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Didelotia korupensis and *Tessmannia korupensis* (*Leguminosae*, *Caesalpinioideae*), two new tree species from Korup National Park in Cameroon

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Key words

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Abstract Two new tree species, *Didelotia korupensis* and *Tessmannia korupensis* (*Leguminosae*, *Caesalpinioideae*), are described and illustrated. *Didelotia korupensis* is the 12th species in the genus. It is an understory tree to 15 m tall with an often leaning stem to 30(–53) cm diam. *Didelotia korupensis* is only known from an area of c. 4 km^2 in and near the permanent plots along the P transect in the southern part of Korup National Park in Cameroon, where 51 trees have been recorded so far. *Didelotia korupensis* is assessed according to IUCN criteria as Endangered. *Tessmannia korupensis* is the 13th species in the genus. It is a canopy tree to 39 m tall with a stem to 105 cm diam. *Tessmannia korupensis* is known from seven groups of trees of 9 to 43 trees each, in and near the permanent plots along the P transect in the southern part of Korup National Park and from a single collection made in the lowland rain forest near Mt Cameroon. *Tessmannia korupensis* is assessed according to IUCN criteria as Endangered.

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INTRODUCTION

Korup National Park in Cameroon is completely covered in tropical evergreen rain forest; predominantly lowland rain forest, with small patches of sub-montane rain forest on the summits of the highest hills. The rain forest stands mostly on well-drained soil but patches of rain forest on periodically inundated soil commonly occur along streams. Most of the rain forest has never been farmed, logged or otherwise disturbed and therefore Korup is considered a biological research site of global importance, for scientific research into primary rain forest ecology (Gartlan 1986, Thomas 1986). The scientific exploration of the Korup rain forest vegetation was for a large part organized by J.S. Gartlan, D.M. Newbery and D.W. Thomas since the 1980s (e.g. Gartlan et al. 1986, Newbery et al. 1988, Thomas et al. 2003). Their ecological research and vegetation surveys have provided evidence for the plant conservation importance of Korup National Park. Their paper on the analysis of 40 668 trees in 135 plots along four transects in Korup (Gartlan et al. 1986) represents a major advance in knowledge of the vegetation of Korup. Plant collecting by D.W. Thomas along these transects resulted in the discovery of several new tree species, for example *Tetraberlinia korupensis* Wieringa (1999) (*Leguminosae*, *Caesalpinioideae*); near-endemic to Korup National Park. This species was described from samples collected along the 'P transect', the southernmost of the four transects in Korup studied by Gartlan et al. (1986).

A large permanent plot, the 82.5 ha 'P plot', was established in 1990 by D.M. Newbery along the P transect in Korup National Park; in rain forest dominated by trees in the *Detarieae* tribe of the Legume subfamily *Caesalpinioideae* (Newbery et al. 1998). Since the year 2000, collecting efforts in the P plot were aimed at making a flowering and a fruiting collection of every tree species found within and near the plot, especially those in the Legume family. Alpine-style tree climbing techniques were applied to collect the higher trees. These collecting efforts further increased in 2003, when a second large permanent plot was established to the NW of the P plot, the 56.25 ha 'NW plot' (Newbery et al. 2013). As a result of this collecting strategy, new tree species have been found in and around these two plots, mainly in the Legume family but also in other families. During the past eight years, eight new tree species in the *Detarieae* tribe were described, occurring in or near the permanent plots along the P transect: *Anthonotha xanderi* Breteler (2010), *Berlinia korupensis* Mackinder & Burgt (2009), *Cryptosepalum korupense* Burgt (Van der Burgt et al. 2014), *Englerodendron korupense* Burgt (Van der Burgt & Newbery 2007), *Gilbertiodendron newberyi* Burgt (Van der Burgt et al. 2012), *Hymenostegia viridiflora* Mackinder & Wieringa (2013), *Talbotiella korupensis* Mackinder & Wieringa (Mackinder et al. 2010) and *Talbotiella velutina* Burgt & Wieringa (Mackinder et al. 2010). The two new species of the present paper are the 9th and 10th species in this series. All 10 species were described from type material collected in or near the permanent plots along the P transect in Korup by the author. In total, 44 tree species belonging to the *Detarieae* tribe have been found in the southern part of Korup National Park (Newbery & Van der Burgt unpubl. data).

All species except *Anthonotha xanderi* and *Hymenostegia viridiflora* are endemic or near-endemic to the Southwest Region in Cameroon or even to Korup National Park, emphasising the great importance of this park for the conservation of tree species. Three possible explanations as to why these 10 species had been previously overlooked in a floristically relatively well-studied area are discussed in Van der Burgt & Eyakwe (2010): 1) tall trees are difficult to collect in fertile state; 2) tall rain forest trees are frequently named from bark and stem characteristics and from leaves collected from the ground, but undescribed species will usually need to be collected fertile to be recognized; 3) most of the 10 rain forest tree species occur in very low densities.

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In September 2004 and May 2007, flowering and fruiting specimens (*Van der Burgt 718* & *952*) were collected from a tree in the permanent plots along the P transect in Korup National Park in Cameroon. These specimens were identified as *Didelotia afzelii* Taub. although that species is only known from Sierra Leone and Liberia and has a somewhat different leaf shape and size. Some years later, in March 2010 and March 2014, during a vegetation survey in the Sula Mountains in Sierra Leone, collections were made of *D. afzelii* (*Van der Burgt 1442* & *1745*) and it was noted that trees of this species may grow to the largest size in their vegetation type; evergreen rain forest and gallery forest. Although the trees are mature when they reach c. 7 m height (*Chillou 1060* (IFAN), *Deighton 2247* (K, SL)), they may become canopy trees of 25–30 m tall, with straight stems 60–91 cm diam (*Van der Burgt 1745* (K, etc.), *Voorhoeve 1300* (WAG)). This contrasts with the trees in Korup National Park, which are always understory trees to c. 15 m tall, with an often leaning stem to 30(–53) cm diam. After further comparison of the specimens of *D. afzelii* with *Van der Burgt 718* and *952* the author concluded, based on the characters mentioned below, that the latter two specimens represent an undescribed species.

During work on the permanent plots along the P transect in Korup National Park, two *Tessmannia* trees were recorded, on 20 January 2000. In later years, more trees of the same species were found, outside these plots. The number and size of the leaflets collected from these trees is similar to those of *Tessmannia dewildemaniana* Harms, but there are several differences (see below), indicating that these are separate species. The trees were revisited numerous times with the aim of making good quality flowering and fruiting collections, but without success. Flowers were collected from the ground (*Van der Burgt 943*) and sterile leafy twigs from a mature tree with old fruits from the ground beneath the tree (*Van der Burgt 1128*). These are sufficient to determine that the trees represent an undescribed species of *Tessmannia*, as explained below, but good quality collections of the new species should still be made.

METHODS

The herbaria BM, K, SCA, SL, WAG and YA were visited and all material stored under *Didelotia* and *Tessmannia* was studied. Measurements were made on dried material from herbarium specimens. Those on the perianth, stamens and pistil were made from rehydrated material, which was dissected and measured under a microscope. All cited specimens and duplicates have been seen by the author. The terminology used in the descriptions follows Beentje (2010). The conservation status category was assessed using the criteria defined by the IUCN (2015); these assessments have not yet been reviewed through the IUCN Species Information Service.

RESULTS

Didelotia

The genus *Didelotia* Baill. was described by Baillon in 1865. A revision of the genus was published by Oldeman (1964); he recognized seven species already described to which he added *Didelotia idae* J.Léonard, Oldeman & de Wit. Two additional new species have been described since then: *Didelotia morelii* Aubrév. (Aubréville 1968: 255) and *Didelotia pauli-sitai* Letouzey (1977). *Didelotia ledermannii* Harms was considered a synonym by Oldeman (1964), but is likely a valid species (Wieringa pers. comm.). Including the new species presented here, the genus *Didelotia* now consists of 12 species.

The species in the genus *Didelotia* are characterised by their inflorescence and flower morphology. The main axis of the inflorescence is long, slender and pendant, with short, densely flowered, lateral axes, inserted alternately along the main axis. The usually 5-merous flower has two valvate bracteoles, triangular sepals, linear petals, 5 stamens and 5 filiform staminodes. The pod has 1–2 often indistinct longitudinal veins. The number of pairs of leaflets of *Didelotia* species shows a large inter-specific variability, as is often the case in the larger African genera of the Legume tribe *Detarieae*. The leaves can be unifoliolate (*Didelotia idae*, *D. unifoliolata* J.Léonard); bifoliolate (*D. africana* Baill., *D. letouzeyi* Pellegr.); 3–7-jugate (*D. afzelii*, *D. engleri* Dinkl. & Harms, *D. ledermannii*; as well as the new species presented here) or 8–35-jugate (*D. brevipaniculata* J.Léonard, *D. minutiflora* (A.Chev.) J.Léonard, *D. morelii* and *D. pauli-sitai*).

Didelotia korupensis Burgt, *sp. nov.* — Fig. 1, 2

Morphologically comparable to *Didelotia afzelii* Taub., but *D. korupensis* is an understory tree to c. 15 m tall with an often leaning stem to 30(–53) cm diam; the leaflets are (4–)7–18 cm long; the pedicel is 5–10 mm long and the bracteoles 5 mm long; the pod is 9–15.5 cm long. *Didelotia afzelii* is a canopy tree to c. 30 m tall with a vertical stem to 91 cm diam; the leaflets are 3–9 cm long; the pedicel is 4–5 mm long and the bracteoles 3–4 mm long; the pod is 6.5–10 cm long. — Type: *X.M. van der Burgt 718* (holo K (2 sheets: K000460433, K000460434); iso B, BR, G, LISC, MO, P, PRE, SCA, US, WAG, YA), Cameroon, Southwest Region, Korup National Park, NW plot near P transect, subplot 42XN, N5°00'48.5" E8°46'58.1", 100 m, in flower, 18 Sept. 2004.

Tree, to c. 15 m tall. Stem to 30(–53) cm diam, often leaning, stem base conical. Bark dull dark brown, smooth; lenticels small, corky, concolorous or lighter in colour. Twigs puberulent to glabrescent, hairs erect, yellowish brown, to 0.2 mm long. *Stipules* in fused pairs, intrapetiolar, caducous, lanceolate, 6–11 by 4–6 mm, with parallel veins; densely puberulent, hairs to 0.2 mm long, distal part inside glabrous; apex bilobed, both lobes acute. *Leaves* paripinnate, to 35 by 25 cm, with 3–5 pairs of opposite leaflets; petiole 3–10 mm long, 1.5–4 mm diam, puberulent, hairs to 0.2 mm long; a pair of caducous gland-like small basal leaflets inserted laterally on the petiole, 1–2 mm long; leaf rachis (2–)6–20 cm long, puberulent; petiolules 1–3 mm long on proximal part, 2–4 mm long on distal part, puberulent. Leaflets elliptic, (4–)7–18 by (1.5–)3–6 cm, base oblique, cuneate to obtuse, apex attenuate, finely emarginated; both sides dull to somewhat glossy, concolorous; upper surface glabrous, lower surface sparsely appressed puberulent, hairs to 0.2 mm long; midrib puberulent above with hairs to 0.3 mm long, below prominent and sparsely puberulent; 10–15 pairs of secondary veins. No glands seen on leaflets. *Inflorescence* axillary, sometimes terminal, pendant; c. 7 basal bud scales, broadly ovate, progressively becoming larger, to 12 by 9 mm, veins parallel, apex bilobed, densely puberulent outside, golden brown hairs to 0.1 mm long, glabrous inside; main axis of inflorescence light green, (4–)12–30 cm long by 1–2 mm diam, densely puberulent, golden brown hairs to 0.2 mm long; peduncle 1.5–4 cm long, internodes 1–3 cm long; 5–17 lateral axes, alternate, light green, 2–25 mm long by 2 mm diam, densely puberulent, hairs to 0.2 mm long, 15–18 flowers per cm; bract at base of lateral axis resembling a bud scale, 9–11 by 7–9 mm; 4 colleters inserted outside the bract, deep purple, partly puberulent, c. 2 by 1 by 0.7 mm, the two middle colleters each with a linear appendage 1–3 mm long. *Flowers*: floral bract caducous, broadly ovate, 3–5 by 2–4 mm, puberulent outside, hairs to 0.2 mm long, glabrous inside; pedicel pink, 5–10 mm long, puberulent, hairs to 0.2 mm long; bracteoles 2, elliptic, greenish light pink on both sides, 5 by 4 mm, outside puberulent, inside glabrous, nerves parallel; receptacle 1 mm high, 3 mm diam at the top, glabrous; disk yellow, 3 mm diam, 1 mm high, glabrous, centre depressed; sepals 5,

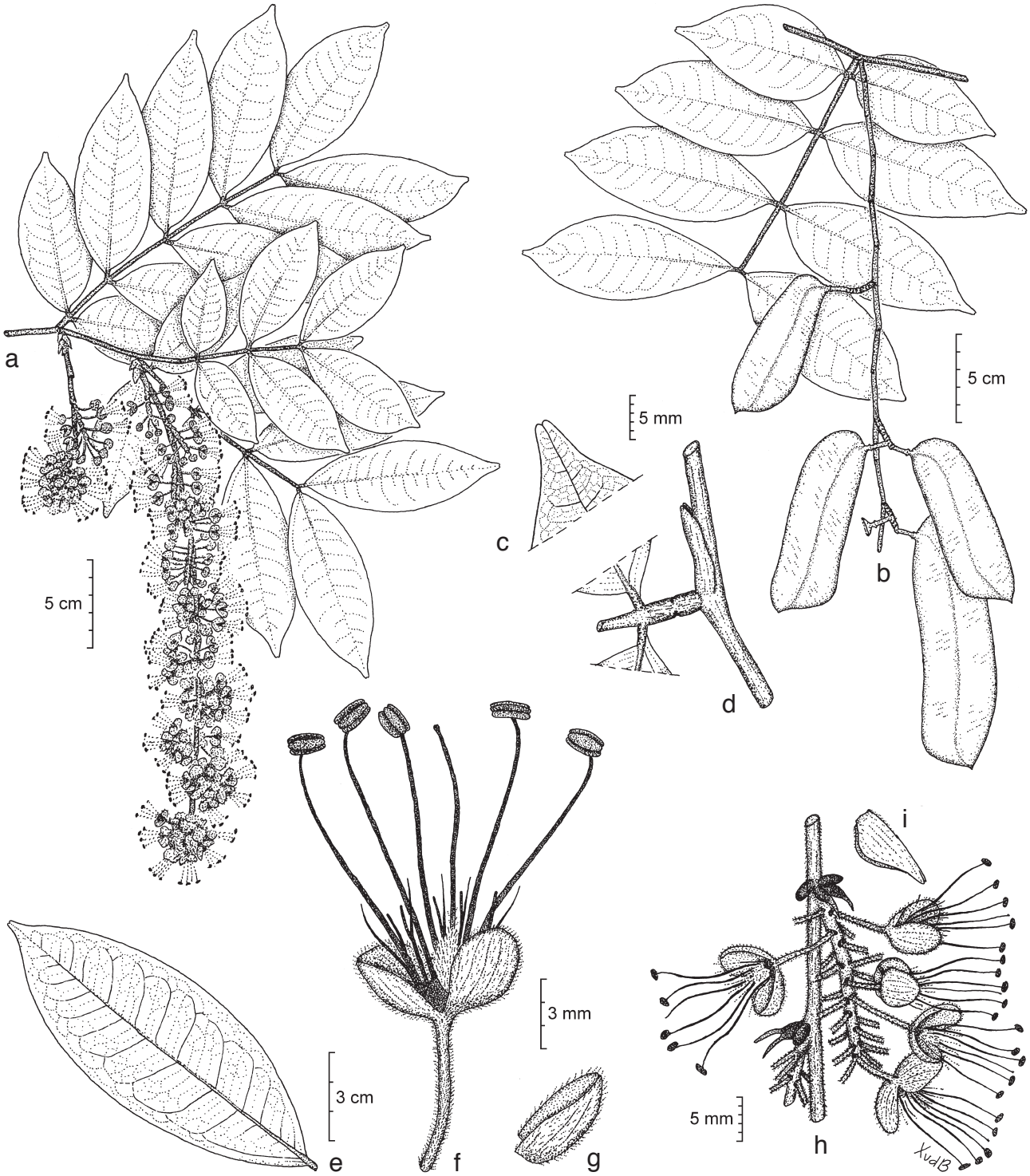

Fig. 1 *Didelotia korupensis* Burgt. a. Twig with two inflorescences; b. twig with infructescence and four fruits; c. emarginate leaflet apex; d. fused pair of stipules, petiole showing scars of a caducous basal leaflet pair; e. leaflet lower surface; f. flower showing five linear petals and five filiform staminodes; g. floral bract; h. part of inflorescence showing a lateral axis with four colleters at the base (most flowers removed); i. caducous bract at base of lateral axis (a, c–f. *Van der Burgt 718*, WAG; b. *Van der Burgt 952*, K). — Drawn by Xander van der Burgt.

pink, triangular, 1–2 mm wide by 0.5–1 mm high, glabrous; petals 5, alternate to the sepals, red, linear-lanceolate, 4–6 by 0.3 mm, glabrous; stamens 5, alternate to the petals; filaments red, glabrous, 13–15 mm long; anthers dark red, 2 by 1.2 mm, glabrous; staminodes 5, red, filiform, 3–4 mm long, glabrous, alternate to the stamens; ovary green, 3 by 1.2 by 0.4 mm, margins densely hirsute, sides hirsute, hairs to 0.3 mm long; 5–7 ovules; stipe 0.5 mm long, glabrous; style red, 11–15 mm long, proximal part sparsely hirsute, distal part glabrous; stigma capitate. *Infructescence* pendulous, to 32 cm long, with 1–4 fruits. *Fruits* oblong-rectangular, dull, glabrous, 1–7-seeded, 9–15.5 by 3.5–4.5 cm, valve 1.5 mm thick, beak to 1 mm long, sutures not winged; a single longitudinal vein running from the base to the apex, more or less equidistant to both sutures.

Distribution — Endemic to Korup National Park in Cameroon (Fig. 3). The species has only been recorded in and near the permanent plots along the P transect in the southern part of this park.

Habit — Understory tree. The stem is often leaning; the stems of two of the known trees had fallen to the ground, after which two or three stem shoots on each tree grew to a diam of 10–15 cm.

Habitat — Rain forest dominated by trees in the *Detarieae* tribe of the Legume subfamily *Caesalpinioideae*, on well-drained sandy and sometimes rocky soil, at 100 m altitude.

Additional material. Cameroon, Southwest Region, Korup National Park, NW plot near P transect, subplots 42XN, 42WN and 43WN, twigs with fruits, *X.M. van der Burgt 952* (BR, G, K, MO, P, SCA, WAG, YA), 28 May 2007.

Conservation status — *Didelotia korupensis* is assessed here according to IUCN (2015) criterion D as Endangered (EN D). The new species is only known from an area of rain forest of c. 1600 m by 3000 m (c. 4 km^2), where 51 trees over 10 cm stem diam of *D. korupensis* have been recorded so far (see above). These 51 trees are mature. Although much of the forest in south Korup remains unexplored for this species, the number of mature trees might be lower than 250 because the species is not common in the area where it is found, and thus the category Endangered applies. IUCN criteria A, B and C were not used to evaluate the species, because there is no evidence of population reduction or decline in the past. Decline in the future is a possibility; see the conservation assessment of the other species in this article.

Notes — The permanent plots along the P transect, inside and near which *D. korupensis* has been found, have a total area of 155.75 ha. Of the 3 181 trees ≥ 50 cm stem diam in these plots, only one tree, of 53 cm stem diam, was identified as *D. korupensis*. Trees between 10 and 50 cm diam were registered in 56 randomly located subplots within the plots (area of each subplot 0.25 ha; total area of all 56 subplots 14 ha). Of the 5 755 registered trees between 10 and 50 cm diam, 27 trees (in 12 subplots) were identified as *D. korupensis.* During random surveying 23 additional trees over 10 cm stem diam were recorded in and near the plots. Therefore, at present a total of 51 *D. korupensis* trees are known. More trees are undoubtedly present inside and near the plots; however, *D. korupensis* trees are absent from most of the forest within the plots (Van der Burgt pers. obs.).

Stem diam measurements are available for 25 trees: four trees were measured in the years 1991 and 2015 (24.7 years apart)

Fig. 2 *Didelotia korupensis* Burgt. a. Section of inflorescence; b. infructescence; c. inflorescence and leaves; d. stem of the tree from which the type specimens were collected; 14.8 cm diam at 1.3 m above ground (a, c, d. *Van der Burgt 718*, WAG; b, d. *Van der Burgt 952*, K). — Photos by Xander van der Burgt.

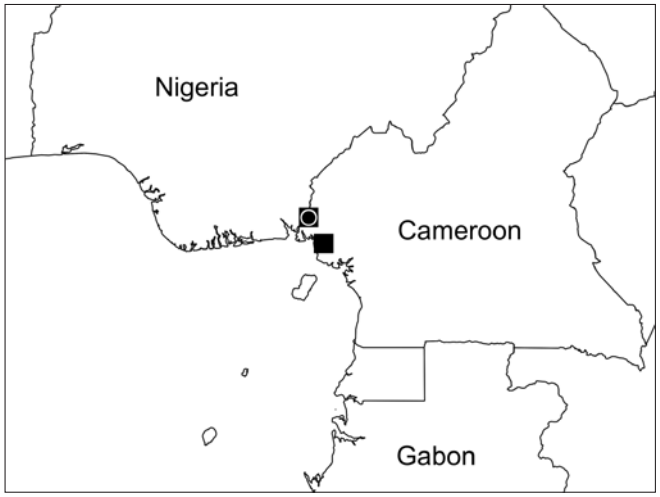

Fig. 3 Distribution of *Didelotia korupensis* Burgt (only the upper black circle) and *Tessmannia korupensis* Burgt (both black circles).

and 21 trees in the years 2003 and 2015 (average 12.0 years apart). The average annual diam increment of the 25 trees is 1.13 mm/y. The three fastest growing trees had grown c. 3.0 mm/y. Four trees had grown only c. 0.1 mm/y in c. 12 years; indicating that individual trees of *D. korupensis* may hardly grow at all for at least 12 years, presumably waiting for better growth conditions. Low increments like these are typical for many understory tree species in Korup National Park (Newbery & Van der Burgt unpubl. data).

The *D. korupensis* trees grow in small groups, mixed with trees of many other species. None of the groups of *D. korupensis* trees has been mapped in its entirety, but a group probably consists of c. 5–10 individuals over 10 cm stem diam, in an area of up to 0.5 ha. Many tree species in the Legume tribe *Detarieae* in Korup occur in co-dominant groups, mostly in the upper story of the forest but sometimes, as in *D. korupensis*, in the middle story. The *D. korupensis* groups are small compared to the groups of some other tree species in Korup. *Microberlinia bisulcata* A.Chev. for example, grows in more or less circular groups of 400–1100 m diam; while two species of *Tetraberlinia* grow in even larger groups (Newbery et al. 2004, 2013).

The pods of *D. korupensis* probably curl up when dry (the pods on the only fruiting collection are immature), which would indicate the presence of ballistic seed dispersal (Van der Burgt 1997). The maximum seed dispersal distance was not recorded but is probably small, c. 10–20 m, because the fruits are less strong and placed less high above the ground than those of most other species in the Legume tribe *Detarieae*. The tendency of trees of *D. korupensis* to grow in groups is probably related to the relatively short and strictly limited maximum dispersal distance of the ballistic seed dispersal method. In addition to ballistic seed dispersal, seeds of *D. korupensis* may occasionally be subject to some form of long distance dispersal, dispersing the seeds far enough for the establishment of a new group of trees, but the dispersal type is unknown.

Tessmannia

The genus *Tessmannia* Harms was described in 1910, with the species *T. africana* Harms (1910). Eleven new species were described between 1915 and 1967 (IPNI 2015). A revision of the genus has never been published, but most species in the genus appear in one or more of the African regional flora accounts (e.g., Aubréville 1968, 1970, Léonard 1952). The genus *Tessmannia* now consists of 13 species, including the new species presented here. Four currently undescribed species have been identified from specimens collected in Gabon (Breteler pers. comm., Sosef et al. 2006); see notes.

The genus *Tessmannia* is characterised by leaflets glossy on both sides, with prominent venation and densely covered in translucent dots. The number of leaflets varies from bifoliolate in *T. copallifera* J.Léonard to 14–30 foliolate in *T. anomala* (Micheli) Harms. The flower has small caducous bracteoles which do not envelope the flower bud; 4 sepals completely enveloping the flower bud, one of which consist of two fused sepals; 5 large white or pink petals; 10 stamens of which 9 are united at the base; and relatively small, round to elliptic fruits, with a smooth to verrucose surface (Léonard 1952).

Tessmannia korupensis Burgt, *sp. nov.* — Fig. 4, 5

Morphologically comparable to *Tessmannia dewildemaniana* Harms, but *Tessmannia korupensis* has stipules to 11 by 7 mm which have only been seen on juvenile trees; the leaflets are somewhat glossy above, with visible venation; the pedicel and the exterior surface of the sepals have dense erect hairs to 0.1 mm long, mixed with sparse appressed hairs to 0.3 mm long; the fruits are smooth, 6–11 by 3.5–7 cm, the upper suture is winged, wings 5–10 mm wide on each valve. *Tessmannia dewildemaniana* has stipules to 25 by 13 mm, present on fertile collections; the leaflets are very glossy above with very clearly visible venation; the pedicel and sepals have dense hairs to 1 mm long; the fruits are verrucose, 4–8 by 3–5 cm, the upper suture is not winged. — Type: *X.M. van der Burgt 1128* (holo K (K001061190 herbarium sheet, K001061191 carpological coll.); iso BR, G, MO, P, SCA, WAG, YA), Cameroon, Southwest Region, Korup National Park, P extension plot, subplot 26ON, N5°01'04.3" E8°47'23.4", 100 m, leaves and fruits, 22 Feb. 2008.

Tree, to 39 m tall. Stem to 105 cm diam, straight, cylindrical. Buttresses to 1 m high. Bark dark grey-brown, with small vertical fissures. Twigs glabrous. *Stipules* caducous, not seen on mature trees; stipules on an 11 m tall juvenile tree in pairs, green, glabrous, asymmetrically ovate, 7–11 by 4–7 mm. *Leaves* to 28 by 22 cm, glabrous, with (2–)4–6 alternate leaflets; petiole 3–7 mm long, 2–3 mm diam; leaf rachis 5–11 cm long. Leaflets elliptic, 6–18 by 3–9 cm; petiolules 2–4 mm long; leaflet base obtuse, apex acuminate, to 10 mm long; both sides slightly glossy and identical in colour, or slightly darker below; 8–12 pairs of secondary veins. Leaflets dotted with translucent dots, one dot of 0.2 mm diam and 3–10 dots c. 0.1 mm diam in each areole. Glands 5–12 per leaflet, 0.25–0.4 mm diam, placed near the petiolule and near the margin. *Inflorescence* unknown. *Flowers*: bract at base of pedicel not seen; bracteoles 2, caducous, not seen, inserted at 0–1 mm and 2–4 mm from the base of the pedicel; pedicel green, 18–38 mm long, puberulent, dense erect hairs to 0.1 mm long, mixed with sparse appressed hairs to 0.3 mm long; sepals 4, outside green, puberulent, dense erect hairs to 0.1 mm long, mixed with sparse appressed hairs to 0.3 mm long; inside densely hirsute with appressed hairs to 1 mm long; edges glabrous; the adaxial sepal broadly elliptic, consisting of two fused sepals, apex often split, 12–17 mm long by 10–12 mm wide; the other 3 sepals narrowly elliptic, 12–17 by 5–8 mm; petals 5, alternate to the sepals, pink; oblanceolate, adaxial petal c. 25 by 10 mm, the other 4 petals 35–40 by 15–20 mm, including claw of 5–8 mm long; midvein of petals densely appressed hairy on both sides, hairs light brown, to 2 mm long, mature petals glabrescent; stamens 10, in two whorls of 5, the adaxial stamen free, the proximal 2–4 mm of the filaments of the other 9 stamens united; filaments pink, outer 5 filaments 32–40 mm long, inner 5 filaments 25–30 mm long; lower 5 mm of filaments densely appressed hairy, hairs light brown, to 2 mm long, mature filaments glabrescent; anthers orange, c. 5 by 1 mm, glabrous; ovary light brown, c. 12 by 5 by 2 mm, densely hirsute, light brown hairs to 1 mm long; 4–5 ovules; stipe 2 mm long, densely hirsute; style pink, 22–28 mm long, glabrous; stigma capitate. *Infructescence* unknown. *Fruits* obovate, dull, dark brown, smooth, puberulent, erect hairs to 0.3 mm long, woody, 6–11 by 3.5–7 cm, valve 2–3 mm thick, stipe 6–8 mm

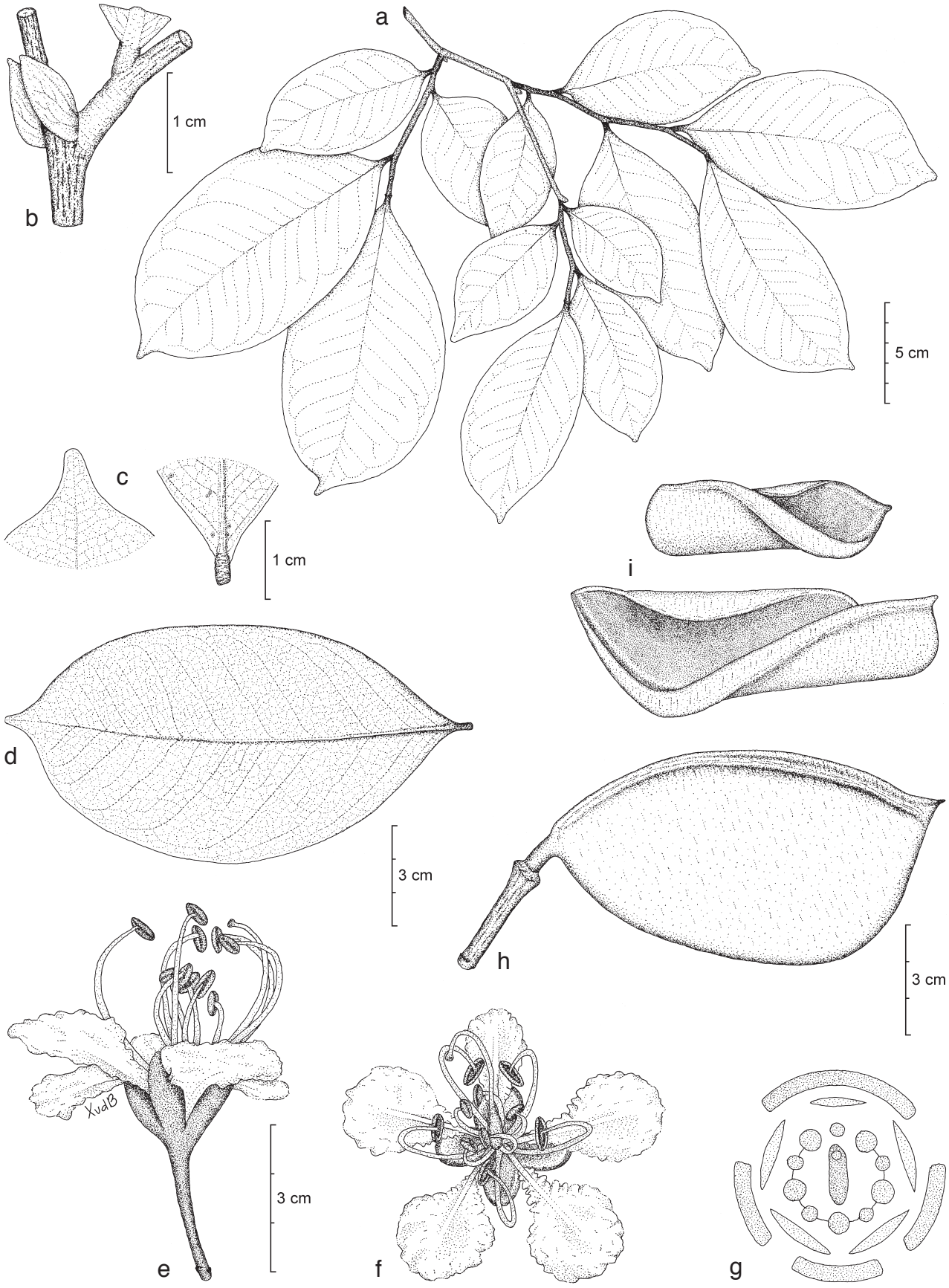

Fig. 4 *Tessmannia korupensis* Burgt. a. Twig with three leaves; b. section of twig with pair of stipules and leaf base; c. apex of leaflet upper surface; base of leaflet lower surface, showing glands; d. leaflet lower surface; e, f. flower; g. diagram of flower; h. pod; i. dry pod valves (a, c, d, h, i. *Van der Burgt 1128*, K, WAG; b. *Van der Burgt 1123*, K; e–g. *Van der Burgt 943*, K). — Drawn by Xander van der Burgt.

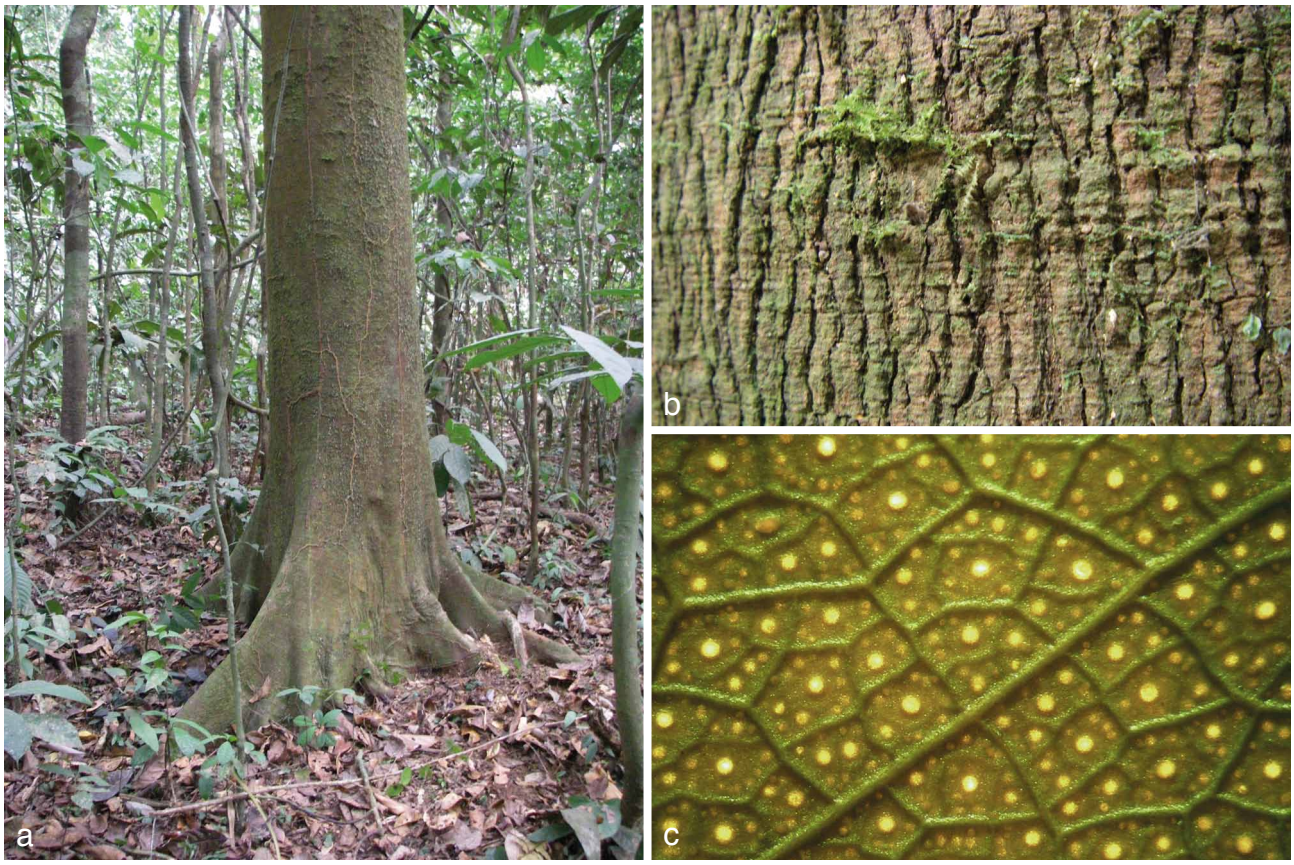

Fig. 5 *Tessmannia korupensis* Burgt. a. Stem of a tree of 52 cm diam at 1.3 m above ground; b. bark; c. lower surface of leaflet with translucent dots; 6 by 4.5 mm (*Van der Burgt 1128*, K). — Photos by Xander van der Burgt.

long, upper suture winged, 5–10 mm wide on each valve, beak 2–4 mm long; fruits contain 1–2 seeds and are explosively dehiscent. *Seedlings*: hypocotyl 10–15 cm, epicotyl 4.5–8 cm long, both with sparse hairs to 0.1 mm; first two leaves opposite, petiole 0.8–2 cm long, sparse hairs to 0.1 mm; 1 pair of opposite leaflets 6–9 by 2.5–3.5 cm, glabrous; petiolules 1–2 mm long, sparse hairs to 0.1 mm.

Distribution — Endemic to the Southwest Region in Cameroon (Fig. 3); recorded in and near the permanent plots along the P transect in the southern part of Korup National Park and from a single collection made in the lowland rain forest on the western side of Mt Cameroon at c. 75 km distance to the type locality.

Habit — Canopy tree from rain forest. The bark has small vertical fissures (Fig. 5b), similar to the bark of the other species of *Tessmannia*.

Habitat — Rain forest dominated by trees in the *Detarieae* tribe of the Legume subfamily *Caesalpinioideae*, on well-drained sandy and sometimes rocky soil, at 100–200 m altitude.

Additional material. Cameroon, Southwest Region, Korup National Park, P extension plot, subplot 24UN, trees PE8293 and PE8295, N5°00'55.0" E8°47'25.9", 100 m, fruits, *X.M. van der Burgt 707* (BR, G, K, MO, P, SCA, WAG, YA), 7 Sept. 2004; subplot 24UN, tree PE8293, flowers, *X.M. van der Burgt 943* (K, MO, WAG, YA), 25 May 2007; near P transect, c. 1.5 km south of Science Camp, along the stream passing through the camp, sterile, *X.M. van der Burgt 1123* (BR, G, K, MO, P, SCA, WAG, YA), 19 Feb. 2008; Southwest Region, Mt Cameroon, Liwenyi, around Likenge village, sterile, *P. Tchouto 515* (K), 18 Mar. 1993.

Conservation status — *Tessmannia korupensis* is assessed here according to IUCN (2015) criteria as Endangered, EN B1ab(i,iii). The new species has an Extent of Occurrence of c. 230 km^2. Much of the forest between the two known occurrences has been or will be converted to farmland or oil palm plantations. This area has been much less visited by botanists but the species likely occurs here as well, indicating the possibility of continuing decline in the sense of IUCN criteria. At Liwenyi, around Likenge village, in the Onge forest, where the species was collected in 1993, slash and burn agriculture was then a threat to the forest (Cheek pers. obs. 1993). The threat of large-scale forest clearing for oil palm plantation exists for all unprotected forest in Cameroon. Korup National Park unfortunately is not fully protected; some of the residents of the villages around the park use parts of the park for hunting and farming. In September 2009, the four camps for researchers and tourists in southern Korup were burned down by local villagers in protest of the prohibition of hunting and farming within the park. Although the forest does not burn naturally, the same fate might happen to parts of the forest during a dry season with exceptionally dry weather.

Notes — Trees have been recorded inside and near the permanent plots along the P transect in the southern part of Korup National Park. These plots have a total area of 155.75 ha. Of the 3 181 registered trees ≥ 50 cm stem diam in the plots, only two trees, standing at 10 m distance to each other, were identified as *T. korupensis*. Trees between 10 and 50 cm diam were registered in 56 random located subplots within the plots (area of each subplot 0.25 ha; total area of all 56 subplots 14 ha). None of the 5 755 registered trees between 10 and 50 cm diam were identified as *T. korupensis*. Most of the forest in southern Korup does not contain any *T. korupensis* trees.

Tessmannia korupensis trees always occur in groups; seven such groups of trees have been recorded in southern Korup, at distances of 0.3–6.4 km to each other. One of these groups was mapped and found to contain 43 individuals over 10 cm stem diam, in an area of less than 1 ha (Fig. 6), mixed with many trees of other species. In two other groups the trees were counted: 9 trees and 33 trees over 10 cm stem diam.

The pods of *T. korupensis* curl up when dry (Fig. 4j), indicating the presence of ballistic seed dispersal (Van der Burgt 1997).

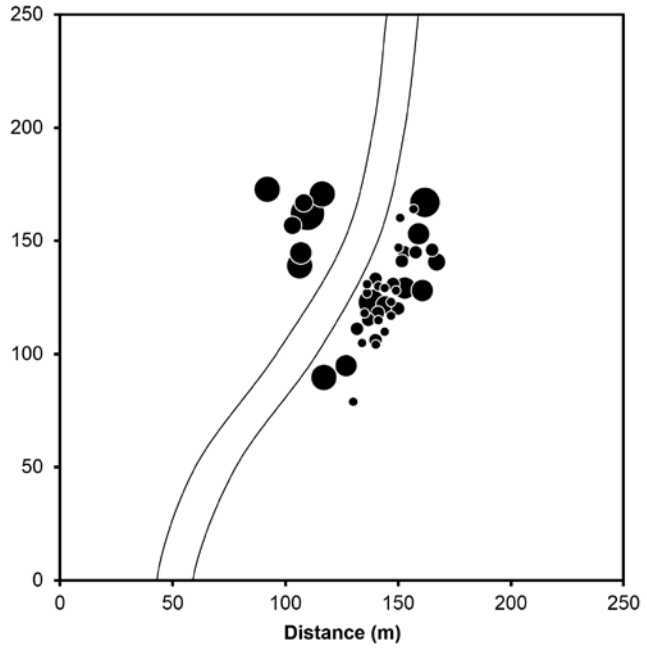

Fig. 6 Map of a group of 43 trees of *Tessmannia korupensis* Burgt in southern Korup National Park. The size of a dot represents the stem diam at 1.3 m above ground in 7 size classes: 10–20 cm to 70–80 cm. The group is divided by a river bordered on one side by swamp forest. All trees grow on well-drained soil; *T. korupensis* is not a river bank tree species. The area on the map is completely covered by closed-canopy rain forest.

Even though the trees are tall, the maximum seed dispersal distance (which could not be recorded) will be small compared to that of most other species in the Legume tribe *Detarieae* because the fruits are small; see remarks under *Didelotia korupensis*. Most other species in the genus *Tessmannia* have small cardboard-like pods which stay flattened when dry and are therefore not constructed for ballistic seed dispersal.

A number of specimens, usually collected in or near Gabon, do not match any of the existing species of *Tessmannia*. This material may represent several new species (F.J. Breteler pers. comm.), and is already cited in Sosef et al. (2006) under four different unpublished names. These species will be formally published in a future article. The type of *T. korupensis* does not match the collections cited in Sosef et al. (2006) under these four undescribed species.

Tessmannia korupensis can be distinguished from all other species of *Tessmannia* by its comparatively large pods of 6–11 by 3.5–7 cm with its upper suture with 5–10 mm wide wings on each valve. Other species of *Tessmannia* have pods of 3–8 by 2–5 cm and lack wings.

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