17–20 Feb. 1907, *Chevalier* 17360 (P); Morénou, 25–30 Nov. 1909, *Chevalier* 22449 (BR, K, P, WAG); Abidjan, Oct. 1930, *Chevalier* 34127 (P); Treichville near Abidjan, 8 Jun. 1970, *de Koning* 792 (WAG); Banco, 31 Oct. 1961, *J.J. de Wilde* 3203 (BR, K, P, WAG); Adiopodoumé, 16 Dec. 1988, *D. & L. Gautier-Beguin* 1173 (G, MO); ibid., 7 Nov. 1967, *Geerling & Bokdam* 1480 (BR, WAG); Daloa, 7 Feb. 1998, *Jongkind et al.* 4306 (WAG); western Marahou Nat. Park, 18 May 1999, *Jongkind & Diomaudé* 4599 (WAG); Sassandra, 25 Mar. 2000, *Jongkind et al.* 4758 (WAG).

Ghana: Neung F. R., 25 Oct. 1961, *Enti* 1120 (K); sine loco, Dec. 1940, *Vigne* 4777 (FHO).

Benin: Ouémé, 8 Aug. 2001, *Adjakidjé* 4702 (WAG).

Nigeria: Benin-Iguelabra, 24 Oct. 1946, *Chizea* FHI 19036 (FHO); Gilli-Gilli F. R., 12 Feb. 1961, *Daramola & Emwiogbon* FHI 44281 (K); Calabar, 12 Jan. 1985, *John* s.n. (K); Sapoba, Oct. (fl.) Mar. (fr.), *Kennedy* 2547 (BM, G, MO), 2600 (BR, FHO, K, MO) & 2602 (BR, FHO, K, MO); Ago-Owu F. R., *Lowe* 2447 (K); Oban Distr., 1911–1912, *Mr. & Mrs. Talbot* s.n. (BR, K); 10 km Yyo to Iket Ekpene, 7 Apr. 1971, *van Meer* 1218 (WAG).

Cameroon: 46 km Kribi–Lolodorf, 12 Mar. 1970, *Bos* 6531 (BR, K, P, WAG); near Yaoundé, 1946, *Letouzey* 1085 (P); Elom, 45 km ESE of Kribi, 25 Apr. 1968, *Letouzey* 9435 (P); Mamfe, Jan. 1920, *Maitland* 1150 (K); Korup N.P., 11–21 Apr. 1985, *D.W. Thomas* 4698 (BR, K, MO, P, WAG); ibid., 16 Mar. 2004, *van der Burgt* 670 (WAG); ibid., 26 Aug. 2004, *van der Burgt* 695 (WAG); Bipindi, 1904, *Zenker* 3020 (BM, BR, G, K, WAG) & 3155 (BM, BR, G, K, MO, P, WAG); ibid., 1908, *Zenker* 3768 (BM, BR, G, K, MO, P).

Gabon: Ikoy, Jan. 1957, *Gauchotte* 1790 SRFG (P); N of Koumameyong, 30 Jan. 1993, *McPherson* 16099 (MO, WAG); 24 km Okondja–Akieni Rd., 3 Feb. 2008, *Wieringa et al.* 6391 (WAG); 25 km NNE of Koumameyong, 21 Feb. 1987, *Wilks* 1363 (MO); 40 km NNE of Koumameyong, 25 Mar. 1987, *Wilks* 1463 (WAG).

Angola: Cazengo, Monte Belo, 22 Jan. 1903, *Gossweiler* 751 (BM).

Notes – The two largely sympatric species *Anthonotha crassifolia* and *A. macrophylla* are difficult to distinguish from one another. They can easily be separated when in fruit, much less easily when in flower and usually almost impossible when with leaves only. This may be illustrated by the identity of *Vouapa macrophylla* (P.Beauv.) Baill. var. *heudelotiana* Baill. (1865). Since 1865 all authors have followed Baillon in treating the variety as part of Beauvois' species, whether classified in *Vouapa, Macrolobium* or in *Anthonotha* proper. Aubréville (1959) was the first author to recognize the variety as belonging to *A. crassifolia,* after having it raised to specific rank in 1936. His identification is confirmed.

Aubréville & Pellegrin (1958) based their *Anthonotha sassandraensis* on characters of the fruit only. In Aubréville (1959) it is separated from *A. crassifolia* by some differences in the pod, whether dehiscent or tardily dehiscent and by characteristics of the ventral (Aubréville: dorsal) suture. These differences are bridged by intermediates and fall within the broad variation of *A. crassifolia* pods. Therefore *A. sassandraensis* cannot be maintained as a distinct species.

Macrolobium crassifolium A.Chev. (Chevalier 1920) was published without a description. The specimen cited, *Chevalier* 12373, has been investigated. It belongs to *Dalbergia* (Papilionoideae), not to *Anthonotha.*

5. *Anthonotha ferruginea* (Harms) J.Léonard (Léonard 1955: 202 & 1957: 220); Aubréville (1968: 202, fig. 48 & 1970: 190, fig. 41); Breteler (2008: 142). – *Macrolobium ferrugineum* Harms (Harms 1899: 271); Pellegrin (1948: 47). – Type: Gabon, Sibange Farm, 3 May 1880, *Soyaux* 74 (holo-: B†; lecto-: P, **designated here**, isolecto-: K).

Shrub to small tree to 16 m tall and 15 cm dbh. Branches brown-villous, the same indumentum present on petioles, leaf rachis, petiolules and midrib of leaflets beneath. Stipules caducous, nearly completely united, narrowly ovate-lanceolate, 1–3 × 0.5 cm, appressed long-hairy outside, glabrous inside. Leaves (6–)7–9-jugate; petiole (1–)1.5–2.5(–3) cm long, terete; rachis ± terete, 16–40 cm long; leaflets: petiolule 2–5 mm long; lamina narrowly oblong-elliptic to lanceolate, (2–)4–4.5 times as long as wide, (4–)10–21 × (2–)3–4(–5) cm, rounded to subcordate at base, 0.5 to 2.5 cm long acuminate at apex; glabrous with impressed midrib and finely prominent lateral venation above, silverish, appressed short-hairy with a loose overlay of brown hairs beneath; main lateral nerves 10–17 pairs, prominent. Inflorescence a cauliflorous, drooping, loose panicle, up to 48 cm long, ± appressed, short brown-hairy; racemes up to 10 cm long, (1–)2–13 cm apart; bracts caducous, triangular, up to 4 × 1.5 mm, glabrous inside. Pedicel 6–9 mm long. Bracteoles broadly obovate, 7–8 × 5–7 mm, brown-hairy outside, sparsely tomentellous on apical part inside, with distinct palmate venation, edges glabrous, at least with a glabrous zone. Hypanthium c. 1 mm long, glabrous. Sepals obovate-elliptic, 5–6 × 3–4 mm, the adaxial sepal c. 5 × 4 mm, slightly emarginate to bilobed apically. Large petal: claw 8–12 mm long, lamina 5–8 mm long, 10 mm wide, 3–4 mm bilobed at apex; small petals 4, ± ovate, c. 0.5 mm long. Large stamens 3, 20–25 mm long, filaments pubescent in lower half, anthers 3 mm long; staminodes 6, 0.5–1 mm long, with a minute, closed anther. Pistil not completely developed; ovary c. 2.5 mm long, velutinous, style glabrous. Pod immature (but probably full-grown in size), oblong, 15–30 × 5 cm, undulate, pale-brown velutinous with dark-brown patches and spots, obscurely, slightly prominently, obliquely nerved, c. 4–5-seeded. Mature seeds unknown. Fig. 4G.

Habitat and distribution – Rain forest in West Gabon, alt. up to 350 m. Fig. 11.

Additional specimens studied – **Gabon**: Waka, 21 Nov. 1984, *Arends et al.* 373 (WAG); Loango N. P., 12 May 2005, *Harris et al.* 8569 (WAG); ibid., 14 May 2005, *Harris et al.* 8620 (WAG); Fernan Vaz, 19 Jun. 1895, *Klaine* s.n. (P);

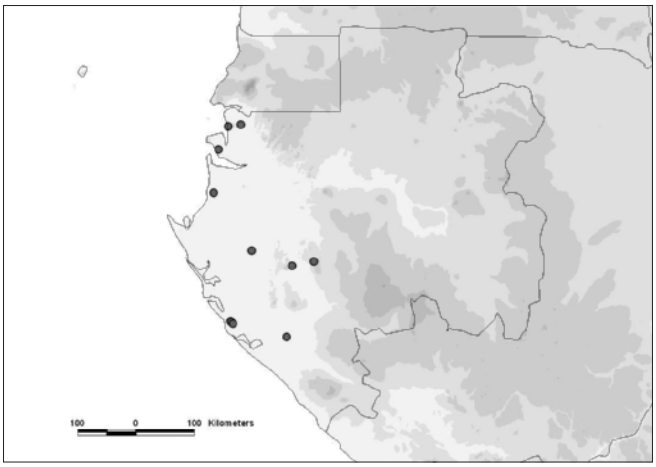

Figure 11 – Distribution of *Anthonotha ferruginea*.

Loanga N. P., Ndoyani, 7 May 2004, *Mouandza & Babicka* 127 (BR, LBV, WAG); Fougamou–Yombi Rd., 31 Oct. 1994, *Wieringa et al.* 3009 (WAG).

Notes – Harms (1899) described this species as cauliflorous, and the type material at Kew and Paris as well as the specimens collected since confirm this. However, fig. 256 of the family treatment by the same author in 'Die Pflanzenwelt Afrikas' (Harms 1915), shows a leafless part of a branch bearing several inflorescences (ramiflorous), but the leaf and the flower depicted separately could very well represent *A. ferruginea*. Unfortunately it is not mentioned on which specimen(s) these illustrations are based.

Aubréville (1968, 1970) reported that this species may reach one meter diameter or more and that it is also present in Cameroon (Aubréville 1970). This information is based on the misidentified *Letouzey* 5621, cited in the Flore du Cameroun, which specimen represents *A. cladantha* (see also Wilks & Issembé 2000: 156).

6. *Anthonotha fragrans* (Baker f.) Exell & Hillc. (Exell & Hillcoat 1955: 39 & 1956: 201); Léonard (1957: 220); Keay (1958: 473); Aubréville (1959: 281, fig. 8); Voorhoeve (1965: 138, fig. 17); Aubréville (1968: 206, fig. 50 & 1970: 192, fig. 43); de Koning (1983: 190); Keay (1989: 24); Wilks & Issembé (2000: 156); Aké Assi (2001: 286); Poorter et al. (2004: 399); Akoègninou et al. (2006: 610); Hawthorne & Jongkind (2006: 838); Breteler (2008: 142). – *Macrolobium fragrans* Baker f. (Baker 1928: 140 & 1930: 673); Pellegrin (1948: 50); Léonard (1952: 419). – Type: Angola, Cabinda, Belize, 26 Nov. 1918, *Gossweiler* 7577 (holo-: BM; iso-: BR, COI, LISC, K, MO).

Macrolobium chrysophylloides Hutch. & Dalziel (Hutchinson & Dalziel 1928a: 347 & 1928b: 400); Aubréville (1936: 228, Pl. 84). – Type: Sierra Leone, Commendi–Gengaru Road, Nov. 1918, *Aylmer* 261 (lecto-: K). See note.

Medium-sized to large tree, (20–)30–45 m tall, dbh 30–100(–130)cm; sapwood often with a whitish exudate. Branchlets rusty velutinous, the same indumentum present on stipules outside, petioles, rachis, and petiolules, glabrescent with age. Stipules very early caducous, ± completely united, oblong, 6–7 × 2 mm, glabrous inside. Leaves (1–)3–4(–5)-jugate; petiole ± terete, 0.5–1.5(–4) cm long; rachis ± terete, (1.5–)5–15(–28) cm long; leaflets: petiolules (2–)3–5 mm thick, terete or grooved above, (2–)3–5(–7) mm long; lamina elliptic to oblong, sometimes obovate, rarely ovate, (1–)1.5–3 times as long as wide, (4.5–)10–18(–47) × (2.5–)5–7(–15) cm, rounded to obtuse or even cordate at base, rounded to obtuse to truncate-emarginate to shortly acuminate or apiculate at apex, the acumen 1–2(–10) mm long; glabrous above with impressed midrib, ± appressed, brown to silverish short-hairy beneath, midrib and the (11–)13–18(–26) pairs of main lateral nerves prominent beneath, the reticulate, tertiary venation obscured by indumentum. Inflorescence a slender, brown-velutinous, (7–)10–30(–40) cm long compound raceme, the racemes distantly placed along the main axis, 1–2 cm long; bracts very early caducous, triangular-ovate in outline, ± boat-shaped, 1–2 mm long, glabrous inside. Flowers with a strong sweet smell. Pedicel 3–5(–6) mm long, hairy as inflorescence. Bracteoles elliptic, concave, 5–6 × 3–4 mm, subappressed brown short-hairy outside, glabrous to sparsely tomentellous (more densely so towards margin) inside, the edge with a small glabrous zone. Hypanthium 1–1.5 mm long, glabrous. Sepals oblong-triangular, 2–3.5 × 1–2 mm, glabrous, acute at apex, the adaxial one 2.5–3.5 × 3 mm, entire or shortly bilobed in bud, usually distinctly bilobed in open flower. Large petal glabrous: claw 2.5–4 mm long; lamina 5–6 × 4 mm in outline, deeply bilobed; small petals 4, triangular-ovate, 1–1.5 mm long, glabrous. Large stamens 3, 9–10 mm long, anthers 1 mm long, filaments pubescent in basal 2–3 mm; staminodes usually all present, 1–1.5 mm long, filaments hairy at base, small, dehiscing anthers of 0.2–0.5 mm long usually present; pistil 10 mm long, ovary 3 mm long, velutinous, 2–3-ovuled, style glabrous. Pods very variable in shape, ± ovoid-ellipsoid to subglobose, 5.5–11 × 4–6 × 2.5–3.5 cm, short-dark-brown velutinous, prominently and ± transversely to somewhat reticulately veined, 1–3-seeded; ventral suture ± flat, 1.5–3 cm wide, dorsal suture rounded, c. 1 cm broad. Seeds very variable in shape, shortly (semi-) ellipsoid to subquadrangular or pyramidal to lenticular, c. 4 × 3–3.5 × 2–2.5 cm; seed coat firm, c. 1 mm thick, smooth, ± dull, brown; cotyledons irregular plano-convex, up to c. 1 cm thick. Figs 3C, D & 4H.

Habitat and distribution – Primary and old secondary rain forest from Guinea to D.R.Congo. Alt. 0–800 m. Fig. 12.

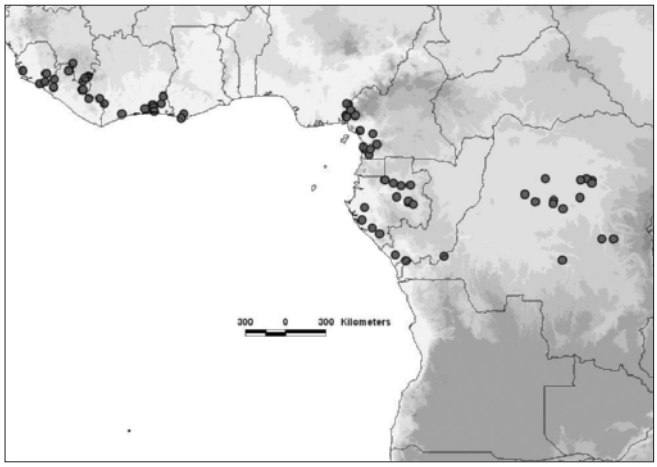

Figure 12 – Distribution of *Anthonotha fragrans*.

Additional specimens studied – **Guinea**: Macenta, 6 Jul. 1949, *Adam* 5554 (MO); Nimba Mts, 11 Dec. 2007, *Jongkind et al.* 8197A (WAG); ibid., Apr. 1950, *Schnell* 5038 (P).

Sierra Leone: Kambui Reserve, 14 Jan. 1938, *Edwardson* 270 (FHO); Kenema, 29 Mar. 1955, *Jordan* 2002 (K); Duanguli (Mende), 22 Apr. 1948, *King* 70 (K); Gengelu, 24 Nov. 1948, *King* 112 (K); ibid., 4 Feb. 1949, *King* 147 (K); near Kenema, 6 Dec. 1965, *Samai* 250 (K); Gola Forest, 14 May 1952, *Small* 667 (K, P).

Liberia: Kitoma, Mar. 1959, *Adam* 10807 (MO); Nimba Mt, 5 Jan. 1965, *Adam* 20450 (K, MO); ibid., 19 Feb. 1965, *Adam* 20980 (K, MO); ibid., 3 Aug. 1974, *Adam* 28868 (MO); Lofa, 23 Nov. 2005, *Jongkind et al.* 6887 (WAG); ibid., 29 Nov. 2005, *Jongkind et al.* 7009 (WAG); Bomi

Hills, 26 Feb. 1962, *van Dillewijn* 76 (WAG); 18 mi N of Tapeta, 25 Jan. 1961, *Voorhoeve* 146 (BR, WAG); Bomi Hills, 4 Nov. 1961, *Voorhoeve* 596 (BR, WAG); Kpetu-Zuole, 1 Nov. 1961, *Voorhoeve* 603 (BR, WAG); 20 mi W of Chien, 15 Nov. 1961, *Voorhoeve* 639 (BR, WAG).

Côte d'Ivoire: Forêt du Banco, 16 Nov. 1967, *Aké Assi* 9764 (G, MO); Abidjan, 1928, *Aubréville* 47 (BR, K, P) & 80 (BR, K, P); Forêt Classée de Matié, 29 Apr. 1997, *Breteler* 13767 (WAG); Agboville, 29 Nov. 1990, *Chatelain & Téhé* 673 (G, WAG); Alépé, 5 Mar. 1907, *Chevalier* 16244 bis (P); between Bébou and Mbasso, 24 Feb. 1909, *Chevalier* 22648 (K, P, WAG), syntype of *Macrolobium chrysophylloides*; Forêt du Banco, 25 Feb. 1976, *de Koning* 6581 (WAG); ibid., 3 Jun. 1976, *de Koning* 6956 (WAG); ibid., 10 Jun. 1976, *de Koning* 6985 (WAG); Forêt de Teké, 28 Sep. 1956, *J.J.de Wilde* 573 (WAG); Agboville, 31 Aug. 2001, *Wieringa et al.* 4291 (WAG).

Ghana: Takoradi–Tankwa Rd., 8 Oct. 1974, *Enti* 1363 (BR, MO, WAG); Axim, Feb. 1935 (?), *Vigne* 2824 (BR, FHO).

Nigeria: Cross River North F. R., 7 Dec. 1950, *Keay* FHI 28155 (BR, K).

Cameroon: Douala, Jun. 1917, *Chevalier* 33306 (P); ibid., Jun. 1917, *Fleury in Chevalier* 33302 (P); Mayuka, Jul. 1917, *Fleury in Chevalier* 33235 (P); near Douala, Jun. 1917, *Fleury in Chevalier* 33451 (P); Norot, 27 Sep. 1927, *Hédin* 1559 (P); Mayukia, 20 Oct. 1927, *Hédin* 1599 (P); 60 km ESE Kribi, 22 Jan. 1962, *Letouzey* 4091 (P); near Nyabessan, 10 Apr. 1970, *Letouzey* 10330 (BR, P, WAG); between Tcherikoy and Sokelle II, 14 Dec. 1973, *Letouzey* 12370 (P); SW of Mebande, 23 Jan. 1974, *Letouzey* 12757 (P); 12 km ESE of Bafang, 24 Nov. 1974, *Letouzey* 13317 (P); Lac Ejacham, 18 May 1975, *Letouzey* 13544 (BR, K, P, WAG); Weme, 17 Jul. 1987, *Nemba et al.* 581 (MO); Korup N. P., Nov. 1978, *D.W. Thomas* 385 (K); ibid., 27 Jul. 1983, *D.W. Thomas* 2368A (MO); 5 km W of Esukutang, 30 May 1988, *D.W. Thomas* 8046 (MO); Korup N. P., 11 Apr. 2005, *van der Burgt* 743 (WAG); ibid., 27 Apr. 2005, *van der Burgt* 754 (WAG); Elephant Mt near Kribi, 7 Feb. 1994, *Wieringa & Haegens* 2139 (WAG).

Equatorial Guinea: Esamalan, 31 Jan. 2003, *Desmet et al.* 336 (BRLU); Parc Monte Alén, 15 Jan. 2002, *Senterre et al.* 1869 (BRLU); ibid., 7 Jan. 2002, 3193 (BRLU); ibid., 10 Jan. 2002, 3242 (BRLU) & 3247 (BRLU).

Gabon: Rabi, 3 Apr. 1990, *Breteler et al*. 9766 (WAG); Bambidie, 6 Nov. 1999, *Breteler* 15379 (WAG); Tchibanga, Jan. 1962, *De Saint Aubin* 2097 CTFT (P); Koumameyong, Mar. 1987, *Dibata* 113 (MO, WAG); Lac Ogamoué, 8 Dec. 1953, *Gauchotte & Guillery* 1225 SRF (P); Oveng, 24 Sep. 1985, *Reitsma c.s.* 1584 (WAG); Ekobakoba, 9 Dec. 1986, *Reitsma c.s.* 2725 (WAG); 25 km S of confluence Ogooué–Ivindo, 10 May 1984, *Wilks* 935 (WAG); 18 km ESE of Agnang, 3 Jun. 1989, *Wilks* 1948 (P).

Republic of the Congo: Mindu, Jul. 1989, *De Namur* 785 (BR).

D.R.Congo: Balanga, *Bermejo* 83 (BR); km 22 Kisangani-Bengamissa, 15–16 Nov. 1972, *Bokdam* 3660 (WAG), 3667 (WAG); Lonkala , 20 Jul. 1954, *Collin* 8 (BR); Tshuapa, Sep. 1934, *L. Dubois* 540 (BR); ibid., Sep. 1935, *L. Dubois* 739 (BR); Yasala–Yetsi Rd., 26 Nov. 1958, *Evrard* 5227 (BR); Bokone, 19 Jan. 1959, *Evrard* 5572 (BR, K); Baboma, Mar. 1940, *Flamigni* 7135 (BR, K); km 37 Elundu–Kindu, 9 Jul. 1957, *Gaillez-Mahin* 73 (BR); Likete, 12 May 1936, *Ghesquière* 2710 (BR, K); km 43 Bengamisa Rd., Feb. 1938, *Gilbert* 935 (BR, K, P); km 47 Bengamissa Rd., 26 May 1936, *Gilbert* 2316 (BR, K, MO, P); Busanga, Sep. 1951, *Gorbatoff* 11 (BR); Kidumbu, 16 Aug. 1958, *Gutzwiller* 1970 (BR); Yangambi, 11 Sep. 1938, *J. Louis* 11223 (BR, K); Lindja, Feb. 1939, *J. Louis* 14133 (BR); Yangambi, 11 Oct. 1939, *J. Louis* 16194 (BR, K); Pangi, 24 Jun. 1942, *Michelson* 63 (BR); Yangambi, 20 Jan. 1939, *van der Meiren* 21 (BR); Kisangani, 14–20 Feb. 1939, *van der Meiren* 26 & 37 (BR).

Angola: Cabinda, Chiluango, 1919, *Gossweiler* 7607 (K).

Notes – *Macrolobium chrysophylloides* Hutch. & Dalziel was first published in the Flora of West Tropical Africa, 2: 347 (Jul. 1928) and based on two syntypes, *Aylmer* 261 and *Chevalier* 22648. In the later, 'official' publication in Bull. Misc. Inf. Kew 1928: 400 (10 Dec. 1928), *Aylmer* 261 is indicated as the type, which in fact is a lectotypification.

Some authors (e.g. Wilks & Issembé 2000) or collectors (e.g. *De Saint Aubin* 2097) report that the sapwood when cut exudes a whitish to cream-coloured watery gum.

7. *Anthonotha gilletii* (De Wild.) J.Léonard (Léonard 1957: 221); Breteler (2008: 142). – *Macrolobium gilletii* De Wild. (De Wildeman 1906: 252, t. 46); Léonard (1952: 417). – Type: D.R.Congo, Bas-Congo, 1903, *Gillet* 3645 (holo-: BR).

Tree (6–)15–25(–30) m tall, up to 40(–70) cm dbh. Branchlets glossy, ± silverish and firmly appressed short-hairy, glabrescent with age, the same indumentum present on stipules outside, and petioles, rachis, petiolules, and leaflets beneath. Stipules very early caducous (only one seen), united at base, oblanceolate, 5–6 mm long, glabrous inside. Leaves (3–)4–5(–6)-jugate, very rarely unifoliolate; petiole and rachis subterete, respectively 2–3.5(–5) and (5–)7–11(–16) cm long; leaflets oblong-elliptic, (1.5–)2–3(–4) times as long as wide, (4–)7–11(–16) × (1.5–)2–4(–5) cm, rounded to cuneate at base, caudate-acuminate at apex, the acumen (0.5–)1–1.5(–2) cm long; petiolules terete, (3–)4–6 mm long; glabrous above and finely, prominently, reticulately veined with impressed midrib, beneath with prominent midrib and 8–11 pairs of main lateral nerves, the tertiary venation somewhat obscured by indumentum. Inflorescence paniculate, on the trunk or the leafless branches as well as axillary on the leafy shoot, up to c. 50 cm long, hairy as branchlet but brownish not silverish; racemes 1–2.5 cm long, up to 5 mm long pedunculate; bracts very early caducous, not seen. Pedicel (3.5–)5–10 mm long, hairy as inflorescence. Bracteoles elliptic to obovate, concave, (6–)7–8(–10) × 2.5–5 mm, outside hairy as inflorescence, glabrous to tomentellous inside, edges tomentellous. Hypanthium 1–2.5 mm long, slightly ribbed, glabrous at both sides. Sepals glabrous, narrowly elliptic to narrowly ovate-oblong-triangular, acute to acuminate at apex, 5–10(–13) × 2–3 mm, the larger, adaxial one up to 5 mm wide and 0.5–3 mm bilobed. Large petal (5–)7–11 × 5–6(–8) mm, the claw with slightly outward recurved margins; small petals 4, ± obovate, 1–1.5(–2.5) mm

long, the lateral ones usually longer than the abaxial ones. Large stamens 3, 15–18(–25) mm long; filaments abaxially shortly united at base, pubescent in lower (1.5–)2–5 mm; anthers subellipsoid, 1.5–2 mm long; staminodes 6, (1–)2–4 mm long, hairy as long stamens, usually provided with a small anther of 0.5(–1) mm long, usually containing some pollen. Pistil up to c. 25 mm long; ovary 5–7 mm long, velutinous, 8–9-ovulate; style glabrous. Pods narrowly oblong in outline, (7–)11–18(–22) × 3–4 cm, unequal-sided at base, apiculate at apex, densely appressed, brown-short-hairy and finely, closely, obliquely, prominently veined, c. 5–6-seeded. Mature seeds not seen. Fig. 4I.

Habitat and distribution – Rain forest and gallery forest in Republic of the Congo and D.R.Congo, probably extending into Gabon and Cameroon (see note). Alt. up to c. 800 m. Fig. 13.

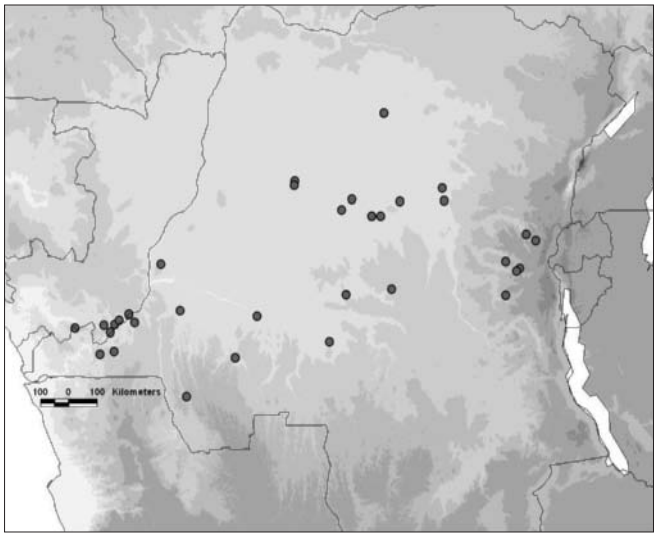

Figure 13 – Distribution of *Anthonotha gilletii*.

Additional specimens studied – **Republic of the Congo**: Chutes de la Foulakari, 24 Jul. 1964, *Bouquet* 282 (P, WAG); Kinkala, 29 Jul. 1964, *Bouquet* 326 (P); Boko, 4 Aug. 1963, *De Néré* 472 (BR, G, K, P, WAG); 20 km Brazzaville–Linzolo, Forêt de la Djoumouna, 22 Jan. 1970, *Makany* 1487 (P); ibid., 26 Jan. 1967, *Sita* 1527 (P, WAG).

D.R.Congo: Kirundu, 10 Feb. 1915, *Bequaert* 6889 (BR); Balanga, Ikela, *Bermejo* 57 (BR); Mofinu, Maluku, 5 Apr. 1971, *Breyne* 557 (BR, MO); Milu, 21 Jan. 1976, *Breyne* 2869 (BR); Mofinu, Maluku, 25 Jan. 1978, *Breyne* 3253 (BR); Kukuluba, 13 Sep. 1935, *Callens* 4250 (BR); Kimbuango, 25 Jan. 1960, *Compère* 1319 (BR); Kiyaka, 12 Jul. 1955, *Devred* 2159 (BR, FHO, K); ibid., 8 Aug. 1955, *Devred* 2422 (BR, K); Lofoi, Sep. 1934, *L. Dubois* 522 (BR); Ikela, 15 Aug. 1958, *Evrard* 4667 (BR, K); *Yongo* 14 Aug. 1958, *Evrard* 4713 (BR); piste Yalikungu–Yalomboka, 20 Nov. 1958, *Evrard* 5186 (BR); Bokota, 11 Feb. 1959, *Evrard* 5668 (BR); Kole, 1946, *Flamigny* 8144 (BR); between Kwango and Wamba, 28 Jul. 1944, *Germain* 2454 (BR); Yankelili, 2 Apr. 1949, *Germain* 4802 (BR); Ikela, Jun. 1949, *Germain* 4993 (BR); Lusele, Jun. 1952, *Germain* 7618 (BR, FHO); Kakenge, Nov. 1937, *Gillardin* 291 (BR, K); Urega, Jul. 1932, *Lebrun* 6723 (BR); between Mushie and Bolobo, Dec. 1932, *Lebrun* 6750 (BR, WAG); Kabunga, 24 Feb. 1958, *A. Léonard* 1836 (BR); Bulumbu, 9 Apr. 1959, *A. Léonard* 3739 (BR, WAG); Nyangoma, 10 Apr. 1959, *A. Léonard* 3789 (BR, WAG); Yahila, 27 Jan. 1947, *J. Léonard* 1132 (BR, K); ibid., 23 Aug. 1948, *J. Léonard* 1863 (BR); Ubundu, 28 Dec. 1981, *Lubini* 3557 (BR); Maniema, 26 Jun. 1942, *Michelson* 73 (BR); Buene, 21 Jan. 1976, *Pauwels* 5455 (BR, MO, WAG); km 110 Kavumu–Walikale, 23 Jul. 1959, *Troupin* 10598 (BR); Ipamu, Jan. 1923, *Vanderyst* 12960 (BR).

Note – The following specimens may represent *Anthonotha gilletti* as well, but they could not be identified with certainty.

Gabon: Bélinga, Jul. 1966, *N. Hallé & Thomas* 691 (P).

Cameroon: Tissongo Lake, 12 Sep. 1983, *Asonganyi* 650 (P); Mvini, 25 km E of Campo, 20 Dec. 1983, *Kaji* 48 (P); Ambam Akokas Rd., 31 Aug. 1978, *Koufani* 178 (P).

8. ***Anthonotha lamprophylla*** (Harms) J.Léonard (Léonard 1955: 202 & 1957: 221); Keay (1958: 473); Aubréville (1968: 204, fig. 49 & 1970: 192, fig. 42); Keay (1989: 224); Breteler (2008: 142). – *Macrolobium lamprophyllum* Harms (Harms 1901: 85); Baker (1930: 671); Pellegrin (1948: 47). – Type: Cameroon, Bipindi, May 1899, *Zenker* 2069 (holo-: B†; lecto-: WAG, **designated here**; isolecto-: G, K, MO, P).

Shrub to medium-sized tree, up to 30 m tall and 35 cm dbh. Branches densely, ± appressed, brown short-hairy, the same indumentum present on petiole, leaf rachis and petiolules. Stipules very early caducous, not seen. Leaves (4–)5–6(–8)-jugate; petiole terete, 0.5–1.5 cm long, rachis terete, (6–)12–30 cm long; leaflets: petiolule 2–5(–7) mm long, terete; lamina oblong-elliptic, sometimes ovate-lanceolate, (1–)2–4(–5) times as long as wide, (3–)10–21 × (1.5–)2–5(–7.5) cm, rounded to obtuse at base, (0.5–)1–1.5(–3.5) cm long acuminate at apex, glabrous above with impressed midrib and with ± prominent, reticulate lateral venation, silverish to golden-brown appressed short-hairy beneath, with prominent midrib and 9–16 main lateral nerves. Inflorescence a cauliflorous, loose, pendulous panicle, up to 40 cm long, appressed brown-short-hairy, often up to ± six inserted together on a knob-like base; raceme axis up to 6.5 cm long; bracts supporting the racemes very early caducous, ovate-elliptic, up to 1.5 × 1 cm, glabrous inside; bracts supporting the individual flowers early caducous, narrowly ovate-elliptic, up to 3 mm long, glabrous inside. Pedicel (5–)6–10 mm long. Bracteoles elliptic, (8–)10–12(–13) × (4–)5–6(–7) mm, sparsely tomentellous inside, more densely so near margin, edges with a glabrous zone. Hypanthium 1–2 mm long, glabrous, sometimes ± puberulous near the base or in stripes. Sepals oblong-elliptic, 5–7 mm long, 2–3 mm wide, the adaxial one broader and emarginate to shortly bilobed apically, usually glabrous rarely with a few short hairs on margin near base. Large petal: claw 5–8 mm long; lamina (5–)6–10 mm long, 9–14 mm wide, bilobed; small petals all present, ± elliptic, 0.5–2 mm long. Large stamens 3, 2.2–3 cm long, filaments pubescent in lower part, anthers 2 mm long; staminodes usually all present, up to 3 mm long, some with a minute dehiscent anther of 0.5 mm long. Pistil 2–3 cm long; ovary velutinous, 5–6 mm long, 5–7-ovuled; style hairy as ovary in lower half, glabrous in upper half. Pod oblong in outline, slightly falcate or not, 8–35 × 4.5–6.5 cm, shortly

(c. 0.5 cm) stipitate at base, often beaked, pale-brown velutinous with irregular-shaped, darker brown patches and spots, obscurely, ± transversely, slightly prominently veined, up to 7-seeded. Seeds ± elliptic in outline, irregularly lobed, laterally compressed, up to 8 × 4.5 × 1.7 cm , seed coat ± dull, thin. Fig. 4J.

Habitat and distribution – Tropical lowland rain forest in eastern Nigeria, southern Cameroon and northern Gabon. Alt. 0–700 m. Fig. 14.

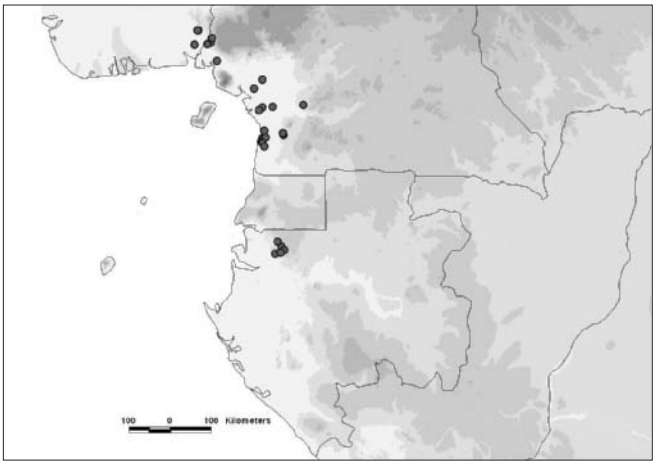

Figure 14 – Distribution of *Anthonotha lamprophylla*.

Additional specimens studied – **Nigeria**: Oban District, 13 Mar. 1945, *Onochie* FHI 7723 (FHO); Oban, 1911–1912, *Talbot* 1272 bis (BR, K), 1656 (K).

Cameroon: 6 km Kribi–Ebolowa, 21 Oct. 1968, *Bos* 3111 (BR, P, WAG); 12 km Kribi–Lolodorf, 13 Jan. 1969, *Bos* 3626 (BR, K, P, WAG); 12 km E of Kribi, 30 Apr. 1969, *Bos* 4445 (BR, K, P, WAG); 20 km Kribi–Lolodorf, 30 May 1969, *Bos* 4669 (BR, K, P, WAG); 11 km E of Kribi, 27 Oct. 1969, *Bos* 5542 (WAG); Ekundu Kundu, 27 Apr. 1996, *Cable et al.* 2253 (K); Lombe, 1975, *Gartlan* SP 1 (K); 2 km W of Kondotiti, 12 Nov. 1985, *Gentry & Thomas* 52762 (MO); Korup N. P., 28 Mar. 1998, *Kenfack* 1078 (MO); 30 km NE of Eseka, 14 Dec. 1973, *Letouzey* 12349 (P); Bitoutouk, 18 Dec. 1973, *Letouzey* 12433 (P); 25 km S of Yabassi, 11 May 1976, *Letouzey* 14906 (BR, K, P, WAG); near Masore, 7 Jun. 1976, *Letouzey* 15109 (BR, K, P, WAG); 27 km Kribi–Edea, 22 Apr. 1968, *Mezili* 128 (BR, COI, P, WAG); km 14 Douala–Edea, *Mpom* 330 (P); Ebimimbang, 4 Mar. 1999, *Shu Neba & Ndoum* 2463 (WAG); Korup N. P., 1987, *D.W. Thomas* 6908 (BR, K, MO, WAG); Elephant Mt, 6 km S of Bidou III, 6 Sep. 1997, *van der Burgt* 154 (WAG); Korup N. P., 5 Apr. 2005, *van der Burgt* 740 (WAG); Tissongo Camp, Douala–Edea Reserve, 27. Jun. 1976, *Waterman & McKey* 891 (K); Bipindi, Apr. 1913, *Zenker* 398 (BR, G, MO, WAG); ibid., 1900, *Zenker* 2093 (K); ibid., 1901, *Zenker* 2385 (BR, G, K, P, WAG); ibid., 1904, *Zenker* 2965 (BM, G, K, MO, P, WAG) & 3113 (BR, G, K, P, WAG); ibid., 1908, *Zenker* 3572 (BR, G, K, LISC, MO, P); ibid., 1909, *Zenker* 3904 (BR, G, K, MO, P); ibid., 1913, *Zenker* 4981 (BR, G, P).

Gabon: Crystal Mts, Mbilan Mt, 5 Apr. 2005, *Leal* 496 (WAG); Crystal Mts, 15 Nov. 2000, *Nguema Miyono* 1302 (WAG); ibid., 22 Jan. 2001, *Nguema Miyono* 1638 (WAG); ibid., 24 Mar. 2001, *Nguema Miyono* 1842 (WAG).

9. *Anthonotha macrophylla* P.Beauv. (Palisot de Beauvois 1806: 71, t. 42); Exell & Hillcoat (1956: 202), see note; Léonard (1957: 221); Keay (1958: 473) partly, see notes; Aubréville (1968: 210, fig. 211 & 1970: 196, fig. 44); de Koning (1983: 191); Keay (1989: 223); Aké Assi (2001: 287); Akoègninou et al. (2006: 610); Hawthorne & Jongkind (2006: 838); Breteler (2008: 142) – *Vouapa macrophylla* (P. Beauv.) Baill. [Baillon 1865: 178, fig. III 6–7, excl. var. *heudelotiana* Baill., which is *Anthonotha crassifolia* (Baill.) J.Léonard] – *Macrolobium macrophyllum* (P.Beauv.) J.F.Macbr. (Macbride 1919: 21); Hutchinson & Dalziel (1928: 347); Baker (1930: 672); Aubréville (1936: 230, fig. 85B); Pellegrin (1948: 49); Léonard (1952: 422, fig. 31) – Type: Nigeria, between Oware et Buonopozo, 1786–1788, *Palisot de Beauvois* s.n. (holo-: P).

Macrolobium palisotii Benth. (Bentham 1865: 308), nom. illeg. (superfluous), p.p. excl. *Welwitsch* 560 [= *Anthonotha pynaertii* (De Wild.) Exell & Hillc.].

Shrub to small tree up to 20 m tall and 60 cm dbh, rarely lianescent (see note). Branches silverish to pale-brown appressed short-hairy, glabrescent, the same on stipules, petiole, leaf rachis and petiolules. Stipules very early caducous, ovate-elliptic, c. 2 mm long, glabrous inside. Leaves (2–)3(–4)-jugate; petiole subterete (1–)2–3(–7) cm long; rachis subterete, 2.5–11(–16) cm long; leaflets: petiolule (4–)5–8(–15) mm long; lamina obovate-elliptic, (1.5–)2.5–3 times as long as wide, (5–)11–20(–30) × (2–)3–7(–16) cm, rounded to somewhat cuneate, rarely obtuse at base, 0.5–2(–2.5) cm long acuminate at apex, glabrous above with a plane to slightly impressed midrib, greyish-silverish to pale-brown, very appressed short-hairy beneath, usually becoming dirty greyish in old leaves; lateral nerves (7–)9–11(–13) pairs, prominent beneath like the midrib. Inflorescence a loose panicle, axillary on the leafy shoot or below the leaves and then sometimes up to 3 together on a knob-like base, up to 15(–21) cm long, appressed, brown short-hairy; racemes up to 3(–4) cm long; bracts early caducous, elliptic, 1–2 mm long, glabrous inside. Pedicel 3–8 mm long. Bracteoles firm, 0.5–1 mm thick, elliptic, 6–8 × 3–6 mm, the glabrous edge often apically interrupted by the tomentellous indumentum of the inside margin. Hypanthium 1–1.5 mm long, glabrous,

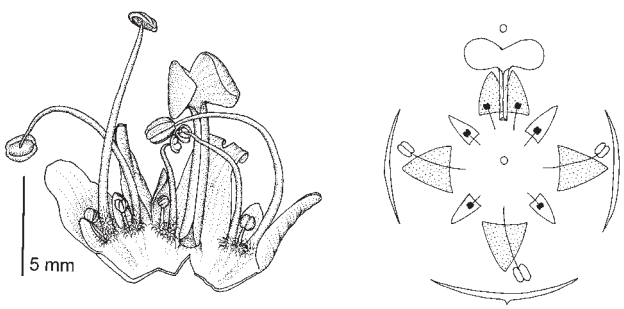

Figure 15 – Opened up flower and diagram of *Anthonotha macrophylla* (*Wieringa et al.* 3214). Drawn by H. de Vries.

rarely appressed short-hairy outside. Sepals ovate-triangular to oblong, (2.5–)4–5 × 1.5–2 mm, acute at apex, the larger, adaxial sepal 1–2 mm bilobed (rarely the two adaxial sepals completely free), glabrous. Large petal: claw 3.5–4(–6) mm long, glabrous; lamina deeply bilobed, c. 3–4.5 × 4–6 mm, lobes not spreading in one plane but in much narrower angle; small petals 4, 1–2(–5) mm long. Large stamens 3, 10–13 mm long; filaments pubescent near base; anthers c. 1.5 mm long; staminodes 6, 0.5–1.5 mm long, mostly provided with a smaller, c. 0.5 mm long, dehiscing anther. Pistil slightly longer than the large stamens; style glabrous or with a few hairs near base; ovary 3–5 mm long, velutinous, (5–)6–7-ovulate. Pod oblong, slightly falcate or not, (8–) 15–26(–34) × 5–7 cm, c. 1.5 cm thick, up to 7-seeded, brown, sometimes very dark-brown to almost black shortly velutinous, ± obliquely to reticulately, prominently veined; sutures ± equally broad. Seeds irregularly shaped, subelliptic in outline, 5–6 × 3.5–5.5 cm, 0.7–0.8 cm thick; seed coat thin, brittle, dull. Figs 3A-B, 4K & 15.

Habitat and distribution – Tropical rain forest, often in secondary forest, from Guinea to D.R.Congo (see notes). Alt. up to 1200 m. Fig. 16.

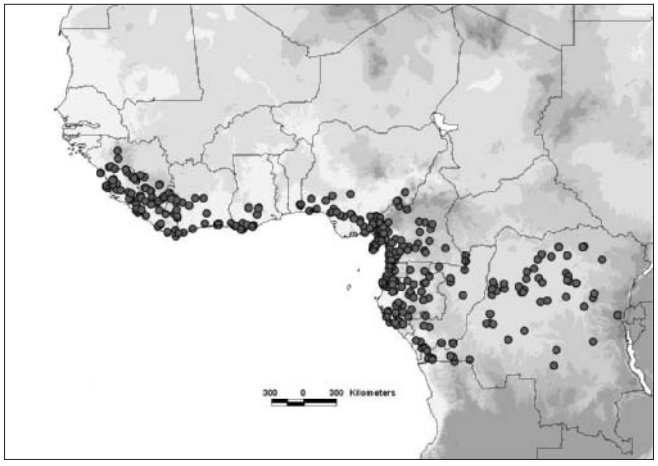

Figure 16 – Distribution of *Anthonotha macrophylla*.

Selection of additional specimens studied – Guinea: Kissidougou, 12 Jul. 1949, *Adam* 5598 (MO); Simandou Range, 12 Nov. 2005, *Cheek* 81 (K); Friguiagbé, 1943, *Chillou* 3450 (BR, K, P); Bambaya (Ht Niger), 13 Jan. 1952, *Jaeger* 3865 (P); Nimba Mts, Nzérékoré, 29 Nov. 2006, *Jongkind et al.* 7350 (BR, WAG); Fouta Djalon, near Dalaba, 6 Mar. 1962, *Langdale-Brown* 2624 (BR, K); Conakry, Jan.–May 1893, *Paroisse* 229 (P); Labé, 17 Jan. 1955, *Roberty* 16536 (K); Ouassaoe, sur les plateaux du Benna, Nov. 1944, *Schnell* 2177 (P).

Sierra Leone: Commendi, 18 Nov. 1918, *Aylmer* 619 (K); Sankan Biriwa massif, 6 Jan. 1960, *Cole* 180 (K); Kennema, 15 Nov. 1926, *Deighton* 408 (K); Loma Mts, Nov. 1944, *Jaeger* 701 (P); Rokupr, 9 Mar. 1951, *Jordan* 406 (K); Lakka peninsula, 21 Dec. 1964, *Morton* SL 1601 (K, WAG).

Liberia: Nyaake, 24 Jun. 1947, *Baldwin* 6223 (K, MO); Soplima, 1 Nov. 1947, *Baldwin* 10020 (MO, K); Bomi Hills, 10 Dec. 1966, *Bos* 2346 (BR, K, P, WAG); between Zorzor and St. Paul R., 20 Nov. 1966, *Bos* 2523 (BR, K, WAG); 10 mi S of Ganta, 30 Jan. 1969, *Jansen* 1411 (BR, K, P, WAG): near Kakata, 14 Jan. 1970, *Jansen* 1694 (BR, K, P, WAG); 5 mi N of Bomi Hills, 18 Oct. 1970, *Jansen* 2258 (BR, WAG); E of Harper, near Cavally R., 20 Jul. 1971, *Jansen* 2429 (BR, WAG); Sino, 29 Nov. 2002, *Jongkind et al.* 5547 (WAG); Banga, 24 Oct. 1926, *Linder* 1225 (K, P); Loma Nat. For., 15 Dec. 1961, *Voorhoeve* 734 (WAG).

Côte d'Ivoire: Banco, 28 Nov. 1931, *Aubréville* 496 (P, FHO); 2 km Togbayourou–Sahirou, 22 Jan. 1969, *Bamps* 1903 (BR); Divo, 1 Nov. 1975, *Beentje* 1273 (WAG); Daloa, 5–6 Mar. 1962, *Bernardi* 8470 (K, P); 12 km SSW of Sassandra, 28 Nov. 1968, *Breteler* 6097 (BR, P, WAG); Banco, 29 Oct. 1974, *de Koning* 4562 (WAG); Tonkoui Mt, 5 Feb. 1984, *Hepper & Maley* 8097 (BR, K, MO); W of Grand Béréby, 11 Nov. 1981, *Leeuwenberg* 12324 (WAG).

Ghana: Kumasi, Oct. 1938, *Andoh* 4600 (FHO); Takoradi–Tankwa Rd, 8 Oct. 1974, *Enti* 1360 (BR, MO, WAG); Ankaful, 25 Nov. 1961, *Hall* 2111 (K); Axim, Feb. 1934, *Irvine* 2225 (K); Cape Three Points F. R., 21 Oct. 1996, *Jongkind* 3763 (WAG); Kumasi, 2 Nov. 1963, *Obeng-Darko* 5176 (BR, WAG); 11 km N of Kade, 2 Dec. 1996, *Schmidt et al.* 2284 (MO, WAG); Kumasi, Feb. 1929, *Vigne* 1594 (FHO).

Benin: Ouémé, 30 Jan. 1999, *Akoègninou et al.* 2155 (WAG).

Nigeria: Iyamoyong F. R., 16 Apr. 1959, *Binuyo* FHI 41247 (BR, FHO, K); Okumu F. R., 9 Jan. 1948, *Brenan & Jones* 8755 (FHO, K, P); Kurmi, 4 May 1973, *J.D. Chapman* 3122 (FHO, K); Old Calabar, Jul. 1905, *Chevalier* 14165 (P); Uzuakoli, 8 Mar. 1972, *Emwiogbon* FHI 63934 (K); Onitsha, 24 Feb. 1973, *Emwiogbon* FHI 66025 (K, WAG); Epe, 3 Aug. 1962, *Gillett* 15276 (K, P); Sapoba, 1932, *Kennedy* 2145 (K, P); Cross. R. North F. R., Ikom–Mamfe Rd., 23 Feb. 1973, *Latilo & Oguntayo* FHI 67661 (K, WAG); Noami, 15 Aug. 1907, *Unwin* 119 (K); 40 mi Calabar–Oban Rd., 16 Apr. 1971, *van Meer* 1334 (WAG).

Cameroon: Ekumbe Mofako, 19 Apr. 1994, *Acworth* 65 (MO); 42 km SE of Mbalmayo, 10 May 1980, *Asonganyi* 1 (P, WAG); Batanga, 3 Apr. 1895, *Bates* 131 (BR, K); Kumba, 23 Mar. 1956, *Binuyo & Daramola* FHI 35647 (FHO, K, P); Kribi, 27 Sep. 1968, *Bos* 2965 (BR, K, P, WAG); Sanaga R. near Ebaka, 24 May 1961, *Breteler* 1439 (BR, K, P, WAG); between Tika and Douala, 13 Mar. 1993, *Breteler* 12060 (WAG); Ekondo Titi, 28 Feb. 1987, *Doumenge* 319 (MO, P, WAG); Etam, 22 Mar. 1986, *Etuge & Thomas* 87 (MA, MO, P, WAG); 90 km SE of Akonolinga, 23 May 1997, *Fogiel* 2099 (MO, WAG); Ndakan, 30 Apr. 1988, *Harris & Fay* 563 (MO, P, WAG); 8 km W of Masok, 31 Mar. 1965, *Leeuwenberg* 5288 (BR, K, P, WAG); NE Dibombe, 26 May 1972, *Leeuwenberg* 9921 (BR, P, WAG); Meteni, 18 May 1959, *Letouzey* 2039 (K, P); Boumba R., between Weso and Medoum, 24 Jun. 1963, *Letouzey* 5331 (BR, K, P, WAG); Cameroon Mt, Kosse, 24 Apr. 1996, *Mukete & Mezili* 17 (MO); Abonando, 29 Mar. 1902, *Rudatis* 28 (K); SW Korup, 3 Apr. 1988, *D.W. Thomas et al.* 7594 (BR, K, MO, WAG); Ebianemeyong, 6 May 2001, *van Andel* 3407 (WAG); Bipindi, 1896, *Zenker* 885, (BR, G, K, MO, P, WAG); ibid., 1904, *Zenker* 2834 (BR, G, K, MO, P, WAG).

Equatorial Guinea: Bioco, near Tiburones R., 21 Sep. 1986, *Carvalho* 2490 (BR, G, K, LISC, MA, MO, P, WAG); 27–28

km Bata–Pemba–Entuba, 5 Feb. 1993, *Carvalho* 5237 (BR, MA, MO, P, WAG).

Gabon: Waka, 22 Nov. 1984, *Arends et al.* 398 (BR, WAG); Mourindi, 15 Sep. 2000, *Bourobou* 248 (BR, MO, P, WAG); Lastoursville, 25 Sep. 1970, *Breteler* 6650 (BR, P, WAG); 70 km SSW of Moanda, 13 Oct. 1970, *Breteler* 6879 (BR, P, WAG); Koumounabwale massif, 12 Feb. 1995, *J.J. de Wilde et al.* 11575 (WAG); Otouma, 15 Jan. 1992, *Dibata* 930 (BR, MA, MO, WAG); Ipassa, 25 Mar. 1975, *Hladik* 2706 A (P); Doudou Mts, 29 Nov. 2003, *Jongkind et al.* 5838 (WAG); Libreville, Sep. 1895, *Klaine* 340 (K, P); Tchibanga, 7 Oct. 1914, *Le Testu* 1796 (BM, BR, G, K, MO, P, WAG); Mouila, 5 Nov. 1924, *Le Testu* 5045 (BM, BR, P, WAG); Oyem, 12 Dec. 1933, *Le Testu* 9080 (BM, BR, P); S of Ekouk, 2 Nov. 1983, *A.M. Louis et al.* 314 (BR, MA, P, WAG); Oveng, 8 Nov. 1983, *A.M. Louis et al.* 508 (BR, K, MA, P, WAG); Lopé–Okando R., 10 Nov. 1991, *McPherson* 15518 (M, P); N of Koumameyong, 1 Feb. 1993, *McPherson* 16127 (BR, MA, MO, WAG); Loango N. P., 3 Dec. 2004, *Mouandza* 356 (WAG); Mts de Cristal, 25 Feb. 2001, *Nguema* 1709 (WAG); Cap Esterias, 3 Nov. 1985, *Reitsma c.s.* 1761 (MA, WAG); Rabi-Kounga, 28 Dec. 1991, *Schoenmaker* 327 (WAG); 8 km NE of Tchimbélé, 29 Jan. 1990, *Wieringa* 489 (WAG); Bongolo, 10 Nov. 1994, *Wieringa et al.* 3133 (G, WAG); 18 km Mimongo–Mbigou, 5 Dec. 2001, *Wieringa et al.* 4590 (WAG); region of Minkebé, N'sing R., 2 Feb. 1990, *Wilks* Mink C31 (WAG).

Republic of the Congo: Forêt de la Djoumouna, 25 Oct. 1976, *Bitsindou* 421 (P); Mossendjo, 18 May 1965, *Bouquet* 1342 (P); Gonaka–Moukouma Rd., 19 Oct. 1965, *Bouquet* 1828 (P, WAG); Odzala N. P., 14 Dec. 1994, *Champluvier* 5116 (BR, K, P, WAG); Pounga–Dimonika Rd., 25 Nov. 1978, *Cusset* 538 (P); Kouilou, Oct. 1990, *Lisowski* B-7147 (BR); Brazzaville, 30 Oct. 1967, *Sita* 1901 (P, WAG); Nabema Mt, *D.W. Thomas et al.* 8885 (MO).

D.R.Congo: Yambata, 14 Mar. 1914, *Bany (Vermoesen)* 133 (BR); 8 km E of Lubutu, *Bokdam* 3596 (WAG); Bambesa, 1934, *Bredo* 1206 (BR); Epulu, 14 Mar. 1986, *Butler-Hart* 584 (WAG); Lulonga, 7 Aug. 1920, *Casteel* 36 (BR); Lowa, 1920, *Claessens* 487 (BR); Menge, Apr. 1921, *Claessens* 519 (BR); Kinganga, 27 Oct. 1959, *Compère* 675 (BR, K); Ganda Sundi, 21 Oct. 1911, *de Briey* 67 (P); 20 km from Bokoli, Nov. 1980, *Dechamps* 8025 (BR); Mvuazi, 27 Nov. 1951, *Devred* 995 (BR, K, P,); Bundu, 5 Feb. 1952, *Devred* 1038 (BR, LISC); Kimpelo, 30 Oct. 1945, *Donis* 1303 (BR, K); Eala, 1935, *L. Dubois* 695 (BR, MO); Lukeni R., Oct. 1942, *Flamigni* 8080 (BR, K); Bambesa, 15 May 1953, *Gérard* 602 (BR, COI, FHO, K); Bokoro, 25 Oct. 1947, *Jans* 602 (BR, K); Maiko N. P., 45 km N of Lubutu, *Lejoly* 1898 (BR, WAG); Yangambi, 20 Apr. 1938, *J. Louis* 8936 (BR, FHO, K, MO); Luki, 26 Jan. 1950, *Maudoux* 289 (BR, FHO, K); Dundusana, 1913, *Mortehan* 162 (BR); Eala, Oct. 1930, *Staner* 1275 (BR, G, K, P).

Angola: Cabinda, Buco Zau, 7 Oct. 1958, *Monteiro et al.* 385 (BM, COI, LISC).

Central African Republic: Lindjombo, 1 Nov. 1988, *Fay & Harris* 8718 (BR, MO); Ndakan, 3 Oct. 1988, *Harris & Fay* 1309 (MO); ibid., 10–12 May 1988, *D.W. Thomas* 8201 (K, MO, WAG).

Notes – The habit of *Anthonotha macrophylla* is sometimes a lianescent shrub or liana as has been reported by *Jansen* (no 2258) from Liberia, *de Koning* (no 4562) from Côte d'Ivoire, *McPherson* (no 15518) from Gabon, and *J. Louis* (no 1686) from D.R.Congo.

For *A. macrophylla* var. *heudelotiana* see under *A. crassifolia.*

Anthonotha macrophylla does not occur in Angola south of the Congo River. The only specimen cited by Exell & Hillcoat (1956) is *Gossweiler* 751 which has been identified as *A. crassifolia* (Baill.) J.Léonard.

Anthonotha macrophylla is widespread and apparently the most common species as it is also the most frequently collected. It is often difficult to distinguish it from species with more or less the same number of and, often similarly shaped, leaflets, such as *A. acuminata*, *A. brieyi*, *A. crassifolia*, *A. gilletii*, and *A. pynaertii.* The same holds for the mutual distinction between these latter species. Usually the identification is impossible when flowers and/or fruits are not present.

10. *Anthonotha mouandzae* Breteler, **sp. nov.**

Anthonotha pynaertii (De Wild.) Exell & Hillc. habitu, numero pinnarum folii et magnitudine florum maxime simile, ab ea differt inflorescentia multo gracili, petalo adaxiali ungue glabro et leguminibus majoribus fere invisibile nervatis. – Type: Gabon, between Rabi-Kounga and Yeno, 19 May 1992, *Breteler, Jongkind, Nzabi & Wieringa* 11537 (holo-: WAG; iso-: BR, LBV n.v., MA, MO, P).

Medium sized forest tree up to 20 m tall and 60 cm dbh. Trunk buttressed at base. Branches appressed short-hairy, glabrous with age. Stipules persistent (the apical part caducous?), closely appressed, ± triangular, to ovate, c. 2 mm long, hairy as branchlet. Leaves: (3–)4(–5)-jugate; petiole terete, 2–3(–5.5) cm long, hairy as branchlet; rachis terete, (3.5–) 5–10(–20) cm long, hairy as petiole; petiolules terete, (3–) 5–6(–8) mm long, hairy as rachis; lamina elliptic to obovate-elliptic, (1.5–)2–3(–3.5) times as long as wide, (4–)8–15(–19) × (2.5–)4–5(–6.5) cm, rounded to obtuse, more rarely cuneate at base, (0.5–)1–1.5(–2) cm caudate-acuminate at apex, glabrous and finely prominently reticulately veined above with plane to impressed midrib and slightly prominent lateral nerves, beneath silverish to golden-brown appressed short-hairy with prominent midrib and (10–)12–13(–15) pairs of ± parallel, prominent main lateral nerves. Inflorescence axillary or below the leaves, up to 3 together, slender, 8–13 cm long, branched at base or not, brown–velutinous, bearing up to 4, well–spaced, 1–1.5 cm long racemes; bracts very early caducous, ovate-triangular, 2–3 × 1–2 mm long, glabrous inside. Pedicel 5–7 mm long, brown-velutinous. Bracteoles elliptic, 7 × 5 mm, ± appressed, golden-brown velutinous outside, glabrous to partly (mainly apically) tomentellous inside, edges c. 1 mm wide, tomentellous. Hypanthium c. 1 mm long, glabrous. Sepals glabrous, oblong, 4–5 × 1.5–2 mm, ± acute at apex, the larger, adaxial sepal c. 1 mm bilobed apically. Large petal 8 mm long, 7–8 mm wide, glabrous; other petals ± obovate, c. 1 mm long. Large stamens 3, c. as long as the pistil; filaments bearded (± hispidulous) in lower

Figure 17 – *Anthonotha mouandzae*: A, flowering branchlet; B, leaf, lower surface; C, flower; D, opened up flower; E, large petal ventral side with attached large sepal; F, petal from dorsal side; G, ovary cut lengthwise; H, diagram of flower; I, pod (A,B, *Wilks* 1503; C-G, *Harris et al.* 8623; I, *Breteler et al.* 11537). Drawn by H. de Vries.

3 mm; anthers ellipsoid, c. 1.5 mm long; staminodes all present, 2–3 mm long, bearded as the large stamens, with a minute anther. Pistil c. 15 mm long; ovary narrowly elliptic, c. 5 mm long, c. 6-ovulate, velutinous; style with a few hairs in basal part. Pods oblong-oblanceolate in outline, 16–25 × 5–6 cm, smooth, brown-velutinous, indistinctly veined; sutures slightly thickened, the ventral one thicker than the dorsal one and deeply grooved at its edge, up to c. 6-seeded. Figs 5A & 17.

Habitat and distribution – Lowland primary rain forest in West Gabon. Alt. 0–200 m. Fig. 18.

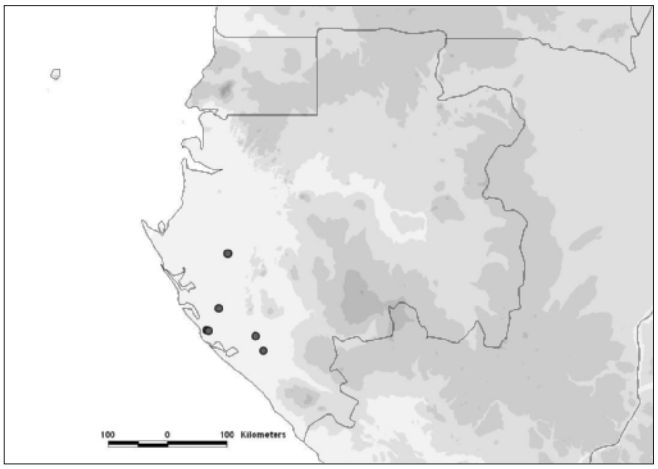

Figure 18 – Distribution of *Anthonotha mouandzae*.

Additional specimens studied – **Gabon**: Oguémoué, 7 Oct. 1953, *Gauchotte* 1151 SRF (P); Loango N.P., 2 km upstream Rembo Nyoungou R. from Akaka Camp, 14 May 2005, *Harris et al.* 8623 (WAG); Akaka, 10 Sep. 2004, *Mouandza et al.* 272 (WAG); Oguémoué, 10 Dec. 1953, *Nze* 1235 SRF (P); 50 km SW of Doussala, 18 Apr. 1987, *Reitsma c.s. & Wilks* 3344 (MA, WAG); 50 km W of Doussala, 18 Apr. 1987, *Wilks* 1503 (MO, WAG).

Etymology – This species has been named after Jean-Claude Mouandza Mbembo, collector of one of the paratypes.

11. *Anthonotha noldeae* (Rossberg) Exell & Hillc. (Exell & Hillcoat 1955: 39 & 1956: 201); Léonard (1957: 222); Brenan (1967: 154, fig. 33); Keay (1989: 224); Breteler (2008: 142). – *Macrolobium noldeae* Rossberg (Rossberg 1936: 156); Nolde (1942: 330, figs 1–6); Léonard, (1952: 419). – Type: Angola, Malange, Quela, Apr. 1933, *von Nolde* 213 (holo-: B†; lecto-: BM, **designated here**; isolecto-: MO).

Tree (15–)25–35 m tall, up to at least 80 cm dbh; sapwood with whitish exudate. Branches (sub)appressed, grey-brown short-hairy, glabrescent, the same deciduous indumentum present on petioles, rachis, and petiolules. Stipules very early caducous, not seen. Leaves (3–)4–5(–6)-jugate (see note); petiole subterete (0.5–)1.5–2.5(–5.5) cm long; rachis (4.5–)7–11(–19) cm long; leaflets with (2–)3–5(–7) mm long petiolules; lamina oblong-elliptic to lanceolate, (2–)3–4(–5) times as long as wide, (4–)9–11(–21) × (2–)2.5–5(–8) cm , rounded to obtuse to slightly cordate at base, acuminate to acute at apex, the acumen up to c. 1 cm long; glabrous and ± smooth to prominently reticulately veined above with impressed midrib, greyish-silverish to brownish appressed short-hairy beneath, with very prominent midrib and with 12–16(–20) pairs of ± parallel, main lateral nerves. Inflorescence a panicle, axillary between the leaves or terminating the leafy shoot, with a stiff axis, up to 15 cm long, appressed brown short-hairy, racemes up to c. 6 cm long; bracts early caducous, ovate in outline, cucullate, 3–4 mm long, glabrous inside. Flowers: pedicel 6–9 mm long, hairy as inflorescence. Bracteoles firm, concave, elliptic in outline, 10–13 × (6–)8–9 mm, outside hairy as pedicel, inside ± glabrous to tomentellous, the edges c. 1 mm wide, tomentellous. Hypanthium 1.5–2 mm long, glabrous. Sepals glabrous, triangular-oblong to ovate, 6–8 × 2–3 mm, rounded to acute at apex, the abaxial sepal 3–4 mm broad, usually bilobed at apex. Large petal: claw 5–7 mm long, puberulous at base; lamina bilobed, 20–30 × 10–15 mm; small petals 3, oblong-obovate, sometimes obcordate, 2–4 mm long. Large stamens 4–5, 20–25 mm long, anthers c. 2.5 mm long, filaments pubescent in lower 3–5 mm; staminodes 3–4, 2–3 mm long, pubescent at base, with a dehiscing anther of 0.7–1 mm long; pistil c. 25 mm long, ovary 5–6 mm long, velutinous, 3–4-ovulate, style pubescent in basal 5–6 mm. Pods (see also notes) dehiscent, shortly elliptic to oblong in outline, 6–18 × 4–6(–8) cm, 1–3-seeded, ± appressed dark-brown velutinous, ± transversely nerved, obscurely so or not; ventral suture 0.5–1(–1.5) cm thick, usually thicker than the dorsal one. Mature seeds not seen (but see notes). Figs 5B-C & 19.

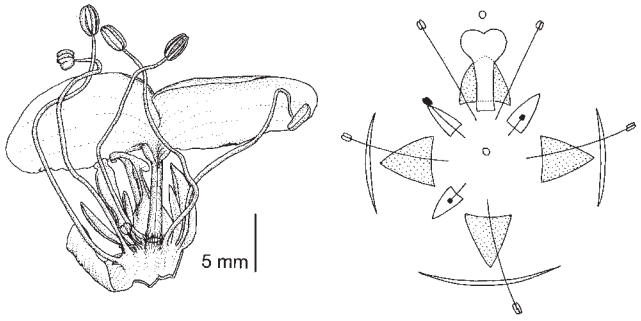

Figure 19 – Opened up flower and diagram of *Anthonotha noldeae* (*Kahurananga et al.* 2635). Drawn by H. de Vries.

Habitat and distribution – Montane forest on fertile (volcanic) soils, in eastern Nigeria, West Cameroon, central Angola, eastern D.R.Congo, Burundi, and western Tanzania. Alt. 900–2300 m. Fig. 20.

Additional specimens studied – **Nigeria**: Mambilla Plateau, Ngelyaki F. R., 1 Mar. 1972, *J.D. Chapman* 2714 (FHO); ibid., 8 Nov. 1973, *J.D. Chapman* 3287 (FHO); ibid., 11 Nov. 1973, *J.D. Chapman* 3335 (FHO); Mambilla Plateau, Gashaka, Chapal, 8 May 1976, *J.D. Chapman* 4459 (FHO); Mambilla Plateau, Ngelyaki F. R., 2 Aug. 1976, *J.D. Chapman* 4539 (FHO); ibid., 10 Aug. 1976, *J.D. Chapman* 4600 (FHO, K); Mambilla escarpment, 11 Feb. 1977, *J.D. Chapman* 4670 (FHO); Gembu District, Ngelyaki F. R., 28 Nov. 1968, *Daramola* FHI 62361 (K).

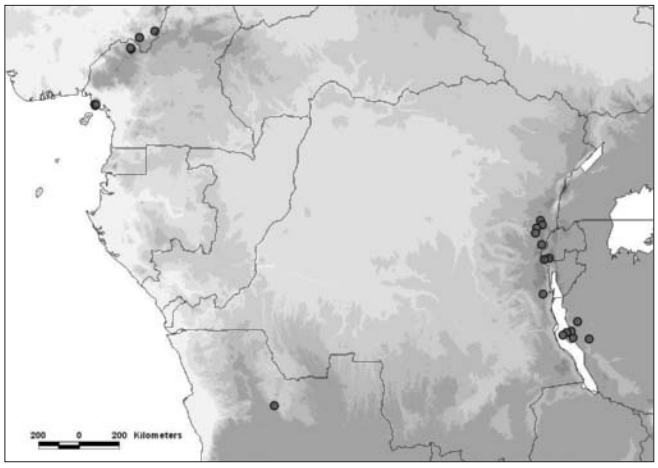

Figure 20 – Distribution of *Anthonotha noldeae*.

Cameroon: Kunge, 2 km N of Nkambe, 4 Nov. 1974, *Letouzey* 13148 (P, WAG); Gepka, 5 km N of Nkambe, 13 Nov. 1974, *Letouzey* 13148 bis (P); Cameroon Mt, Lisoka, Apr. 1930, *Maitland* 1076 (K); Cameroon Mt, southern slope above Batoke, 29 Dec. 1983, *D.W. Thomas* 2794 (BR, MO, P, WAG); ibid., 9–20 Jan. 1984, *D.W. Thomas* 2976 (BR, K, P, WAG).
D.R.Congo: Masisi, 16 Aug. 1958, *Gutzwiller* 1971 (BR); ibid., 12 Jan. 1959, *A. Léonard* 2511 (BR, WAG) & 2514 (BR, WAG); ibid., 25 Jan. 1959, *A. Léonard* 2651 (BR, WAG); Kalimbi, 23 Mar. 1959, *A. Léonard* 3564 (BR, WAG); Mabaye, 2 Mar. 1969, *Lewalle* 3264 (BR, WAG); Fizi, Apr.–May 1944, *Michelson* 632 (BR); trail Kilongo–Muwet, 8 Jan. 1958, *Michelson* 1060 (BR); km 41 Kibabi–Kikoma, 27 Apr. 1958, *Pierlot* 1870 (BR).
Burundi: Lua R., Ruanda frontier, 5 Nov. 1973, *Guigonis* 610 (P).
Tanzania: Mpanda District, Ntakatta Forest, 15 Jun. 2000, *Bidgood et al.* 4697 (K); Kungwe-Mahali Peninsula, 8 Aug. 1959*, Harley* 9219 (BR, K); Mwese, 20 May 1975, *Kahurananga et al.* 2563 (K); ibid., 21 May 1975, *Kahurananga et al.* 2635 (BR, K, WAG); Kabesi valley, 31 Aug. 1972, *Newbould et al*. 1972 (K); Mpanda District, Mahili Mts, 5 Sep. 1958, *Newbould et al.* 2336 (BR, K); Kigoma District, Mahili Mts, 1969, *Nishida* 42 (K).

Notes – The specimen *Letouzey* 14332 from Cameroon, gathered on 18 Aug. 1975 from below a tree, 45 km ENE of Mamfe, consists of some loose leaflets and two seeds. The collector describes the leaves as 6–8-jugate and the pods dehiscent on the tree with 4–6(–8) seeds. The other specimens studied never had more than 6-jugate leaves and the number of ovules (3–4) found in the ovary contradicts with the high number of seeds reported by Letouzey. Nevertheless the loose leaflets represent most probably *Anthonotha noldeae*. The seeds are described by Letouzey as having a glossy seed coat. They measure 2.5 × 3.5 × 0.5 cm and have a brittle seed coat.

Nolde (1942) gives also a description of the species. She describes the leaves as 5–6–jugate, the ovary as 3–4-ovuled and the pod as 1–3-seeded. The pod is further described as glabrous. The pod indumentum is very short-hairy in this species and it may be very sparsely so in mature pods as seen in *Thomas* 2794 from Cameroon. It needs careful observation to see the remnants. This may account for Nolde's observations that the pods are glabrous (see also *A. crassifolia*). Her measurements of the seeds are 5 × 4 × 1–1.5 cm.

The distribution of *Anthonotha noldeae* is very disjunct. The species has only been collected from volcanic soils or from sites where growing conditions are very favourable as described by Nolde (1942) from Angola. It is not known if this may be related with the absence of an effective association with fungi.

12. *Anthonotha pellegrinii* Aubrév. (Aubréville 1968: 213); Breteler (2008: 142). – Type: Gabon, Ivouta, 11 Apr. 1927, *Le Testu* 6496 (holo-: P; iso-: BM, BR, LISC, MO, WAG).

Tree, at least up to 30 m tall and 70–80 cm dbh. Bark smooth, dark greenish, 3–4 mm thick. Branches densely tomentose to woolly, the same indumentum present on petiole, leaf rachis and petiolules. Stipules ± persistent, united in lower half, oblong, c. 8 × 3–4 mm, appressed long-hairy outside, glabrous inside. Leaves (3–)5–7-jugate; petiole terete, (0.5–)1(–1.5) cm long; rachis terete, (1.5–)4.5–13 cm long, with a c. 1 cm long, filiform prolongation; leaflets: petiolule 1–4 mm long; lamina oblong-elliptic, 1.5–3.5 times as long as wide, (3–)4.5–12.5 × 2–4 cm, rounded to obtuse to subcordate at base, 2–5 mm long acuminate at apex, glabrous, smooth and glossy above with a ± plane midrib, main lateral nerves 10–15 pairs, ± indistinct above, beneath hidden by the woolly indumentum. Inflorescence a short, up to 3 cm long panicle, on the leafy shoot, axillary and/or below the leafy part, woolly-tomentose; bracts early caducous, ovate, concave, 3 × 2 mm, glabrous inside. Pedicel 5–8 mm long. Bracteoles elliptic, 7 × 4–5 mm, sparsely tomentellous inside, edges glabrous or with a glabrous zone. Hypanthium ≤ 1 mm long, glabrous. Sepals ± oblong, 3–3.5 × 1–1.5 mm, the adaxial one c. 2 mm wide, entire. Large petal: claw 3–3.5 mm long; lamina 5 × 7 mm, c. 2 mm bilobed; small petals present or not, ≤ 0.5 mm long. Large stamens 3, 10–15 mm long; anthers 2 mm long; filaments often sparsely pubescent in basal part; staminodes two of the outer whorl present, 1–2 mm long, with a minute dehiscent anther. Pistil 10–15 mm long; ovary c. 3 mm long, densely villous, 3–4-ovuled; style sparsely pubescent in lower half. Pod ± broadly elliptic in outline. 7–13 × 4.5–5.5 cm, cuneate to rounded at base, acute at apex, brown-velutinous, surface ± densely, finely tuberculate, 1–2-seeded. Mature seeds not seen. Figs 5D, E & 21.

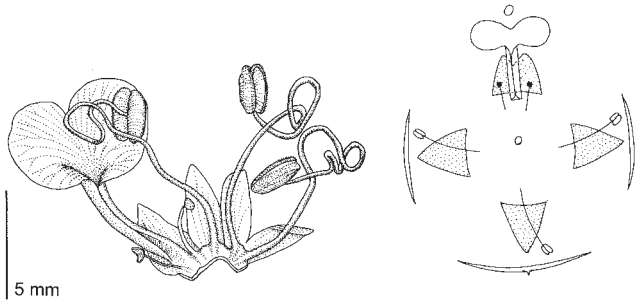

Figure 21 – Opened up flower and diagram of *Anthonotha pellegrinii* (*Le Testu* 6496). Drawn by H. de Vries.

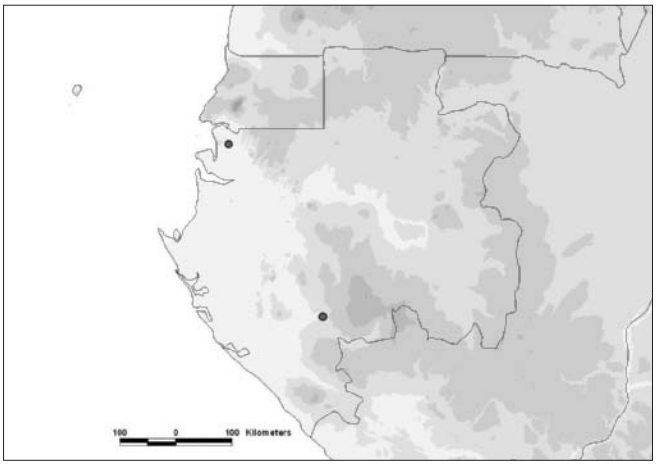

Figure 22 – Distribution of *Anthonotha pellegrinii*.

Habitat and distribution – Tropical rain forest in Gabon. Alt. 0–300 m. Fig. 22.

Additional specimen studied – **Gabon**: 15 km N of Koulounga, 22 Sep. 1983, *Floret & Louis* 1395 (P, WAG).

13. ***Anthonotha pynaertii*** (De Wild.) Exell & Hillc. (Exell & Hillcoat 1955: 39 & 1956: 201); Léonard (1957: 222), partly, except specimens cited from Gabon; Aubréville (1968: 208) partly, name and type only; Breteler (2008: 142). – *Macrolobium pynaertii* De Wild. (De Wildeman 1910: 192); Pellegrin (1948: 50), partly, name only; Léonard (1952: 424). – Type: D.R.Congo, Eala, Mar. 1907, *Pynaert* 1226 (holo-: BR).

M. bonnivairi De Wild. (De Wildeman 1920: 256). – Type: D.R.Congo, Eala, Apr. 1913, *Bonnivair* 26 (holo-: BR).

M. malchairi De Wild. (De Wildeman 1920: 255). – Type: D.R.Congo, Likimi, 30 Apr. 1910, *Malchair* 312 (holo-: BR).

M. palisotii Benth. (Bentham 1865: 308, partly, as regards *Welwitsch* 560).

Small to medium sized tree, (2.5–)15–20(–30) m tall, dbh up to 40(–80) cm. Branchlets densely brown-short-hairy, appressed or not, the same indumentum present on stipules, petioles, rachis and petiolules, glabrescent with age. Stipules caducous well before the leaves are fully expanded, oblong, c. 3 mm long, leaving a small rim of c. 0.5 mm high. Leaves (2–)3–5(–6)-jugate; petiole ± terete, (0.5–)2–4(–6) cm long; rachis ± terete, (0.5–)5–15(–17) cm long; leaflets: petiolules terete, (4–)5–7(–10) mm long, lamina obovate-elliptic, (1.5–)2.5–3(–3.5) times as long as wide, (5–)8–17(–33) × (2–)3–7(–10) cm, rounded to somewhat cuneate at base, gradually or often abruptly acuminate at apex, the acumen (2–)5–10(–20) mm long; glabrous and smooth to prominently reticulately veined above with impressed midrib, whitish grey to silverish or brownish appressed short-hairy beneath, midrib and the (9–)11–14(–18) pairs of main lateral nerves prominent beneath, the tertiary venation slightly prominent (obscured by indumentum). Inflorescence a simple or compound raceme, axillary or below the leaves, single or, usually, up to seven together, up to 11 cm long, brown subappressed short-hairy; bracts very early caducous, not seen. Flowers whitish, sweet scented; pedicel (4–)5–7(–9) mm long. Bracteoles elliptic, concave, (5–)6–7(–8) × 4–5 mm, outside hairy as inflorescence, glabrous or sparsely tomentellous inside, the edges tomentellous. Hypantium 1–1.5 mm long, glabrous, often obscurely ribbed. Sepals triangular-oblong, (2–)4–5(–5.5) × 1–2(–2.5) mm, glabrous, acute to rounded at apex, the adaxial sepal c. 4 × 2 mm, entire to shortly bilobed. Large petal: claw (2.5–)3–4(–5) mm long, pubescent along the margin (fig. 3F & G); lamina (2–)3–4(–4.5) mm long, (4–)5–6(–8) mm wide, slightly bilobed or only notched at apex; small petals 4, ovate-oblong to obovate, 1–2 mm long, glabrous. Large stamens 3, 8–11 mm long; anthers 1.5–2 mm long; filaments pubescent in basal 1–2 mm; staminodes all present, 0.5–2(–3) mm long, usually with a small, ≤ 0.5 mm long, dehiscing anther and a pubescent filament. Pistil 8–14 mm long; ovary 3–5 mm long, velutinous, 4–8-ovulate; style usually glabrous, rarely with a few hairs in lower part. Pod oblong, often curved and rounded to cuneate at base, obliquely acute at apex, 12–20(–27) × 3–5(–6) cm, up to 2 cm thick, up to 6-seeded, densely pale-brown velutinous, ± transversely nerved, nerves slightly oblique or not, somewhat reticulate, slightly prominent; dorsal suture hardly thickened, the ventral one slightly so. Seed elliptic to square or rectangular in outline, 3–4.5 × 2.5–3.2 × 1–1.2 cm; seed coat brown, smooth, slightly glossy, glabrous, distinctly, shallowly impressed or prominently veined. Figs 3E, G & 5F.

Habitat and distribution – Tropical rain forest, often reported from damp places or from periodical inundated or riverine forest, but also from dry land forest. From Liberia to Angola. Alt. up to 1500 m. Fig. 23.

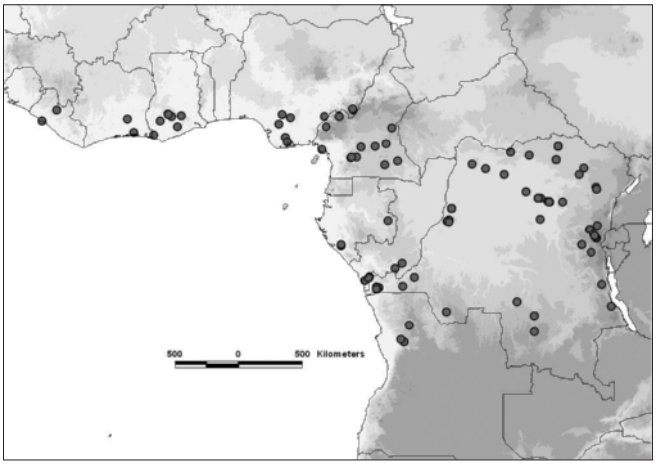

Figure 23 – Distribution of *Anthonotha pynaertii*.

Additional specimens studied – **Liberia**: Dukwia R., 23 Feb. 1929, *Cooper* 225 (FHO, K); Gbanga, 9 Sep. 1926, *Linder* 473 (K).

Côte d'Ivoire: Anoumaba, 12–20 Nov. 1909, *Chevalier* B 22389 (P); Banco, 5 Jan. 1931, *Martineau* 330 (P).

Ghana: Mpraeso District, May 1956, *Adu* 69 (K, P); Kumasi, Oct. 1931, *Andoh* 2368 (FHO); Ankassa Game Res., near Ankassa R., 26 Apr. 1995, *Breteler* 13372 (WAG); Kumasi–Kwadaso, Oct. 1971, *Cudjoe* 570 (BR, WAG); Kumasi,

Oct. 1978, *Enti* 1871 (MO, WAG); near Akyeasa, Oct. 1921, *Fishlock* 73 (BM, K); Anwhiaso Res., Sep. 1936, *Foggie* 4438 (BM); Obo, Kwahu, Jan. 1932, *Irvine* 1727 (K); sine loco, 1934, *Vigne* 3371 (K, P).

Nigeria: Sardauna Prov., Mambilla L.A., 9 May 1973, *J.D. Chapman* 3139 (FHO); Ahoado District, Jan. 1927, *Chesters* 15 (K) & 16 (K); Ishan District, Ubiaja, 4 Nov. 1950, *Keay* FHI 28125 (K); S. Nigeria, *Kennedy* 1964 (K); boundary of Yashaka and Mabila Plateau, 14 Jan. 1955, *Latilo & Daramola* FHI 34408 (K, P); Mamu Govt. Reserve, 6 Sep. 1944, *Onochie* FHI 7662 (K, P); Kundate, 23 Dec. 1948, *Savory & Keay* FHI 25130 (BR, K); Degema District, 1914, *Talbot c.s.* 3655 (BM, K) & 3656 (K).

Cameroon: Bertoua, km 6 to Batouri and Betaré Oya, 14 Mar. 1961, *Breteler* 1191 (BR, K, P, WAG); 2 km NE Nguélémendouka, 22 Nov. 1961, *Breteler* 2109 (BR, P, WAG); Poumpoum, 5 km S of Lomié, 13 Dec. 1982, *de Kruif* 922 (WAG, YA); 4 km NE of Otélé, 28 Mar. 1964, *W.J. de Wilde c.s.* 2252 (BR, K, P, WAG); Fonduka, Feb. 1931, *Johnstone* 66/31 (FHO); Usonigbe F. R., 26 Oct. 1946, *Keay & Onochie* FHI 19676 (FHO); Akilla, *Kennedy* 1964 (FHO, K); boundery of Gashaka and Mambilla Plateau, 14 Jan. 1955, *Latilo & Daramola* FHI 34408 (FHO); between Weso and Médoum, 24 Jun. 1963, *Letouzey* 5333 (K, P); Cameroon Mt, Dec. 1929, *Maitland* 894 (K); Mamfe District, Jan. 1920, *Maitland* (?) 1156 (K); c. 90 km NE of Yaoundé, Feb. 1914, *Mildbraed* 8192 (K); km 15 Yaoundé–Nkilzok, 9 Nov. 1953, *Mpom* 82 (P); Bangbel, 20 km NE Betaré Oya, 10 Dec. 1980, *Satabié* 547 (P); Otomo Res. near Yaoundé, *Service Forestier du Cameroun* 21 (K, P).

Gabon: S of Doussala, 23 Sep. 2000, *Bourobou et al.* 460 (MO, P, WAG); sine loco, 1863–1864, *Griffon du Bellay* 14 (P).

Republic of the Congo: M'Boumou, 16 Nov. 1964, *Bouquet* 769 (P, WAG); Lefini, 18 Jan. 1963, *de Nere* 664 (P).

D.R.Congo (selection of specimens seen): Epulu, 10 May 1996, *Amsini* 17 (MO, WAG); 7 km W of Kisangani, 17 Sep. 1971, *Bokdam* 3226 (WAG); Eala, 6 Apr. 1928, *Corbisier Baland* 768 (BR, MO); ibid., 18 Apr. 1932, *Corbisier Baland* 1313 (BR, K, MO, P); Panzi–Kwango, 12 Jun. 1955, *Devred* 2008 (BR, WAG); Boketa, 29 Apr. 1955, *Evrard* 852 (BR, K); Bikoro, 29 Mar. 1958, *Evrard* 3830 (BR, K); Bambesa, 19 Apr. 1952, *Gérard* 197 (BR, K); Tukpwo, 11 May 1954, *Gérard* 1398 (BR); Epulu, 12 Dec. 1981, *Hart* 182 (BR, K); ibid., 14 Mar. 1980, *Hart* 584 (BR, MO, WAG); Kaniama, 1935, *Herman* 2156 (BR, K); Bolombo, Aug. 1930, *Lebrun* 1191 (BR, G, K, MO, P); Bondo, Mar. 1931, *Lebrun* 2451 (BR, G, P); Eala, 1935, *Leemans* 381 (BR, P); Yangambi, 28 Apr. 1979, *Lejoly* 5094 (WAG); Kampala, 14 Feb. 1958, *A. Léonard* 1649 (BR); Dibaya, 7 Jun. 1957, *Liben* 3138 (BR, K); Eala, 19 May 1936, *J. Louis* 1943 (MO, WAG); Yangambi, 24 Mar. 1937, *J. Louis* 3487 (BR, P, WAG); Luki, 21 Feb. 1955, *Mahieu* 70 (BR, FHO, K); Likimi, 20 Apr. 1910, *Malchair* 266 (BR); Luki, 30 Nov. 1949, *Maudoux* 238 (BR, WAG); Kamituga, Oct. 1943, *Michelson* 541 (BR, K); Kisangani, 20 Apr. 1984, *Pauwels* 6873 (BR, WAG); Shabunda, 15 Dec. 1955, *Pierlot* 1121 (BR); Makwe, 25 Nov. 1959, *Pierlot* 3274 (BR, WAG); Nola, Feb. 1907, *Seret* 2771 (BR); Bikoro, 21 Oct. 1957, *Thonet* 98 (BR, K); Luki, 19 Jan. 1948, *Toussaint* 163 (K, MO); Irangi, 28 Aug. 1957, *Troupin* 4269 (BR, K, WAG); Temvo, 3 Mar. 1919, *Vermoesen* 1728 (BR); Luki, 23 May 1959, *Wagemans* 2356 (BR).

Angola: Cazengo, Granja de S. Luiz, 1909, *Gossweiler* 4510 (BM, COI, K, LISC, LISU); ibid., 1909 (?), *Gossweiler* 4725 (BM, BR, COI, FHO, K, LISC); ibid., 28 Nov. 1911, *Gossweiler* 5221 (BM, COI, LISC, LISU); Buco Zau, 11 Sep. 1916, *Gossweiler* 6673 (BM, COI, LISC, LISU); Sera–Subluali, 7 May 1919, *Gossweiler* 8029 (BM, BR, COI, K, LISC, LISU); Cabinda, Cataboanga, 15 Jun. 1960 *Monteiro & Murta* 247 (BM, LISC); Golungo Alto, 1856, *Welwitsch* 560 (BM, COI, K, LISC, P).

Notes – *Hart* described her specimen 182 as "arbre de la strate supérieure" and *Bokdam* (no 3226) and *J. Louis* (no 1943) reported their specimen as a liana.

A. pynaertii resembles *A. macrophylla* in many aspects such as leaflet number and leaflet shape, but can often satisfactorily be distinguished by the golden-brown indumentum on the lower surface of its leaflets. This indumentum is whitish to greyish in *A. macrophylla* as in the older leaflets of *A. pynaertii.* The best character to separate these two species is found in the bracteoles: with hairy edges in *A. pynaertii,* with glabrous edges in *A. macrophylla.* Specimens of *A. pynaertii* from West Africa have hitherto been identified as *A. macrophylla.* Correct identification resulted in a considerable larger area for *A. pynaertii.*

14. ***Anthonotha stipulacea*** (Benth.) J.Léonard (Léonard 1955: 203 & 1957: 223); Aubréville (1968: 201, fig. 47 & 1970: 198); Breteler (2008: 143). – *Macrolobium stipulaceum* Benth. (Bentham 1865: 308); Oliver (1871: 299); Baker (1930: 671); Pellegrin (1948: 47). – *Vouapa stipulacea* (Benth.) Taub. (Taubert 1892: 142). – Type: Gabon, Gaboon R., Jul. 1861, *Mann* 920 (holo-: K).

Vouapa autraniana Pierre, nomen in sched., Herb. *Autran in Heckel* 16 (P).

Shrub (sometimes unbranched) to small tree, up to 12 m tall and 10 cm dbh. Branchlets densely appressed brown short-hairy, same indumentum present on petiole, leaf rachis, and petiolules. Stipules long persistent, united in lower part, elliptic to lanceolate, 5–8 × 1–2.5 cm, acute to acuminate at apex, appressed short-hairy outside, glabrous inside. Leaves 5–7(–8) -jugate; petiole subterete, 0.5–1(–1.5) cm long; rachis subterete, (15–)20–45(–57) cm long, with an up to 3.3 cm long, thread-like prolongation; leaflets: petiolule firm, (2–)4–5 mm long; lamina obovate-elliptic to oblong, (2–)3–4(–5) times as long as wide, (4–)18–25(–32) × (1.5–)4–6(–9) cm, rounded to cuneate at base, (0.5–)1–3(–4) cm long acuminate at apex, glabrous above with slightly impressed midrib and with prominent, reticulate lateral nervation, beneath densely, silverish to pale brown appressed short-hairy and with sparse, subappressed longer hairs. Inflorescence an up to 10 cm long panicle on the trunk, single or several together on a knob-like base and then semiglobose in appearance, more or less appressed brown velutinous; bracts ± persistent, ovate-elliptic, 4–5 mm long, glabrous inside, those subtending an individual raceme up to 12 mm long. Pedicel 17–20 mm long. Bracteoles elliptic, 9–12 × 4.5–7 mm, tomentellous inside,

edges with a glabrous zone. Hypanthium 1–1.5 mm long, glabrous. Sepals ovate-elliptic to lanceolate, 7–10 × 3–5(–6) mm, the adaxial sepal 4–6 mm wide, 1–1.5 mm bilobed. Large petal: claw 6–10 mm long; lamina 8–9 × 10–14 mm, 3 mm bilobed at apex; small petals all present, ovate-elliptic to oblong, 1–2.5 mm long. Large stamens 3, 20–25 mm long; filaments pubescent at base; anthers 2.5–3 mm long; staminodes all present, 1–2 mm long, with or without a minute closed anther. Pistil 25–30 mm long; ovary 3–5 mm long, velutinous, 5–10-ovulate; style ± glabrous. Pod oblong, ± falcate, 19–27 × 4.5–5.5 cm, pale brown velutinous with darker brown patches and spots, ± densely, prominently, obliquely veined, cuneate, curved to rounded at base, acute to beaked at apex, up to c. 8-seeded. Mature seeds ± rectangular to subquadrate, 3–3.5 × 2–3.3 × 1–1.3 cm. Fig. 5G.

Habitat and distribution – Tropical rain forest in the continental part of Equatorial Guinea and in West Gabon. Alt. 0–400 m. Fig. 24.

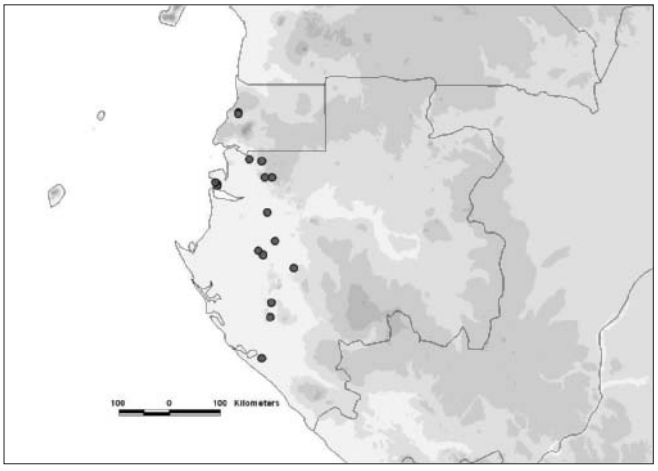

Figure 24 – Distribution of *Anthonotha stipulacea*.

Additional specimens studied – **Equatorial Guinea**: 27 km Bata–Senge, 13 Nov. 1996, *Carvalho* 6078 (MA); ibid., 17 Jul. 1997, *Carvalho* 6394 (MA).
Gabon: Libreville, *Autran in Heckel* 16 (P) & 19 (P); Diabomagola, 20 Jul. 1912, *Fleury in Chevalier* 26128 (P, WAG); between Nkogo and Elrinanghâ on the Ayem lake, 22 Aug. 1912, *Fleury in Chevalier* 26149 (P); 25 km Kinguélé–Tchimbélé, 20 Jan. 1991, *J.J. de Wilde et al.* 10099 (WAG); Bokoué, 20 Jul. 1959, *N. Hallé* 778 (P, WAG); Libreville, 10 Jun. 1896, *Klaine* 473 (P); ibid., 26 Aug. 1896, *Klaine* 529 (P), *Klaine* 811 (flowers) (K, P) & *Klaine* 811 (fruits) (K, P); Echira, 1894–1895, *Leroy* s.n. (P); Crystal Mts, 27 Jan. 2001, *Nguema* 1664 (WAG); ibid., 5 Aug. 2001, *Nguema* 1968 (WAG); Gamba, 8 Apr. 2003, *Niangadouma et al.* 277 (WAG); Doudou Mts, 18 Nov. 2005, *Sosef et al.* 2380 (WAG); Komi near Sindara, 17 Jun. 1986, *Thomas & Wilks* 6405 (MO, WAG); Ngoualé, 2 May 2001, *Walters et al.* 591 (MO, WAG); 29 km ENE Lambaréné, 5 Apr. 1994, *Wieringa & Haegens* 2657 (WAG); Cristal Mts, 1 May 2001, *Wilks* AP 3410 (WAG).

15. ***Anthonotha trunciflora*** (Harms) J.Léonard (Léonard 1955: 201 & 1957: 223); Aubréville (1968: 204); Breteler (2008: 143). – *Macrolobium trunciflorum* Harms (Harms 1899: 272); Baker (1930: 671); Pellegrin (1948: 46). – Type: Gabon, near Libreville, Sibange Farm, 6 May 1881, *Soyaux* 275 (holo-: B†; lecto-: P, **designated here**, isolecto-: K).

Small tree up to 20 m tall and 27 cm dbh. Branches sparsely appressed short-hairy, soon glabrescent, the same indumentum present on petiole, leaf rachis, petiolules and leaflet midrib beneath. Stipules early caducous, completely united or nearly so, oblong-elliptic, c. 4.5 × 1.5 cm, appressed puberulous outside, glabrous inside. Leaves (2–)3–4-jugate; petiole subterete, usually tumid, (3–)5–10(–25) mm long; rachis subterete, (4–)6–15(–26) cm long; leaflets: petiolule terete, 3–7 mm long; lamina elliptic to obovate, rarely ovate, 2–3.5(–4) times as long as wide, (5–)12–21(–29) × (2.5–)4–8(–9) cm, rounded to cuneate at base, (3–)5–10(–15) mm long acuminate at apex, glabrous above, appressed greyish to whitish arachnoid-hairy beneath when young, the indumentum soon shriveling to dots or patches and finally disappearing, adult leaflets usually glabrous or with a few subappressed hairs mainly on midrib; main lateral nerves 8–13 pairs, prominent beneath. Inflorescence a short, 4–9 cm long panicle, axillary on the leafy shoot, but mostly beneath the leafy part, rarely on the trunk, subappressed brown-hairy; racemes c. 2 cm long; bracts early caducous, ovate-elliptic, 2–3(–4) mm long, glabrous inside. Pedicel 2.5–4 mm long. Bracteoles elliptic, 7–8 × 5–6 mm, tomentellous inside, edges glabrous. Hypanthium 1–1.5 mm long, glabrous. Sepals elliptic, 4–6 × 4.5 mm, the two adaxial sepals from free to ± completely united. Large petal: claw 5–7 mm long; lamina 6–8 × 10–13 mm, 2–4 mm bilobed; small petals all present, ovate-elliptic, 0.5–1 mm long. Large stamens 3, 15–25 mm long; filaments pubescent at base; anthers 2.5 mm long; staminodes all present, c. 1 mm long, with a small closed anther or not. Pistil 15–25 mm long; style pubescent in lower half; ovary 3–4 mm long, velutinous, 6–7-ovuled. Pod narrowly elliptic to oblong in outline, (9–)15–20(–28) × 4–6 cm, pale-brown shortly velutinous, usually with darker brown irregularly shaped patches, up to 5-seeded, transversely, prominently veined, sutures slightly prominent. Mature seeds not seen. Figs 5H & 25.

Habitat and distribution – Rain forest in West Gabon. Alt. up to 500 m. Fig. 26.

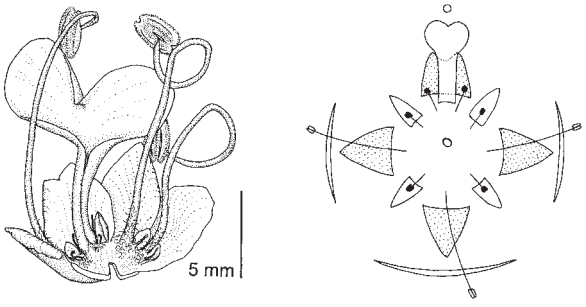

Figure 25 – Opened up flower and diagram of *Anthonotha trunciflora* (*van der Burgt* 77). Drawn by H. de Vries.

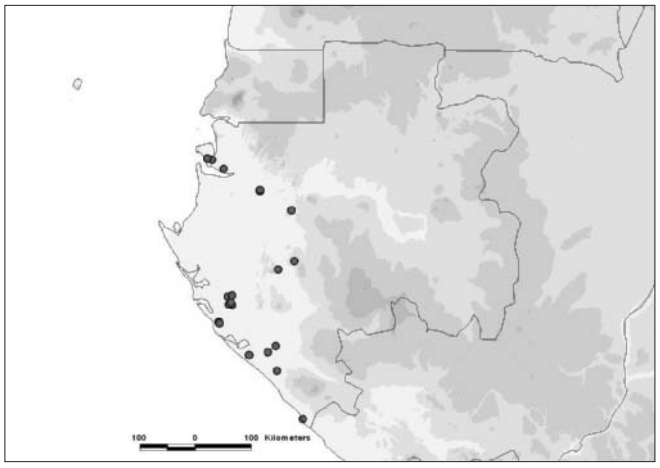

Figure 26 – Distribution of *Anthonotha trunciflora*.

Additional specimens studied – **Gabon**: Toucan, 29 May 2002, *Bourobou et al*. 629 (MO, P, WAG); ibid., 4 Jun. 2002, 693 (MO, WAG); Rabi-Kounga, 8 Jul. 1998, *Breteler et al.* 14355 (WAG); Gamba, 5 Dec. 1994, *J.J. de Wilde c.s.* 11324 (WAG); Loango N. P., 15 May 2005, *Harris* 8663 (WAG); Mboumi, 13 Aug. 1999, *Issembe* 166 (WAG); S of Ekouk; 2 Nov. 1983, *A.M. Louis et al.* 302 (K, MA, P, WAG); Waka, 32 km SW Sindara, 14 Dec. 1983, *A.M. Louis et al.* 1380 (K, MA, P, WAG); 23 km S.E of Igotchi–Mouende, 19 May 1997, *McPherson* 17051 (BR, MO, WAG); Loango N. P., 11 Sep. 2004, *Mouandza et al.* 278 (WAG); 50 km SW Doussala, 16 Oct. 1985, *Reitsma c.s.* 1623 (WAG); 13 Apr. 1987, *Reitsma c.s. & Wilks* 3222 (WAG); Nyanga, 4 km from Bame, 12 May 2001, *Stone et al.* 3262 (WAG); Rabi-Kounga, 24 Mar. 1994, *van der Burgt* 77 (WAG); ibid., 26 Apr. 1994, *van der Burgt* 113 (WAG); Moukalaba Doudou N. P., 22 Feb. 2004, *van Valkenburg et al.* 2944 (P, WAG); Rabi-Kounga, 2 Jul. 1992, *Wieringa* 1225 (WAG); Fougamou–Yombi, 31 Oct. 1994, *Wieringa et al.* 3003 (WAG); Rabi-Kounga, 26 Nov. 1994, *Wieringa & van Nek* 3291 (WAG).

16. *Anthonotha wijmacampensis* Breteler, **sp. nov.**

Anthonotha brieyi (De Wild.) J.Léonard forma inflorescentiae, floris et leguminis maxime simile, ab ea differt habitu (arbor major) folio pinnis pluribus foliolisque minoribus et indumento villoso ferruginea ramenculorum juvenilium, petiolorum, rhachidum et petiolulorum. – Type: Cameroon, 30 km Ebolowa–Minkok Rd., 3°00´N, 11°21´E, 6 Jun. 1975, *J.J. de Wilde* 8272 (holo-: WAG; iso-: BR, COI, K, LBV, LISC, MA, MO, P, YA).

Deciduous tree up to 50 m tall and 70 cm dbh; bole cylindrical with small, up to 70 cm high buttresses; bark rather smooth, with a few, ± rectangular flakes. Branches densely rusty-brown-villous, the same indumentum present on stipules outside, petioles, rachis, and petiolules. Stipules very early caducous, ± ovate, c. 2 mm long, glabrous inside. Leaves (2–)4–5-jugate; petiole ± terete, c. 1 cm long; rachis ± terete, 1–5 cm long; leaflets: petiolules ± terete, 2–3(–4) mm long; lamina 2–2.5 times as long as wide, 3–5(–9) × 2(–3.5) cm, rounded at base, acute to up to 1 cm long acuminate at apex, glabrous above with impressed midrib, brown-villous-velutinous beneath with prominent midrib and 9–13 pairs of main lateral nerves. Inflorescence a compound raceme (rachis up to 1 cm long) up to 3 cm in diam., appearing with the new leaves, nearly only on the older branches, ± fasciculate in appearance, the raceme axes a few millimetres long at most, ± appressed, brown short-hairy; bracts early caducous, broadly ovate, concave, 1–2 mm long, glabrous inside. Pedicel 5–8 mm long. Bracteoles thin, 4–5 × 3–4 mm, glabrous and distinctly veined inside, edges c. 0.2 mm wide with small glabrous zone. Hypanthium 1 mm long, glabrous. Sepals oblong-elliptic, 3 × 1–1.5 mm, the adaxial one 2 mm wide, entire to deeply bilobed and sometimes as long as the claw of the large petal or even longer. Large petal: claw 4–6 mm long; lamina 4 × 6 mm, shallowly bilobed; small petals usually 3, sometimes 4 present, narrowly triangular to oblong, c. 1 mm long. Large stamens 3, 11 mm long; filaments sparsely pubescent in lower half; anthers 1.5 mm long; staminodes 2 (of outer whorl) present, ≤ 1 mm long, with or without a strongly reduced anther; pistil 10 mm long; style hairy in basal part; ovary velutinous, 3 mm long, 2-ovulate. Pods suborbicular, obliquely so or not to elliptic, 5–9 × 4.5–6 cm, rounded at base, apiculate, dull, densely short-brown-velutinous, ± prominently, densely nerved, 1–2-seeded. Seeds, usually irregularly lobed, slightly flattened, up to 3.5 cm in diam. and 1 cm thick, glabrous. Figs 5I, J & 28.

Habitat and distribution – Semi-deciduous forest in South Cameroon. Alt. up to c. 600 m. Fig. 27.

Additional specimen studied – **Cameroon**: 22 km E of Djoum, 6 Nov. 1966, *Letouzey* 8295 (P).

Etymology – *Anthonotha wijmacampensis* is named after the international timber trader and forester Koninklijke (Royal) Houthandel G. Wijma & Zonen, located in Kampen, The Netherlands. Wijma operates forest concessions in the South of Cameroon where this species has been collected. Royal Wijma is the first company in Cameroon, in fact the first in Central Africa, that is executing responsible certified management (FSC) and has shown a great interest in plant taxonomy as an indispensable tool for forest conservation and its wise use.

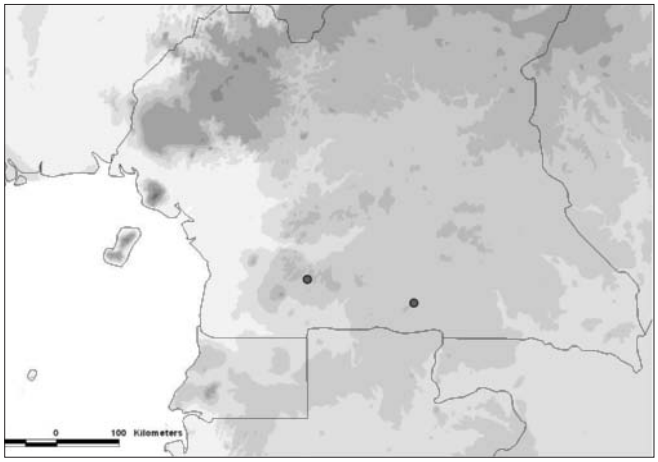

Figure 27 – Distribution of *Anthonotha wijmacampensis*.

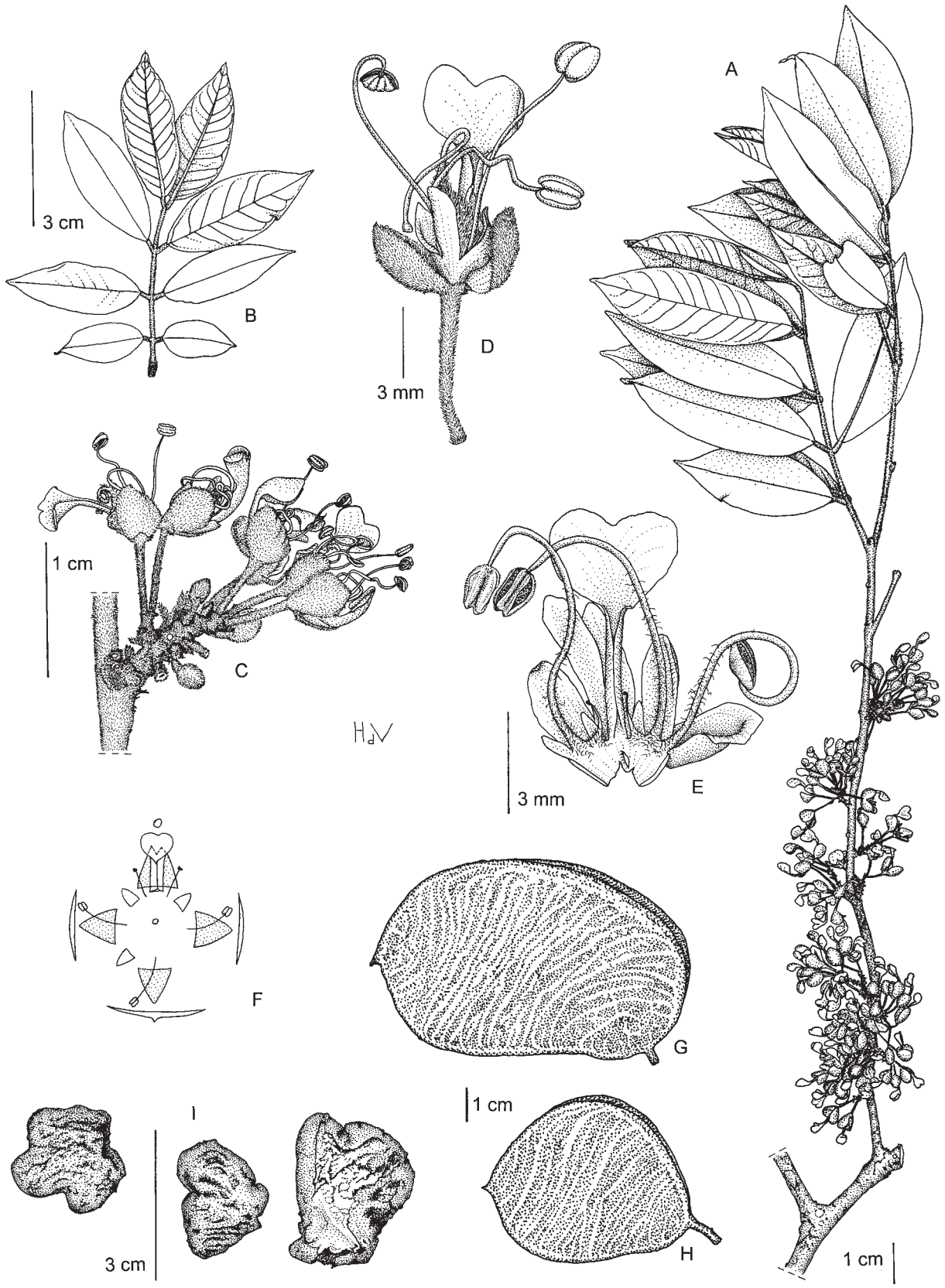

Figure 28 – *Anthonotha wijmacampensis*: A, flowering branchlet with young leaves; B, expanded adult leaf; C, inflorescence; D, flower; E, opened up flower; F, flower diagram; G, two-seeded pod; H, one-seeded pod; I, seeds (A-I. *J.J. de Wilde* 8272). Drawn by H. de Vries.

17. *Anthonotha xanderi* Breteler, **sp. nov.**

Anthonotha brieyi (De Wild.) J.Léonard forma floris et leguminis maxime simile, ab ea differt folio pinnis et nervis foliolorum pluribus, inflorescentia laxiore majore et floribus majoribus. – Type: Cameroon, South-West Province, Korup N. P., 5º01´N, 8º49´E, 24 Oct. 2005, *van der Burgt & Eyakwe* 784 (holo-: WAG; iso-: BR, G n.v., K n.v., LBV, MO n.v., P n.v., SCA n.v., YA n.v.).

Anthonota sp. "to be described": Breteler (2008: 139, fig. 1).

Tree 25–39 m tall, dbh up to 111 cm; buttresses 1.5 m high, 2 m wide; bark pale brown, smooth. Branches appressed, brown short-hairy, the same indumentum present on petioles, leaf rachis, and petiolules. Stipules very early caducous, not seen. Leaves 4–5(–6)-jugate; petiole terete, 2–4.5 cm long; rachis (6–)12–16(–25) cm long; leaflets: petiolules (3–)4–6(–8) mm long; lamina oblong-elliptic, (1.5–)2–3(–4) times as long as wide, (4.5–)8–15(–20) × (2.5–)4–6(–7) cm, rounded at base, (0.5–)1.5–2 cm long acuminate at apex, glabrous and prominently reticulately nerved above with slightly impressed midrib, silverish brown appressed short-hairy

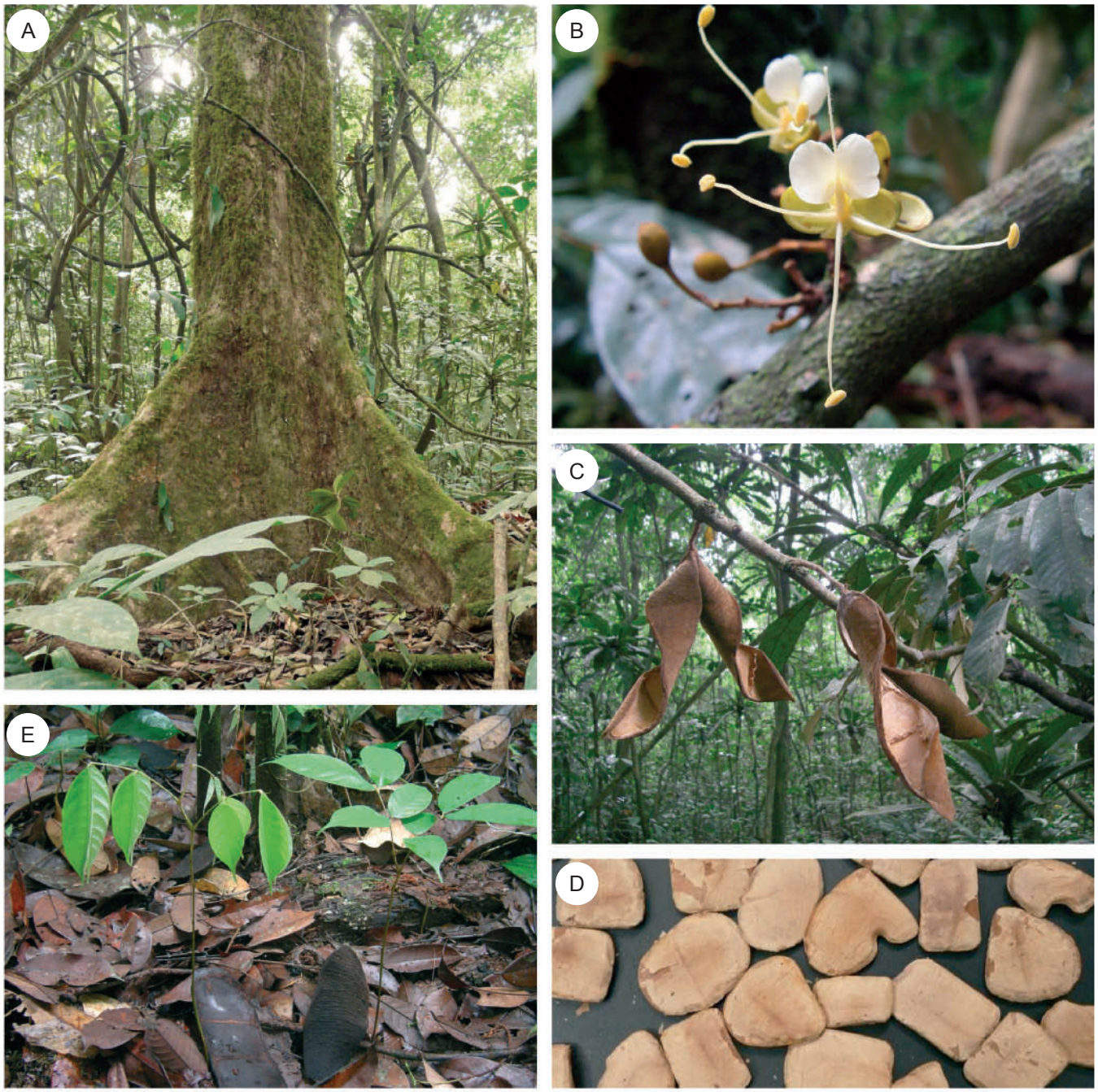

Figure 29 – *Anthonotha xanderi*: A, base of tree trunk; B, open flowers; C, dehisced pods; D, seeds; E, seedlings (A, E, *van der Burgt* 729; B, *van der Burgt et al.* 784; C, D, *van der Burgt* 1125). Photographs taken by the collector.

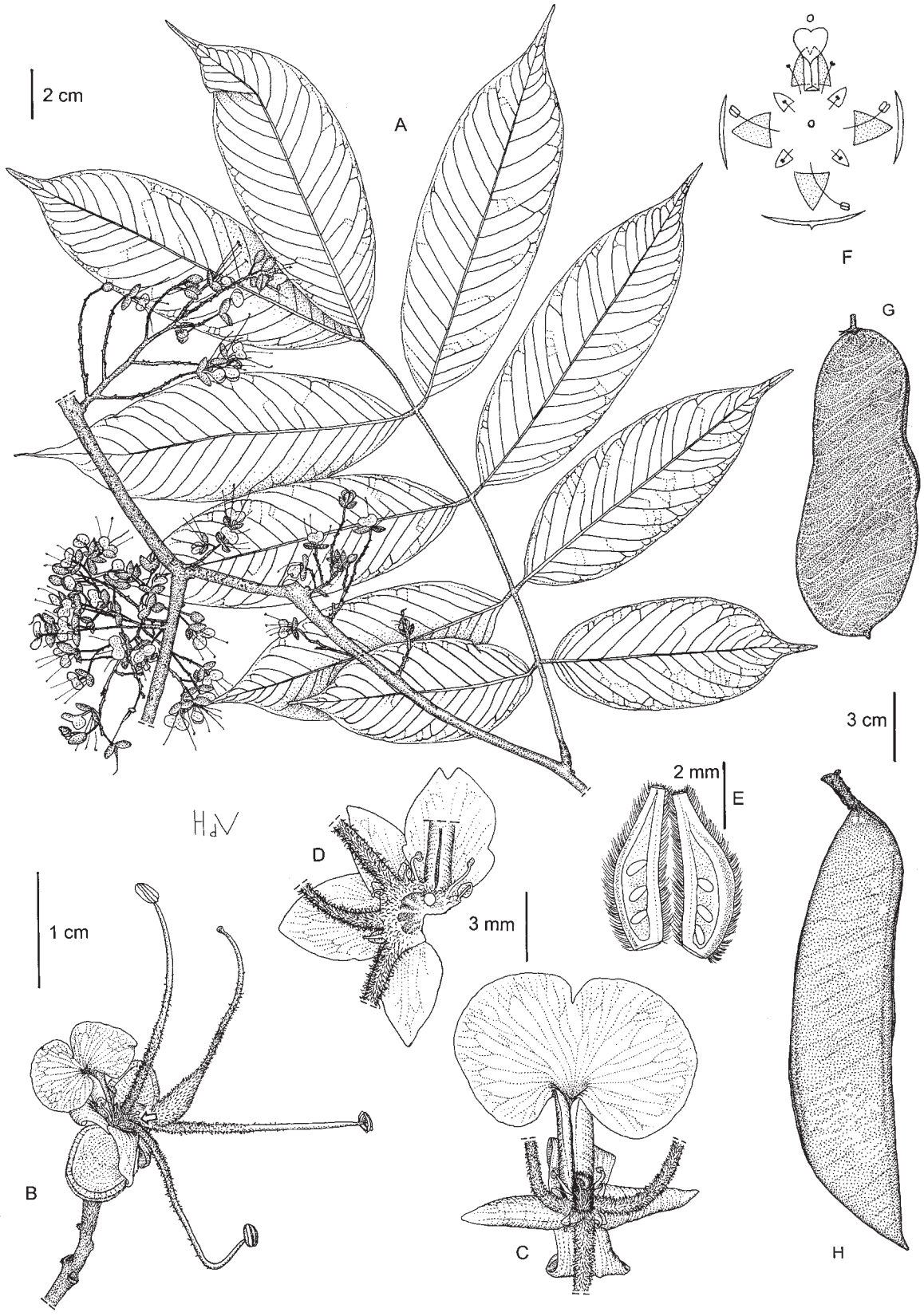

Figure 30 – *Anthonotha xanderi*: A, flowering branch; B, flower (arrow indicates place of detached pistil); C, part of flower showing large petal; D, part of flower showing sepals, small petals and staminodes; E, ovary cut lengthwise; F, flower diagram; G, H, pods (A–E, *van der Burgt* 729; H, *Bos* 6269). Drawn by H. de Vries.

beneath with prominent midrib and prominent 12–16(–20) pairs of main lateral nerves. Inflorescence axillary or below the leaves on the older branches (see photographs), paniculate, single or several together on a knob-like, up to 0.5 cm long axis, up to 10 cm long, appressed brown short-hairy; bracts early caducous, ovate, 3 × 2 mm, glabrous inside. Pedicel 5–7(–11) mm long. Bracteoles elliptic, 6–10 × 4–7 mm, tomentellous inside, 0.3–0.5 mm thick, with glabrous edges. Hypanthium c. 1.5 mm long, glabrous. Sepals 3.5–6 × 1.5–3 mm, the adaxial and the abaxial one subequal in size as are the smaller lateral ones, the adaxial sepal bilobed at apex or not. Large petal: claw 4–6 mm long; lamina up to 9 × 14 mm, bilobed; small petals 4, minute, ≤ 0.5 mm long. Large stamens 3, 23 mm long; filaments pubescent in lower half or beyond; anthers 2.5 mm long. Staminodes 6, 1–1.5 mm long with a strongly reduced anther. Pistil 15–25 mm long; ovary 5–6 mm long, velutinous, 6–(8)-ovulate (see note); style pubescent almost to the top. Pods dehiscent on the tree, circular (1-seeded) to oblong in outline (up to 5-seeded), 5–20(–25) × 4–6(–8) cm, shortly brown-velutinous, prominently, obliquely veined; ventral suture c. 0.7 cm thick, slightly but distinctly thicker than the dorsal one (see also notes). Seeds ± lenticular, 3–3.5 cm in diam., c. 8 mm thick; seed coat thin, brittle, ± dull. Figs 5K, L, 29 & 30.

Habitat and distribution – Primary and old secondary rain forest in South West Cameroon. Alt. 0–500(–930) m. Fig. 31.

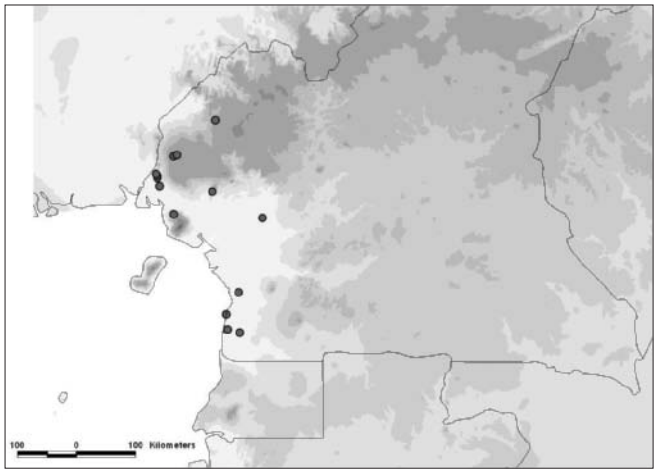

Figure 31 – Distribution of *Anthonotha xanderi*.

Additional specimens studied – **Cameroon**: 40 km N of Kribi, 6 Feb. 1970, *Bos* 6269 (P, WAG); 10 km SE of Korup N. P., 11 Nov. 1985*, Gentry & Thomas* 52661 (MO); Akok, 30 Oct. 1991*, F. Hallé* 4183 (WAG); ibid., 14 Nov. 1991, *F. Hallé* 4236 (WAG); 5 km S of confluence of Medijaba and Lobé rivers, 15 Jan. 1956, *Letouzey* 559 (YA); 45 km SSE of Kribi, 22 Mar. 1968, *Letouzey* 9098 (BR, P, WAG); near Numba, 18 Aug. 1975, *Letouzey* 14332 (K, YA) & 14332 bis (K, P, YA); 15 km NNW of Tombel, 21 Apr. 1976, *Letouzey* 14662 (BR, K, P, WAG); Mokoko, 21 Mar. 1993, *Tchouto* 572 (K); Korup N. P., 27 Jul. 1983, *D.W. Thomas* 2371 (K, MO, P); ibid., 3 Mar. 1988, *D.W. Thomas et al.* 7632 (MO); ibid., 7 Apr. 1988, *D.W. Thomas & Namata* 7668 (MO); ibid., 13 Jan. 2005, *van der Burgt* 729 (WAG); ibid., 21 Feb. 2008, *van der Burgt* 1125 (WAG).

Notes – *Letouzey* (14332) described the pods as large as 42 × 8.5 cm and 4–6(–8)-seeded. I have only observed ovaria or pods with maximum six ovules or seeds.

Etymology – This species has been named after Xander van der Burgt, one of the collectors of the type and photographer of the outstanding illustrations in colour. According to van der Burgt *Anthonotha xanderi* is common and occurs in clusters in the southern part of the Korup National Park.

Unidentified material possibly representing new species – Amongst the several *Anthonotha* specimens that could not be identified to species there are some specimens from Gabon with remarkable vegetative characters which are worth mentioning.

A. The following five specimens have leaflets which show remnants of an indumentum on their upper surface. Leaflets that are hairy above are so far only known from *A. cladantha* but this species is quite different otherwise.
Gabon: Doudou Mts, 3 Jun. 2000, *Issembe et al.* 431 (MO, WAG), tree 30 m tall, 60 cm diam.; Crystal Mts, 21 Jan. 2001, *Nguema Miyono* 1630 (WAG), tree 50 cm dbh; ibid., 11 Jun. 2001, *Nguema Miyono* 1905 (WAG), tree 40 cm dbh; ibid., 13 Jun. 2001, *Nguema Miyono* 1913 (WAG), shrub 3 m tall; ibid., 7 Aug. 2001, *Nguema Miyono* 1970 (WAG), shrub 3–4 m tall.

B. A second entity of two collections only concerns material with distinctly mucronate leaflets and with a ± sericeous, ± combed indumentum of 2–3 mm long hairs on the lower surface.
Gabon: Makande surroundings, 27 Jan. 1999, *Breteler et al.* 14818 (WAG), treelet c. 5 m tall; 40 km NW Doussala, 9 Apr. 2000, *Sosef et al.* 1489 (MO, WAG), small tree, diam. > 10 cm.

ACKNOWLEDGEMENTS

The author is grateful to H. de Vries for the beautiful drawings, to F. Aleva and J.J. Wieringa for preparing and producing the distribution maps, and to R.H.M.J. Lemmens for the Latin version of the diagnoses of the new species. Mrs. B.J.M Breteler-Klein Breteler is thankfully acknowledged for preparing the electronic version of the manuscript.

REFERENCES

Aké Assi L. (2001) Flore de la Côte-d'Ivoire: Catalogue systématique, biogéographie et écologie. 1. Boissiera 57.

Akoègninou A., van der Burg W.J., Van der Maesen L.J.G, Adjakidjè V., Essou J.P., Sinsin B., Yédomonhan H., eds (2006) Flore analytique du Bénin. Wageningen, Backhuys.

Aublet J.B.C.F. (1775) Histoire des Plantes de la Guiane françoise I.

Aubréville A. (1936) Flore forestière de la Côte d'Ivoire I. Paris, Larose.

Aubréville A. (1959) Flore forestière de la Côte d'Ivoire, 2e ed., I. Nogent-sur Marne, C.T.F.T.

Aubréville A. (1968) Légumineuses-Caesalpinioidées, Flore du Gabon 15. Paris, Muséum National d'Histoire Naturelle.

Aubréville A. (1970) Légumineuses-Caesalpinioidées, Flore du Cameroun 9. Paris, Muséum National d'Histoire Naturelle.

Aubréville A., Pellegrin F. (1958) De quelques Césalpiniées africaines. Bulletin de la Société Botanique de France 104: 495–498.

Baillon H. (1865) Études sur l'Herbier du Gabon du Musée des Colonies Françaises. Adansonia 6: 177–230.

Baker E.G. (1928) Leguminosae In: Exell A.W., Mr. John Gossweiler's Plants from Angola and Portuguese Congo. Journal of Botany, British and Foreign 66, Supplement 1: 98-159.

Baker E.G. (1930). The Leguminosae of Tropical Africa. 30. Ghent, Erasmus.

Bentham G. (1865) Description of some new genera and species of tropical Leguminosae. Transactions of the Linnean Society of London. Series 2, Botany 25: 297–320, tab. 36–43.

Brenan J.P.M. (1967) Leguminosae Subfamily Caesalpinioideae. In: Milne-Redhead E., Polhill R.M. (eds) Flora of tropical East Africa. London, Crown Agents for Oversea Governments and Administrations.

Breteler F.J. (2006) Novitates Gabonenses 56. Two Anthonotha species from Gabon transferred to Englerodendron (Fabaceae, Caesalpinioideae). Adansonia, sér. 3, 28 (1): 105–111.

Breteler F.J. (2008) Anthonotha and Isomacrolobium (Leguminosae, Caesalpinioideae): two distinct genera. Systematics and Geography of Plants 78: 137–144.

Breteler F.J., Nguema Miyono N.S. (2008) Revision of the African species of Crudia (Leguminosae, Caesalpinioideae). Systematics and Geography of Plants 78: 81–110.

Chevalier A. (1920) Exploration Botanique de l'Afrique Occidentale Française I: 228. Paris, Paul Lechevallier.

De Koning J. (1983) La forêt du Banco. Wageningen, Veenman.

De Wildeman E. (1906) Leguminosaceae. Annales du Musée du Congo, Botanique, série V, 1: 248–270.

De Wildeman E. (1910) Leguminosaceae. Annales du Musée du Congo, Botanique, série V, 3: 188–216.

De Wildeman E. (1914) Neue Arten aus Zentral-Afrika Belgisch Kongo. Feddes Repertorium Specierum Novarum Regni Vegetabilis 13: 369–384.

De Wildeman E. (1920) Observations sur des Légumineuses de la flore africaine. Bulletin du Jardin Botanique de l'État, Bruxelles 7: 219–270.

De Wildeman E. (1925) Plantae Bequaertianae III. Gand, Publications de l'Ecole spéciale de Commerce annexée à la Faculté de Droit de l'Université de Gand.

Estrella M. de la (2006) Checklist of the Caesalpinioideae (Leguminosae) of Equatorial Guinea (Annobón, Bioko and Río Muni). Botanical Journal of the Linnean Society 151: 541–562.

Exell A.W., Hillcoat D. (1955) Anthonota Noldeae. Boletim da Sociedade Broteriana, sér. 2, 29: 39.

Exell A.W., Hillcoat D. (1956) 20. Anthonata Beauv. In: Exell A.W., Mendonça F.A., eds Conspectus Florae Angolensis 2 (2): 200–202. Lisboa, Ministerio do Ultramar, Junta de Investigacões do Ultramar.

Harms H. (1899) Leguminosae africanae II. Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie 26: 253–324.

Harms H. (1901) Leguminosae africanae II. Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie 30: 75–94.

Harms H. (1915) Leguminosae. In Engler A., Die Pflanzenwelt Afrikas III, 1: 474, fig. 256. Leipzig, Engelmann.

Harms H. (1922) Leguminosae africanae. Notizblatt des Königlichen Botanischen Gartens und Museums zu Berlin 8: 145–156.

Hawthorne W., Jongkind C.C.H. (2006) Woody plants of Western African forests: A guide to the forest trees, shrubs and lianes from Senegal to Ghana. Kew, Kew Publishing.

Hutchinson J., Dalziel J.M. (1928a) Flora of West Tropical Africa 1 (2). London, The Crown Agents for the Colonies.

Hutchinson J., Dalziel J.M. (1928b) Tropical African Plants: VI. Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew) 1928: 397–404.

Keay R.W.J. (1958) Flora of West Tropical Africa , 2nd ed. 1 (2). London, The Crown Agents for Oversea Governments and Administrations.

Keay R.W.J. (1989) Trees of Nigeria. Oxford, Clarendon.

Léonard J. (1952) Cynometreae et Amherstieae. In: Comité exécutif de la Flore du Congo belge, Jardin botanique de l'Etat (ed) Flore du Congo Belge et du Ruanda-Urundi 3: 279–495. Bruxelles, Publications de l'Institut National pour l'Étude Agronomique du Congo belge.

Léonard J. (1954) Notulae systematicae XIV. Les genres Macrolobium Schreb. et Gilbertiodendron J.Léonard en Afrique tropicale (Caesalpiniaceae). Bulletin du Jardin Botanique de l'État, Bruxelles 24: 57–61.

Léonard J. (1955) Notulae Systematicae XVII. Les genres Anthonotha P.Beauv. et Pellegrineodendron J.Léonard en Afrique Tropicale (Caesalpiniaceae). Bulletin du Jardin Botanique de l'État, Bruxelles 25: 201–203

Léonard J. (1957) Genera des Cynometreae et des Amherstieae africaines (Léguminosae-Caesalpinioideae). Essai de blastogenie appliqué à la systématique. Mémoires de l'Académie Royale de Sciences, Lettres et Beaux-Arts de Belgique. Classe des Sciences [in octavo] 30 (2): 1–314.

Léonard J. (1996) Les délimitations des genres chez les Caesalpinioideae africaines (Detarieae et Amherstieae) (1957–1994), in Van der Maesen L.J.G. , Van der Burgt X.M. & Medenbach de Rooy J.M. (eds) The biodiversity of African Plants: 443–455. Dordrecht, Boston, London, Kluwer, Academic Publishers.

Macbride J.F. (1919). Notes on certain Leguminosae. Contributions from the Gray Herbarium of Harvard University. New Series 59: 1–27.

Ngok Banak L., Breteler F.J. (2004) Novitates Gabonenses 50. Le genre Oddoniodendron (Leguminosae, Caesalpinioideae) de Basse Guinée: une revision taxonomique du genre avec description de deux espèces nouvelles du Gabon. Adansonia, sér. 3, 26: 241–250.

Nolde J. von (1942) Eine wenig bekannte Macrolobiumart aus Angola. Kolonialforstliche Mitteilungen 5: 330–336.

Obiang Mbomia D. & Breteler F.J. (2007) Révision du genre Eurypetalum Harms (Fabaceae, Caesalpinioideae). Adansonia, sér. 3, 29: 67–76.

Oliver D. (1871) Flora of tropical Africa 2. London, Reeve.

Palisot de Beauvois A.M.F.J. (1806) Flore d'Oware et de Benin en Afrique, I. Paris, Fain et Compagnie.

Pellegrin F. (1924) La flore du Mayombe d'après les récoltes de M. Georges Le Testu. Mémoires de la Société Linnéenne de Normandie 26.

Pellegrin F. (1948) Les Légumineuses du Gabon. Paris, IEC.

Poorter L., Bongers F., Kouanmé F.N., Hawthorne W.D., eds (2004) Biodiversity of West African forests: An ecological atlas of woody plant species. Wallingford, CABI.

Rossberg G. (1936) Aufzahlung der von Baronin Nolde und O. Hundt in Angola gesammelten Leguminosen. Feddes Repertorium Specierum Novarum Regni Vegetabilis 39: 155–168.

Schreber J.C.D. von (1789) Genera Plantarum 1.

Taubert P. (1892) Leguminosae. In: Engler A., Prantl K. (eds) Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten insbesondere den Nutzpflanzen III, 3: 70–385. Leipzig, Engelmann.

Voorhoeve A.G. (1965) Liberian High Forest Trees: A systematic botanical study of the 75 most important or frequent high trees, with reference to numerous related species.Wageningen, Pudoc.

White F. (1979) The Guineo-Congolian Region and its relationship to other phytochoria. Bulletin du Jardin botanique national de Belgique 49: 11–55.

Wilks C., Issembé Y. (2000) Guide pratique d'identification: Les arbres de la Guinée Équatoriale. Région Continentale. France, Prépresse Communications.

Manuscript received for *Systematics and Geography of Plants* Oct. 2008; accepted in revised version Apr. 2009.

Communicating Editor: Elmar Robbrecht.