The African genus *Sorindeia* (Anacardiaceae): A synoptic revision

**ABSTRACT**

The African genus *Sorindeia* is revised. Nine species are recognized. A key to the species is given together with illustrations to facilitate its use. As far as they are known, the male and female flowers and the fruits of all species are illustrated and their distribution maps are presented.

**INTRODUCTION**

The genus *Sorindeia* is confined to tropical Africa, including Madagascar, the Comoro Islands and the Mascarene Islands. It was described by DU PETIT THOUARS in 1806. He based it on the only species from Madagascar, which was named *S. madagascariensis* by DE CANDOLLE in 1825. More than 80 species have been described in the genus: 32 by ENGLER, in part with the co-authors KRAUSE and VON BREHMER, 5 each by DE WILDEMAN and VAN DER Veken, the remaining by 18 other authors. BOUROBOU-BOUROBOU and the present author added two new species from Gabon in 1997 and 1999.

The genus has never been revised for its entire area, but only for the different major flora's namely the Flora of West Tropical Africa (KEAY 1958), the Flore du Congo Belge et du Ruanda-Urundi (VAN DER Veken 1960), the Flora of Tropical East Africa (KOKWARO 1986), Flora Zambesiaca (R. & A. FERNANDEZ 1966) and the Flore de Madagascar et des Comores (PERRIER DE LA BÂTHIE 1946). Of the 32 African species described by ENGLER and his co-authors almost
all the holotypes in Berlin have been lost. For some names duplicate material in other herbaria could be designated as lectotypes, but in 14 cases a neotype had to be chosen. Only Sorindeia albitrora Engl. & Krause remains a doubtful species. Thirteen species belonged to other genera, of wich 5, possibly 6, belong to Trichoscypha (Anacardiaceae). The Sorindeia species based on material from Tropical America have been transferred to the Andean genus Mauria (Anacardiaceae).

DESCRIPTION OF THE GENUS SORINDEIA

Trees, shrubs or lianas. Exudate light. Leaves alternate, usually imparipinnate, more rarely simple (unifoliolate). Inflorescence a panicle usually many-flowered, terminal or subterminal, axillary or borne just below the leaves or on the trunk. Flowers unisexual, dioecious (possibly very rarely monoecious), small (≥ 6(-8) mm long), 5-merous, shortly pedicelled. Sepals united in lower half only or for more than half their length. Petals ± free, 2-4(-5) times as long as the sepals, imbricate or valvate, (sub)erect or spreading. Male flowers with 10-20 stamens; filaments often shorter than the anthers; pistillode absent. Female flowers with 5-10 staminodes; pistil glabrous or pubescent; ovary ± ovoid, 1-locular, with one pendulous ovule; style short, stigma 3-lobed to subcapitate. Fruits up to 3.5 × 2 cm, drupaceous, 1-seeded.

TYPE.—Sorindeia madagascariensis DC.

MORPHOLOGICAL NOTES

Variation in habit, from shrub or tree to liana, can be considerable in some Sorindeia species, notably so in S. grandifolia and, to a lesser extent, in S. juglandifolia. Often linked with variation in habit there is a great variation in the number, size, shape and hairiness of the leaflets. These elements offer little value for specific distinction. An exception is found in S. winkleri with its impressed midrib on the upper surface of the leaflet. The presence of a ‘collecting nerve’ (see Fig. 2C) is a useful character to distinguish most specimens of S. africana and S. juglandifolia from S. madagascariensis and some material of S. grandifolia where this nerve is missing (see Fig. 2D).

The inflorescence can be borne on the leafy shoot, either axillary or terminal, or just below the leaves, or on the trunk or main stem. Sorindeia batekeensis and S. oxyandra are cauliflorous, caulis is usual in S. madagascariensis, quite common in S. grandifolia (in lianescent forms), and it is rather exceptional in S. juglandifolia. Of the remaining species S. africana, S. gabonensis, and S. winkleri all have axillary and / or terminal inflorescences, whereas S. calantha is rami - or cauliflorous.

The flowers, within the same species, are very variable in color. Mostly, at least when in bud, red flowers have been reported, but also pale green to purplish or red-purplish, while open flowers more often as white, yellow or greenish-yellow. Sometimes more precise observations are made, saying that the corolla is red at the base, fading to yellow at tip, or red outside and yellow inside, or even orange-yellow with deep red base. The red, pink or purplish color of the inflorescence in general and of the flowers in particular, may be related to the position of the inflorescence, whether fully exposed or in shade. A relation between flower color and other characteristics of the various species has not been found. It is therefore incomprehensible, that Van der Veken (1960) used the color of the flowers as the leading character in his key to the species. Very often fieldnotes do not mention the color of the flowers and in the dried state it can hardly be determined. How Van der Veken (1959) for instance managed to establish the flower color of S. submontana for which the holotype label does not give any information, is a mystery. The same holds for S. gossweileri Exell. A consequence of the emphasis on flower color in Van der Veken’s key is that some of his species are widely separated on this basis, whereas they would key out next to each other if based on other morphological characters. An example is S. sparanoi and S. claessensii, both synonyms of S. juglandifolia.

The male and the female flowerbuds are usually slightly different in shape. The female buds are subovoid whereas the male buds have a more...
Fig. 1. — Flowers of *Sorindeia* species, one petal removed: A, *S. africana* (Engl.) Van der Veken; B, *S. gabonensis* Bourobou & Breteler; C, *S. grandifolia* Engl.; D, *S. juglandifolia* (A. Rich.) Planch. ex Oliv.; E, *S. madagascariensis* DC.; F, *S. oxyandra* Bourobou & Breteler; G, *S. winkleri* Engl. (A1, Reitsma et al. 2525; A2, Breteler & Jongkind 10225; A3, Louis et al. 1208; B1, Breteler & Jongkind 10730; B2, Breteler et al. 8731; C1, Leeuwenberg 9265; C2, Leeuwenberg 8854; D1, Breteler et al. 8735; D2, Morton SL692; E1, Jongkind et al. 3206; E2, Rabevohitra & Breteler 3899; F1, Breteler & de Wilde 51; F2, Breteler & de Wilde 50; G1, Breteler & de Wilde 518; G2, Breteler & de Wilde 632). Drawing by H. de Vries.
Fig. 2. — *Sorindeia grandifolia* Engl.: A, flower showing imbricate petals. — *S. juglandifolia* (A. Rich.) Planch. ex Oliv.: B, flower showing valvate petals; C, part of leaf showing ‘collecting nerve’ between the main lateral nerves. — *S. madagascariensis* DC.: D, part of leaf, ‘collecting nerve’ absent. (A, Leeuwenberg 8854; B-C, Breteler et al. 8558; D, Lovett et al. 1002). Drawing by H. De Vries.
globose to depressed globose shape, especially so in *S. juglandifolia*.

The immature dried fruits are often finely ribbed length-wise, which is not observed in mature dried fruits.

**GEOGRAPHICAL NOTES**

The nine species of *Sorindeia* can more or less be classified according to the size of their area of distribution. Four species have a narrow distribution: *S. batekeensis*, *S. gabonensis*, *S. oxyandra*, in western Central Africa (Fig. 5), and *S. calantha* that occupies a very restricted area in Kenya and Tanzania (Fig. 4). Two species viz *S. africana* (Fig. 4) and *S. winkleri* (Fig. 9) have a wider distribution that is, however, mainly restricted to Central Africa. *Sorindeia grandifolia* and *S. juglandifolia* are most widely distributed, occurring in Upper- and Lower Guinea as well as in Congolia. It is remarkable that *S. grandifolia* (Fig. 7) has only been collected north of the equator.

Disregarding the single collection from southern Mozambique, the distribution of *S. juglandifolia* (Fig. 8) is widely disjunct. It occurs in two separate areas in Upper Guinea, does not occur in Nigeria and reappears in Cameroun. Species with disjunct areas are not uncommon, but an area cut in three separate parts is rarely seen in a lowland species. The geography of *Keayodendron bride-loides* Leandri (BRETELÉR 1993) is different, but it is another rare example of this.

The area of *S. winkleri* (Fig. 9) is also disjunct. A large majority of the specimens originate from the Cameroun - Gabon area which is widely separated from the few collections from eastern Congo (Kinshasa) and from Burundi and western Tanzania. A more or less similar disjunct distribution has been observed in *Dichapetalum dewildei* Breteler (BRETELÉR 1978) and in *Penianthus Zenkeri* (Engl.) Diels (DEKKER 1983).

The type species *S. madagascariensis* (Fig. 9) is widely spread, occurring in East Africa and Madagascar.

**Key to the species of *Sorindeia***

1. Midrib of leaflets distinctly impressed above; calyx rather deeply lobed, ciliate (see Fig. 1G). From eastern Africa to Burundi and western Tanzania ................................................................. 9. *S. winkleri*
   1’. Midrib of leaflets prominent, at least plane above; calyx not as above (see Figs. 1A-F, 6A) ......................... 2
2. Flowering and fruiting branches usually with unifoliolate leaves only. Gabon ......................................................... 4. *S. gabonensis*
   2’. Flowering and fruiting branches usually with pinnate leaves, sometimes with trifoliolate, or (rarely) with unifoliolate leaves, but then pinnate, at least trifoliolate leaves usually present as well ........................................... 3
3. Petals, at least the apical part, imbricate in bud (see Fig. 2A). West and Central Africa, north of the equator ........... 5. *S. grandifolia*
   3’. Petals valvate in bud * (see Fig. 2B) ...................................................................................................................... 4
4. Flowers 6-7(-8) mm long. Small tree or shrub from upland rain forest in Kenya and Tanzania ................................................................. 3. *S. calantha*
   4’. Flowers 3-4(-5) mm long. Trees, shrubs, or lianas ................................................................................................. 5
5. Upper part of pedicel and calyx hairy, densely to sparsely so (see Fig. 1A), also in fruit (see Fig. 3A). From Nigeria to Central African Republic and Angola ................................................................. 1. *S. africana*
   5’. Upper part of pedicel and calyx glabrous ** (see Fig. 1B-F), margin of calyx may show a few hairs ........... 6
6. Pistil hairy (see Fig. 3B). Congo (Brazzaville) ........................................................................................................ 2. *S. batekeensis*
   6’. Pistil glabrous ......................................................................................................................................................... 7
7. Calyx lobes equal in length or longer than tube; petals 4-5 mm long; anthers 2-2.5 mm long. Caulliflorous tree. Equatorial Guinea and Gabon .................................................................................. 8. *S. oxyandra*
   7’. Calyx lobes shorter than tube; petals 3-3.5 mm long; anthers ± 1.5 mm long. Trees, shrubs, or lianas, caulliflorous or not ...................................................................................................................... 8

* It is supposed that *S. batekeensis*, of which complete flowers are unknown, belongs here.

** Exceptionally, the upper part of the pedicel and / or calyx may be sparsely puberulous in *S. juglandifolia* (observed on Angus 426 from Zambia) and in *S. oxyandra*. 

ADANSONIA, sér. 3 • 2003 • 25 (1)

8. Tertiary nerves not as described above (see Fig. 2D). East Africa, Madagascar, Comores and Mascarene Islands

1. Sorindeia africana (Engl.) Van der Veken


Shrub or tree up to 33 m tall and 40 cm d.b.h. Branches ± glabrous to distinctly (brown-?) hairy. Leaves (1-)7-13(-19)-folioate; folioles papery to coriaceous, very variable in size, (5-)10-20(-28) × (2-)4-6(-10) cm, rounded to cuneate and unequal-sided or not at base, acuminate at apex, ± glabrous to distinctly (brown-) hairy; lateral nerves (10-)11-14(-16) pairs, the collecting nerve usually distinct. Inflorescence up to c. 50 cm long, pubescent to puberulous, the indumentum

8. Tertiary nerves collected into an oblique nerve directed towards the angle between the midrib and the main lateral nerves (see Fig. 2C) (This nerve not always present in material from Sierra Leone previously assigned to *S. collina*). West and Central Africa, extending to the areas of Flora Zambesiaca and Flora of Tropical East Africa

1. Sorindeia africana (Engl.) Van der Veken


Fig. 3. — Fruits of *Sorindeia* species: A, *S. africana* (Engl.) Van der Veken; B, *S. batekeensis* Lec.; C, *S. gabonensis* Bourobou & Breteler; D, *S. grandifolia* Engl.; E, *S. juglandifolia* (A. Rich.) Planch. ex Oliv.; F, *S. madagascariensis* DC.; G, *S. oxyandra* Bourobou & Breteler; H, *S. winkleri* Engl. (A1, Breteler et al. 14735; A2, Breteler et al. 15033; B, Thollon 576; C, Breteler et al. 14754; D1, Meyer 15086; D2, J.J. de Wilde 8008; D3, Thomas 7023; E1, Reitsma et al. 2596; E2, Breteler & van Raalte 5626; E3, Devred 2554; F1, Jongkind et al. 3206; F2, Chapman 9358; G, Breteler & de Wilde 51; H, J.J. de Wilde 8850). Drawing by H. DeVries.
extending beyond the articulation in the pedicel on the calyx and often on the petals as well. Flowers (Feb.-Dec.), the male with 11-16 stamens, the female with 5(-7) staminodes; pistil glabrous to puberulous. Fruits (Nov.-Feb., May-July) up to 20 × 16 × 14 mm, yellow to orange at maturity, glabrous to puberulous. — Figs. 1A, 3A, 4.

HABITAT AND DISTRIBUTION. — Rain forest from eastern Nigeria to Angola and Central African Republic. Alt. up to c. 1500 m.


Notes. — Sorindeia africana is a variable species. This is reflected by the large number of synonyms. This variation concerns the indumentum, from almost glabrous in the former S. letestui to very hairy in the former S. lastoursvillensis, and the number of leaflets, 3 in the former S. belfadensis to many in van der Veken’s S. multifoliolata. Also the indumentum of the ovary is variable: thus S. multifoliolata var. watsaensis with glabrous ovaries is distinguished from the typical form.

Whether the petals are keeled inside or not, seems to be related to the number of stamens in the male flower: many stamens with ± flat petals, few stamens with keeled petals. In the female flowers, usually with 5 staminodes only, the few stamens with keeled petals. In the female the number of leaflets, 3 in the former S. multifoliolata, seems to be related to the number of stamens in the male flower: many stamens with ± flat petals, few stamens with keeled petals. In the female flowers, usually with 5 staminodes only, the petals are mostly distinctly ridged.
and they probably both occur in Equatorial Guinea. Unfortunately all the material that I have seen from that country which represents these species, is sterile. On account of the following elements of this description: ‘calyx brevis ad medium usque in lobes late ovatos divisus’ and ‘staminum filamenta tenuia, antherae anguste oblongae filamentiis paulum breviores’, however, I have placed $S.$ *tessmannii* in synonymy of $S.*$ *africana* and selected the neotype accordingly.

I have followed *Van der Veken* as regards the synonymity of *Sorindeia maxima* *Verm.* The type material is sterile which implies that its identification is however doubtful.

2. *Sorindeia batekeensis* Lecomte


Tree. Leaves (17-)19-23-foliolate; rachis and petiolule puberulous; leaflets ± oblong, (3-)7-11(-13) × 2-2.5(-3) cm with numerous ± parallel nerves, unequal-sided, caudate-acuminate. Inflorescence a narrow panicle, cauliflorous, 8-18 cm long, sparsely puberulous. Male and complete female flowers unknown. Upper part of pedicel and calyx glabrous in fruit. Fruit (immature) obovoid, sparsely puberulous. — Figs. 3B, 5.

**Habitat and distribution.** — Gallery forest, Batéké Plateau, Congo (Brazzaville).


**Notes.** — *Lecomte* described his species with axillary, glabrous, inflorescences. The two collections on which he based *S. batekeensis*, however, show separate leaves and (puberulous) inflorescences, which suggests strongly that the latter have been taken from a trunk.

The description of the collecting localities of the two specimens are imprecise. Therefore the geographical localization of *S. batekeensis* on Fig. 5 is an approximation. As these localities are both situated on the Batéké Plateau, they are represented by a single point.
3. Sorindeia calantha Mildbr.


Shrub or small tree to 10 m tall. Branchlets glabrous. Leaves 3-7(-11)-foliolate, glabrous or glabrescent; folioles (6-)10-16(-22) × (3-)4-
6(-9) cm, with 8-11(-12) pairs of main lateral nerves, the collecting nerve distinct or not. Inflorescence borne on the main stem, well below the leaves, axillary, or (sub)terminal. Male flowers white or red, 6-7(-8) mm long, glabrous or with puberulous calyx; stamens 13-20; filaments 2-2-3.5 mm long, anthers 2-2.5 mm long. Female flowers unknown. Fruits ellipsoid, ± 3 × 1 cm, glabrous. — Figs. 4, 6.

HABITAT AND DISTRIBUTION. — Upland rain forest in Kenya and Tanzania. Alt. 1200-2000 m.


4. Sorindeia gabonensis Bourobou & Breteler


Shrub or treelet up to 3.5 m tall. Leaves unifoliate, very rarely 3-5-foliolate on non-flowering shoots; leaflets rigidly papery to coriaceous, (7-) 15-20(-25) × (3-) 4-7(-11) cm, acuminate. Inflorescence an axillary or pseudoterminal, slender, loose panicle, up to 25 cm long, puberulous. Flowers (Apr.-May, Aug.-Jan.), ♂ with 6-12 stamens, ♀ flowers with 5 staminodes, pistil glabrous. Fruits (May-Aug., Nov.-Jan.) orange to dark red at maturity, 10-18 × 5-11 mm, glabrous. — Figs. 1C, 3C, 5.

HABITAT AND DISTRIBUTION. — Rain forest of Central Gabon. Alt. up to c. 600 m.


5. Sorindeia grandifolia Engl.


Shrub or tree to 30 m tall and 45 cm d.b.h., or liana or lianescent shrub. The branches may exude a little white latex. Branches and leaf axis (sub)glabrous to pubescent. Leaves (1-)3-7(-9)-foliolate; folioles opposite or subopposite, papery to coriaceous, ± elliptic, (3-)10-20(-30) × (2-)4-8(-15) cm, with 8-13(-15) pairs of main lateral nerves, midrib prominent on upper side, the collecting nerve distinct or not, (sub)glabrous to pubescent, rounded to cuneate at base, usually acuminate at apex. Flowers (Oct.-Mar.) in ± narrow panicles up to 60 cm long, axillary or on the older wood or stem below the leaves, glabrous to puberulous, the indumentum not extending beyond the articulation in the pedicel (upper part of pedicel and calyx glabrous). Calyx lobes broadly rounded, thin-edged. Petals imbricate. Stamens 13-17 in the male flowers, subellipsoid, (10-)15-25 × 8-15 mm, glabrous, orange (red?) at maturity, ± ribbed when immature, smooth when ripe. — Figs. 1C, 2A, 3D, 7.

HABITAT AND DISTRIBUTION. — Rain forest and gallery forest. Alt. up to 1600 m, from Guinea to Southern Sudan, also in Saô Tomé.


NOTES. — As Sorindeia grandifolia may flower and produce fruits in shaded conditions as well as with full exposure, specimens show a great variation in morphology, which is reflected by the large number of synonyms. This variation concerns the habit, from tree to liana, the indumentum of the branches, leaves, and inflorescences, as well as the size of the leaflets and their number of lateral nerves. The size of the inflorescence is also variable, from 5 to 60 cm long, and also its position from axillary to cauliflorous. The possession of imbricate petals is, however, a stable character.

The neotypes for S. ledermanni, S. protioides, S. schroederi, S. longipetiolulata, and S. reticulata have been chosen from the areas where the original type material was collected. For S. schweinfurthii a specimen from a neighbouring country had to be chosen as there was no specimen available from Sudan.


**Sorindeia obtusifoliolata** Engl. var. G. Don, Gen. Syst. 1: 666

**Sapium simplicifolium**


**Sorindeia thollonii** Lecomte, Bull. Soc. Bot. France 55:


**Sorindeia africana DC., Prodr. 2: 80 (1825), nomen (sub) nudum, see notes.

**Sorindeia heterophylla** Hook.f., Niger Flora: 186 (1849), nom. illeg., see notes.

**Sorindeia afzelii** Engl., Bot. Jahrb. Syst. 54: 313 (1917), nom. illeg., not S. afzelii Engl. 1892 which is Trichoscypha longifolia (Hook.f.) Engl. — Type: Afzelius s.n., Sierra Leone, s.loc. (holo-, B, delect.). Neotype not designated.

Small tree to 23 m tall and 40 cm d.b.h., or shrub or liana. Branches may exude a little, white latex. Brachlets, leaves and inflorescences (sub)glabrous to (sparsely) puberulous, or more rarely, pubescent. Leaves (1-)3-6(-12) × (1-)3-6(-12) cm, with (7-)10-15(-17) pairs of main lateral nerves, midrib prominent above; cuneate to rounded and often unequal-sided at base, usually acuminate at apex. Flowers (Jan.-Dec.) in axillary, or terminal ± pendant, up to 60 cm long panicles, more rarely cauliflorous, the indumentum when present not extending beyond the articulation in the pedicel (i.e. upper part of pedicel glabrous). Calyx glabrous, the lobes often sparsely ciliate. Petals valvate, glabrous. Stamens in ő flowers.
(10-)15-16(-18), the filaments slightly shorter than the anthers or ± equal in length; ? flowers with 5 staminodes, pistil glabrous. Fruits (Jan.-Dec.) (sub)ellipsoid, 12-20 × 9-10 mm, smooth, orange at maturity, (immature fruits may be dark-red to purple). — Figs. 1D, 2B, 3E, 8.

HABITAT AND DISTRIBUTION. — Rain forest and gallery forest, from Senegal to Sudan, Zambia and Angola. Alt. up to c. 2000 m.

NOTES. — *Dupuisia juglandifolia*, the basionym of this species, is most probably based on collections from various sources, almost certainly on those made by *LEPRIEUR* and *PERROTTET*. The protologue, however, does not mention any specific collection. The Paris herbarium has a *LEPRIEUR* collection without number that fits the description, but it was collected in flower in May, not in March or April, the time of flowering that is mentioned in the original publication. *Perrottet 151* in the British Museum herbarium, without date of collection, might have served for the original description. As it is not certain whether one or both of these specimens and/or other specimens served as a basis for the original description, the illustration (*tabula 38*) of the protologue has been designated lectotype.

I have followed *VA*N *DER VEKEN* (1959) who treated *Sorindeia africana* DC. as a *nomen nudum*, as did *HOOKER* (1849). Whether it is really a *nomen nudum* is debatable (see...
Brummitt 2002), but a decision had to be taken for the purpose of this revision. Moreover, the consequences of accepting it as validly published are that S. juglandifolia would have to be replaced by de Candolle’s name and S. africana (Engl.) Van der Veken by S. nitidula Eng.  

When Hooker published his Sorindeia heterophylla, he mentioned the earlier Sapindus simplificolius G. Don as a synonym, which renders his name illegitimate.  

The new combination Sorindeia simplicifolia made by Exell in 1944 is illegitimate because it was preceded by S. simplicifolia March in 1896.  

I see no reason to follow Kokwaro (1986), in classifying the variety Sorindeia obtusifoliolata Engl. var. parvifoliolata Engl. as a synonym of Pseudopondias microcarpa (A. Rich.) Engl. Why should the type, lost in Berlin, not represent the genus Sorindeia? This type originated from Bukoba where Sorindeia juglandifolia, the only species of the genus known to occur there has been collected. A collection from the Bukoba district has been designated neotype.  

VAN DER VEKEN’s Sorindeia claessensii De Wild. var. monticola is very different from var. claessensii, it belongs in Sorindeia winkleri.  

I have not been able to maintain Sorindeia collina as a species distinct from S. juglandifolia. Sorindeia collina is distinguished from the latter by the place of the inflorescence, borne on the trunk or on the leafy shoot respectively. This character is not very reliable in distinguishing species in Sorindeia. In Sorindeia grandifolia for instance a single individual may be cauliflorous and ramiflorous at the same time. In Sorindeia juglandifolia this does occur as well, although more rarely so. A few examples are J.F. de Wilde 7982 from Cameroun and Wieringa 1155 from Gabon. The collecting nerve (see Fig. 2C) is not always distinct in S. juglandifolia, especially not in the material formerly assigned to S. collina.  

All the material cited in Champluvier’s publication on Sorindeia ripicola has been examined. A constant morphological character associated with the ecological character ‘riverine’ has not been found, not even within the narrow scope of the material annotated and cited by the author. I have therefore placed S. ripicola in synonymy of S. juglandifolia.  

7. Sorindeia madagascariensis DC.


Sorindeia pinnata (L.) Desf., Cat. Hort. Par. Ill: 331 (1829), as regards reference to Madagascar  


Sorindeia obtusifoliolata Engl. var. obtusifoliolata, Pflanzenw. Ost-Afr. C: 244 (1895). — Type: Stuhlmann s.n., Tanzania, Sansibar et Dar es Salaam; Holst 2789, Tanzania, Amboni; Holst 2188 & 3506, Tanzania, Usambara; Stuhlmann s.n., Tanzania, Usugua (syn-, B, delect.). Lectotype (designated here): Holst 3506, flb. July (K); iso-, HBG, P, Z.  


Tree up to 20(-35) m tall and 20 cm d.b.h. or shrub. Leaves mostly crowded at the top of the branches, (3)7-11(-13)-foliolate; folioles ovate-elliptic to oblong-obovate, (2-)11-20(-30) × (1-)4-6(-10) cm with 8-14 pairs of main lateral nerves, the ‘collecting’ nerve usually absent (see Fig. 2D), but sometimes ± distinct between the upper lateral nerves; ± cuneate and often slightly
to strongly unequal-sided at base, obtuse to acuminate at apex, the acumen up to 3 cm long; glabrous, often minutely puberulous on rachis and the midrib beneath. Flowering Aug.-Dec. Panicles usually borne below the leaves, or on the trunk (especially in continental Africa), more rarely axillary, axillary to terminal or below the leaves or on the trunk in Madagascar, up to 1 m long, up to 1.60 m long in fruit, ± glabrous. Calyx glabrous, lobes shorter than the tube, sometimes sparsely ciliate. Petals valvate, up to 4 × 1.8 cm, yellow to pink. Male flowers with 10-20 stamens, filaments shorter than the 1.5-2 mm long anthers. Female flowers with 5-10 staminodes; pistil glabrous. Fruit (Sep.-Jan.) yellow, subellipsoid, apiculate or not, up to 2.8 × 1.8 cm, smooth, glabrous, edible. — Figs. 1E, 2D, 3F, 9.

HABITAT AND DISTRIBUTION. — Riverine, coastal and upland forest of East Africa, from Somalia to Mozambique, the Comoro islands, Mayotte, Madagascar and the Mascarenes. Alt. up to c. 1800 m.


NOTES. — The first description of Sorindeia madagascariensis is that of Desrousseaux in Lamarck’s Encyclopedie, vol. 3(2): 699 (1792), under the name Mangier pinné, Mangifera pinnata L.f. Suppl.: 156 (1781), a species from India, which is now known under the name Spondias pinnata (L.f.) Kurz. Although Desrousseaux identified his plant from Madagascar as Mangifera pinnata, he was well aware of its distinctness, saying that it should probably be classified as a distinct genus. This was done by du Petit Thouars in 1806, but without providing the necessary new binomial combination for the type species, which was effected by de Candolle in 1825. There is no specimen in the Paris herbarium of du Petit Thouars pertaining to Sorindeia madagascariensis.
sis, nor in the DE Candolle herbarium in Geneva. A collection in the Jussieu herbarium at P has been selected as neotype.

For Sorindeia obtusifoliolata Engl. var. parvifoliolata Engl. see under S. juglandifolia.

I have not seen the fruits described by CHIOVENDA in his diagnosis of Aglaia somalensis Chiov., the basionym of Sorindeia somalensis (Chiov.) Chiov. Scanned color prints of the leaves of the syntypes that have been examined match Sorindeia madagascariensis. One of the three syntypes Scasellati 64 has been designated as the lectotype.

8. Sorindeia oxyandra Bourobou & Breteler


Tree up to 8 m tall. Leaves up to 18-foliolate, glabrous to sparsely puberulous; folioles papyraceous, narrowly, oblong-lanceolate, 10-19 × 3-4 cm, rounded to cutate at base, long-acuminate at apex, the acumen 1-2 cm long, 1-1.5 mm wide; midrib and the 14-20 pairs of main lateral nerves slightly prominent above, more distinctly so beneath, the ‘collecting nerve’ indistinct or absent. Flowers (Aug.) in glabrous, up to 14 cm. long panicles, borne on the stem, the male with 15-18 stamens of 2.5-3.5 mm long, the female with 10-12 staminodes and a glabrous pistil. Immature fruits (Aug.) subellipsoid, 1.5-2 × 0.8-1.3 cm, glabrous. — Figs. 1F, 3G, 5.

HABITAT AND DISTRIBUTION. — Rain forest, Monts de Cristal, Gabon and Alen Mt., Equatorial Guinea. Alt. up to c. 1000 m.
Sorindeia immersinervia Tchimbélé, elliptic, often narrowly so (5-)10-18(-30) firmly papery to coriaceous, ±glabrous, oblong-berulous to glabrous; folioles alternate to opposite, leaves (1-)7-11(-13) foliolate, the main axis pun-3-sided in transverse section.—Figs. 1G, 3H, 9.

EXCLUDED SPECIES


Sorindeia albiziflora Engl. & Krause, Bot. Jahrb. Syst. 46: 341 (1911); Keay in Hutch. & Dalziel, Fl. West Trop. Afr., ed. 2, 1: 736 & 738 (1958). — Type: Ledermann 1938, Cameroun, between Bamenda and Babongi, fl. Dec. (holo-, B, det.). — Note: The original material has been lost at Berlin and a duplicate has not been found. The combination of characters mentioned by Engler & Krause in their
description does not fit any known Sorindeia species, it is in fact hardly admissible in this genus. Trichoscypha seems to be a better choice, although 5-merous flowers with ovaries with 5 stigma’s, as described by the authors, are very rare in this genus and have so far not been collected in Central Africa.


Sorindeia lagdoensis Engl. & Krause, Bot. Jahrb. Syst. 46: 342 (1911). — Type: Ledermann 4375, Cameroun, Lagdo Mts. (holo-, B, delet.) = Lannea microcarpa Engl. & Krause. — Note: There is no original material left to judge this Sorindeia species. Engler & Krause’s description, however, contains sufficient elements such as ‘folia margine densiusculae breviter ciliata’ and ‘antherae parvae ovoideae’ to identify their plant as Lannea microcarpa.


Acknowledgements

The author is very grateful to Mr. H. de Vries for the excellent drawings and to his wife B.J.M. Breteler - Klein Breteler for the electronic version of the manuscript.

REFERENCES


Manuscript received 27 January 2003; revised version accepted 31 March 2003.