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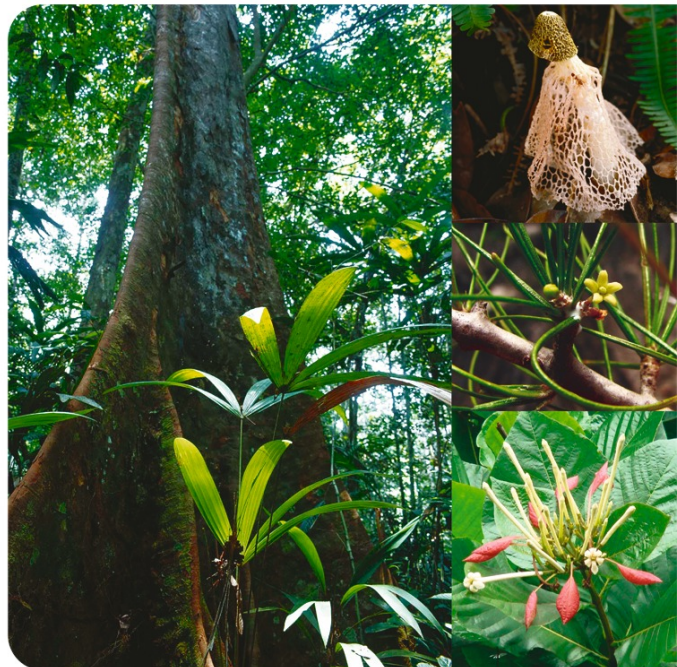
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A revision of African Lecythidaceae

Ghilleen T. Prance^{1,3} & Carel C. H. Jongkind²

Summary. This is a revision of all the African species of Lecythidaceae s.l. Representatives of all four subfamilies occur in Africa. A total of 50 species are recognised in ten genera. Seven genera are endemic to continental Africa: *Brazzeia*, *Crateranthus*, *Napoleonaea*, *Oubanguia*, *Pierrina*, *Rhaptopetalum* and *Scytopetalum* and three also occur elsewhere: *Barringtonia*, *Petersianthus* and *Foetidia*. New species are described in *Napoleonaea*: *N. alata*, *N. beninensis*, *N. cuneata* and *N. sapoensis*, in *Crateranthus*: *C. cameroonensis*, and in *Rhaptopetalum*: *R. cheekii*. Keys for identification and distribution maps of all species are provided. The distribution of Lecythidaceae in Africa is predominantly in West Africa from Guinea to the Democratic Republic of the Congo with only a few species occurring in East Africa.

Key Words. *Barringtonia*, endangered species, *Foetidia*, *Napoleonaea*, new species, Scytopetalaceae, taxonomy.

Introduction

The Neotropical Lecythidaceae has been treated in Prance & Mori (1979) and Mori & Prance (1990), and the Malesian ones in Prance & Kartawinata (2013). The purpose of this paper is to provide a summary of all the African species of the family. In Morton *et al.* (1998) we dealt with the circumscription of the family based on the molecular work of Morton *et al.* (1997) and showed it to be monophyletic. The group either has to be united into a single family including the former Scytopetalaceae or to be divided into four families: Lecythidaceae, Napoleonaeaceae, Scytopetalaceae and Foetidiaceae. We chose the former approach and so the Scytopetalaceae are included in Lecythidaceae here, contrary to the opinion of Appel (1996, 2004) who has done the most recent study of that group. The monophyly of this group was confirmed by the subsequent molecular work of Mori *et al.* (2007). It was Carlquist (1988), based on the wood structure, and Tsou (1989, 1994) based on her extensive embryological work, that first pointed out the probable relationship between the Scytopetalaceae and Lecythidaceae. Recent systems of angiosperm classification have been divided about whether to divide or unite the Lecythidaceae. APG (2009), Mabberley (2008), Shipunov (2010) and Thorne & Reveal (2007) all consider the group as a single family. Takhtajahn (2009) and Reveal (2011) divide it into the three families Lecythidaceae, Scytopetalaceae and Napoleonaeaceae. The revision of *Napoleonaea* here is authored by Carel Jongkind.

Taxonomic History of African Lecythidaceae

The taxonomic history of the species treated here as Lecythidaceae has had two rather separate pathways in Africa treated as the Lecythidaceae (sometimes referred to as Barringtoniaceae) and the Scytopetalaceae which are treated as a single family here.

The first record of a species of Lecythidaceae that occurs in Africa was the description of *Barringtonia racemosa* (L.) Spreng. by Linnaeus (1753) under the name *Eugenia racemosa* L. based on illustrations from the Herman herbarium. This species was collected in Africa by Kirk in 1873 and his collection was named as *Butonica caffra* Miers, by John Miers (1875b). The latter name is now a synonym of *B. racemosa*.

The next genus to be described was *Foetidia* Comm. ex Lam. based on a Commerson collection from Mauritius named as *F. mauritiana* Lam. Lamarck (1788, 2: 457) placed his new genus in the Myrtaceae. This largely Madagascan and Mascarene genus was not associated with Africa until Verdcourt (1985) described *F. africana* Verdc. The genus is also dubiously known from a collection of *F. obliqua* Blume from Pemba Island which is probably an introduction, and from the recently described *F. comorensis* Labat, Bidault & Viscardi from Mayotte in the Comores.

Napoleonaea P. Beauv. was first described by Palisot de Beauvois (1804), who named this magnificent flower after his emperor as *Napoleonaea imperialis* P. Beauv. However, in his *Flore d'Oware et de Bénin* (Palisot de Beauvois 1810), six years later he used the

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orthographic variant *Napoleona*. The initial spelling must be used for the genus. This genus and species was soon renamed by another French botanist, Desvaux (1814) under the name *Belvisia caerulea* Desv., named illegitimately in honour of Palisot de Beauvois. Desfontaines (1820) described the Neotropical genus *Asteranthos* Desf. which he associated with *Napoleonaea*. He placed these two genera together in the subtribe Symplocineae. *Napoleonaea* was then variously placed before finally being related to the Lecythidaceae. Subsequently Desfontaines and also Brongniart (1843) placed this subtribe between Memecylaceae and Rhizophoraceae. Brown (1821) proposed it as a distinct family Belvisiaceae placed near to the Symplocaceae and Rafflesiaceae. Lindley (1836) placed Belvisiaceae (Belvisiae) after his Campanulaceae and Sphenocleniaceae, but in 1845 changed his placement to between Rhizophoraceae and Melastomataceae. De Candolle (1839) placed Napoleoneae after Sphenocleneae and Columelliaceae before Vaccinieae. Endlicher (1839) considered the Napoleoneae as doubtful genera of Ebenaceae and Meissner (1838) placed his Belvisiaceae between Passifloreae and Loasaceae. Jussieu (1844), who described a second species of *Napoleonaea*, put the group between Cucurbitaceae and Passifloreae. Hooker & Planchon (1848) thought the Napoleoneae to be nearer to Myrtaceae with affinities to *Gustavia* L. and other Lecythidaceae and to *Luffa* Mill. in Cucurbitaceae, and Bentham (1849) concurred when he placed Napoleoneae as a suborder of Myrtaceae. Bentham & Hooker (1867: 696) placed Napoleoneae as a third subtribe of their Lecythideae which was a tribe of the Myrtaceae, finally associating *Napoleonaea* with what is now Lecythidaceae. However, Miers (1875a) in a detailed study of the species, considered *Napoleonaea* to be more closely related to *Omphalocarpum* P. Beauv., an African genus of Sapotaceae, and *Asteranthos* to be related to *Rhododendron* L. Miers stated: "We can perceive nothing, either in the floral or carpological structure of *Napoleona*, that bears the slightest analogy to the Myrtaceae; it is equally irreconcilable with Barringtoniaceae and the Lecythidaceae." Neither of Miers' placements have stood the test of time. After excluding the Napoleoneae Miers (1874) treated the Lecythidaceae and the Barringtoniaceae (1875b) as separate families and he placed *Foetidia* in the Lythraceae. Miers split *Barringtonia* into several meaningless genera that are all considered synonyms by Payson (1967), and Prance (2012a). For the two species that reach Africa, *Barringtonia racemosa* was named *Butonica racemosa* (L.) Miers and *B. asiatica* as *Agasta asiatica* (L.) Miers. The only other African species of Lecythidaceae to feature in Miers' monograph of Barringtoniaceae was *Petersianthus* Merr. under the Welwitsch synonym of *Petersia africana* Welw. ex Benth. & Hook. f.

The first genus of the subfamily Scytopetaloidae to be described was *Rhaptopetalum* Oliv. (Oliver 1865), who considered it to be in the tribe Olaceae. This was followed by Baillon (1886) who described *Brazzeia* Baill. with two species, *B. congoensis* Baill. and *B. thollonii* Baill., which he placed in the Tiliaceae. The next genus of the subfamily to be described was *Scytopetalum* Pierre ex Engl. (Engler 1897) who also created the family Scytopetalaceae for his new genus *Scytopetalum* and for *Rhaptopetalum*. Baillon (1890) described *Oubanguia* Baill. which, like *Brazzeia*, he placed in Tiliaceae. Van Tieghem (1905) in a paper that split excessively at the species level, brought together all the genera of Scytopetaloidae so far described under the name Rhaptopetalaceae that included *Rhaptopetalum*, *Scytopetalum*, *Oubanguia* and *Brazzeia*. Engler (1909) returned to the Scytopetalaceae in which he included *Scytopetalum* and *Rhaptopetalum* and he added his new genus *Pierrina* Engl. It was not until Engler (1921) that all the genera of Scytopetaloidae were united in his family Scytopetalaceae in which he recognised two tribes: Oubanguieae containing *Oubanguia* and *Scytopetalum* and Rhaptopetaleae containing *Rhaptopetalum*, *Brazzeia* and *Pierrina*.

The Scytopetalaceae continued to be recognised as a family by other botanists (e.g. Hutchinson & Dalziel 1927a; Germain 1963; Letouzey 1961, 1978a, b and Appel 1996). Carlquist (1988) showed that the wood of Scytopetalaceae resembled that of Lecythidaceae and shortly thereafter Tsou (1994) in a study of the embryology of the Lecythidaceae, suggested a close relationship between Scytopetalaceae and Lecythidaceae and that the Neotropical genus *Asteranthos* belonged in Scytopetalaceae. More recent molecular work, by for example, Morton *et al.* (1997, 1998), Mori *et al.* (2007) have shown that to have a monophyletic Lecythidaceae the Scytopetaloidae should be included in it, an opinion with which we agree.

Crateranthus Baker f. was described as a new genus by Baker (1913) based on his species *C. talbotii* Baker f. with three varieties that are no longer recognised. Knuth (1939a, b, c) divided the Lecythidaceae into three families: Barringtoniaceae DC. ex F. Rudolphi, Lecythidaceae and the unispecific Asteranthaceae R. Knuth. His Barringtoniaceae was further subdivided into four tribes: Barringtoniaceae, including *Barringtonia*, *Planchonia* and *Careya*; Combretodendreae with *Combretodendron* (now *Petersianthus*); Foetideae with *Foetidia*; Napoleoneae for *Napoleonaea* and Crateranthaceae for *Crateranthus*. The Lecythidaceae of Knuth included only the Neotropical species in the family.

The genus *Petersianthus* has a long and rather complicated nomenclatural history. The species now named *Petersianthus macrocarpus* (P. Beauv.) Liben was first described as *Combretum macrocarpum* by Palisot de Beauvois (1820) in his *Flore d'Oware et de Bénin* ten years after he had described *Napoleona* (sic) in an earlier part of the same Flora. The same species was

described again by Bentham & Hooker (1867) under the name *Petersia africana* Welw. ex Benth. & Hook. f. and the name *Petersia* was taken up in several publications, for example by Miers (1875b). Chevalier (1909a) gave the invalid generic name *Combretodendron* for the same species and described it as *C. viridifolium* A. Chev. and so this species also gained names in *Combretodendron*. *Petersia africana* was transferred to *Combretodendron africanum* (Welw. ex Benth. & Hook. f.) Exell (1930) and this name was used in many publications, for example, Knuth (1939a) and Keay (1954). Merrill (1909) described the species that he named *Terminalia quadrialata* Merr. from the Philippine islands. The confusion with the Combretaceae is because of the distinctive winged fruits of *Petersianthus*. Some years later (1916), Merrill realised that this species belonged to the Lecythidaceae in the strikingly disjunct African genus *Petersia*, but also that that name was invalid because of *Petersia* Klotzsch a genus of Capparaceae. Merrill made the required new combination *Petersianthus quadrialatus* (Merr.) Merr. for the Philippine species and Liben (1968) finally made the required nomenclatural transfer to *Petersianthus macrocarpus* (P. Beauv.) Liben for the African species, pointing out that *Combretodendron* was not validly published.

Pichon (1945) discussed the position of *Combretodendron* (= *Petersianthus*) and also proposed a new classification of Lecythidaceae into four subfamilies. His Planchonioideae (= Barringtonioideae) included *Combretodendron* and *Foetidia* in separate tribes as well as separate tribes for the mainly Asiatic genera *Planchonia* and *Barringtonia*. The subfamily Lecythidoideae with five tribes contained all the Neotropical species except *Asteranthos* and the subfamily Napoleonoideae had three unigeneric tribes Napoleoneae, Craterantheae and Asterantheae.

The Lecythidaceae s.s. without the Scytopetalaceae was treated as such in many African regional floras, for example, in East Africa by Sangai (1971) including *Barringtonia* and *Foetidia* and in West Africa by Hutchinson & Dalziel (1927b). For *Flora Zambesiaca* Fernandes (1978) called the family Barringtoniaceae in which he treated the two genera *Barringtonia* and *Napoleonaea*.

In the past both the Scytopetalaceae and the Lecythidaceae s.s. have suffered from excess splitting of the species. For example, in *Napoleonaea* by Miers (1875a), Baker (1913) and Knuth (1939a) and in the Scytopetalaceae by Van Tieghem (1905) and Chevalier (1909b). Both groups have been more recently revised and many names of the above authors placed in synonymy, *Napoleonaea* by Liben (1971) and Scytopetalaceae by Letouzey (1961, 1978a, b). The taxonomy presented here follows that of the two latter authors fairly closely with relatively minor alterations to the Scytopetalaceae and considerable changes to *Napoleonaea*. The latter genus has been contributed to

this publication by Carel C. H. Jongkind who has carried out extensive field studies of it in West Africa.

Lecythidaceae

Lecythidaceae A. Rich. (Richard 1825: 259); Poiteau (1835: 141); Miers (1874); Niedenzu (1892: 7); Hutchinson & Dalziel (1927b & 1928); Keay (1958); Knuth (1939b); Sangai (1971); Prance & Mori (1979); Henderson (1982: 1); Mori & Prance (1990); Prance (2012b); Prance & Kartawinata (2013). Type genus: *Lecythis* Loefl.

Myrtaceae tribus Lecythideae A. Rich. ex DC. (De Candolle 1828: 288); subtribus Eulecythideae Benth. & Hook. f. (Bentham & Hooker 1865).

Barringtoniaceae F. Rudolphi (1830: 56); Miers (1875b); Knuth (1939a); Fernandes (1978).

Lecythidaceae subfam. Barringtonioideae (DC.) Beilschm. (Beilschmied 1833: 9). Type genus: *Barringtonia* J. R. Forst. & G. Forst.

Napoleaeonaceae A. Rich. (Richard 1827: 432).

Lecythidaceae subfam. Napoleonoideae (A. Rich.) Nied. (Niedenzu 1892: 33). Type genus: *Napoleonaea* P. Beauv.

Scytopetalaceae Engl. (Engler 1897: 242, 1921: 475); Hutchinson & Dalziel (1927a); Keay (1958); Germain (1963); Letouzey (1978 a, b).

Lecythidaceae subfam. Scytopetalaceae (Engl.) O. Appel (1996: 225). Type genus: *Scytopetalum* Engl.

Rhaptopetalaceae Tiegh. (Van Tieghem 1905). Type genus: *Rhaptopetalum* Oliv.

Foetidiaceae Airy Shaw (1973: 465).

Lecythidaceae subfam. Foetidioideae Nied. (Niedenzu 1892: 29). Type genus: *Foetidia* Comm. ex Lam.

Large or small *trees, shrubs* and rarely a *suffrutex* or *vine* in *Napoleonaea*, the young stems with cortical bundles of reversed orientation in Barringtonioideae. *Leaves* simple, with entire or slightly serrate margins, pinnately nerved, indumentum, if present, of simple hairs in all African species (stellate in *Couratari* Aubl. in Neotropics); stipules absent or minute. *Inflorescences* terminal, axillary, ramiflorous or cauliflorous, panicles or racemes or flowers often solitary or in cauliflorous clusters. *Flowers* actinomorphic in African species often zygomorphic in Neotropical species, flowers with 2 – 6 sepals, imbricate or valvate or calyx united into a cup enclosing bud, calyx often persistent on mature fruit; apetalous (Foetidioideae) or with petals or petals lacking and with a pseudocorolla in the other subfamilies; petals free, imbricate, 4 – 6 in Barringtonioideae, fused into apetalous ring, plicate in Napoleonoideae with 3 concentric rings of staminodes within, apetalous and with fused staminodes forming a showy corolla-like pseudocorolla in Scytopetalaceae. *Stamens* 10 plus 10 staminodes in *Napoleonaea* or numerous in other

subfamilies, inserted in 1 to many whorls; anther bases fused and joined to pseudocorolla in Scytopetaloideae and to inner whorl of pseudocorolla in Napoleonaeoideae; anthers 2 or 4 locular, longitudinally dehiscent or rarely poricidal; *ovary* syncarpous, inferior or semi-inferior, 2 – 8 locular, placentation central axile, apical-axile or basal-axile, *ovules* 2 to many per loculus, anatropous, sometimes pendulous; nectary disc well developed, annular; style solitary

usually filamentous. *Fruit* a drupe with one to several seeds, a berry or a loculicidal capsule or a woody pyxidium dehiscent by an operculum in many Neotropical species, winged only in *Petersianthus* in Africa, seeds winged in two Neotropical genera (*Couratari* and *Cariniana* Casar); endosperm lacking or scanty in all subfamilies except Scytopetaloideae where often ruminant; cotyledons plano-convex or foliaceous in three Neotropical genera.

Key to subfamilies of Lecythidaceae

1. Pollen syntricolporate; cortical bundles with reversed orientation (xylem outside, phloem inside); secondary xylem without crystal chains. SE Asia and Pacific (1 sp. of *Petersianthus* in Africa) **1. Barringtonioideae**
Pollen tricolpate or tricolporate; cortical bundles reversed or normal orientation; secondary xylem with or without crystal chains. Africa and Neotropics 2
2. Flowers apetalous and without a pseudocorolla of staminal origin; filaments weakly fused at base, situated in a vertical ring on a thick shield-like placenta; ovule with micropyle directed outwards; cortical bundles with reverse orientation; secondary xylem with crystal chains. Madagascar, Mascarenes and East Africa. **4. Foetidioideae**
Flowers with petals or a pseudocorolla (corona) of staminal origin; filaments fused at base to form a distinct staminal ring; ovules in rows hanging or ascending from a central columnar placenta, if horizontal then with the micropyle facing inwards; cortical bundles with normal orientation; secondary xylem with or without crystal chains. Africa and Neotropics. 3
3. Flowers zygomorphic or actinomorphic, with petals, outer row of filaments not forming a petaloid corona. Neotropical **4. Lecythidoideae**
Flowers actinomorphic, with a pseudocorolla of staminal origin; all African except *Asteranthos* 4
4. Sepals 3 – 5, distinct; flowers solitary, or in fascicles; endosperm never ruminant **2. Napoleonaeoideae**
Sepals completely fused; flowers in racemes or panicles (solitary in *Asteranthos*); endosperm usually ruminant **3. Scytopetaloideae**

Key to the African genera of Lecythidaceae

1. Flowers without a pseudocorolla or corona; petals free or absent 2
Flowers with a pseudocorolla or corona of staminal origin 4
2. Petals absent; secondary xylem with crystal chains **10. Foetidia**
Petals present; secondary xylem without crystal chains 3
3. Inflorescence a raceme; fruit tetragonous, but not winged **1. Barringtonia**
Inflorescence a panicle; fruit 4-winged **2. Petersianthus**
4. Calyx lobes distinct, imbricate 5
Calyx undefined, without lobes, but often splitting irregularly or slightly crenate 6
5. Pseudocorolla present, corona absent; ovary semi-superior; stamens in numerous whorls **3. Crateranthus**
Corona present; ovary inferior; stamens in a single whorl **4. Napoleonaea**
6. Inflorescence of solitary flowers axillary on youngest branches; anthers longitudinally dehiscent; ovules 2 or 4 per locule; fruits 1 – 2 seeded; seeds glabrous 7
Inflorescence ramiflorous or cauliflorous; anthers opening by apical pores; ovules numerous per locule; fruits many seeded; seeds pubescent along pseudoaril 8
7. Inflorescence paniculate; carpels 3 – 5; fruits capsular; endosperm not ruminant **5. Oubanguia**
Inflorescence racemose; carpels 6 – 8; fruits drupaceous, endosperm ruminant **6. Scytopetalum**
8. Filaments shorter than anthers; stigma simple; seeds not flattened and without a circular notch **9. Rhaptopetalum**
Filaments longer than anthers; stigma with as many lobes as carpels; seeds flattened, with a circular notch 9
9. Older inflorescences forming dense clusters; fruits globose, rounded at apex **7. Brazzeia**
Inflorescences not forming dense clusters; fruits fusiform, acute at apex **8. Pierrina**

1. Subfamily **Barringtonioideae** (DC.) Beilschm. (Beilschmied 1833: 97).

Tribus Barringtonieae DC. in Schlttdl. (De Candolle 1827: 505).

Subtribus *Barringtoniinae* Benth. & Hook. f. (Bentham & Hooker 1865: 695).

Subfamily *Planchonioideae* Nied. (Niedenzu 1892: 30); Morton *et al.* (1997); Mabberley (2008: 473).

Barringtoniaceae F. Rudolphi (1830: 56); Lindley (1846: 716). Type genus: *Barringtonia* J. R. Forst. & G. Forst., nom. cons.

Small to large *trees*, rarely *shrubs*, pachycaul or leptocaul growth form. *Leaves* alternate or spirally in whorls at apex or at apex of branches, simple, the margins entire or serrate-crenulate, pinnately nerved, usually brochidodromous; stipules absent or minute and caducous. *Inflorescences* terminal, axillary or cauline, simple often pendulous racemes, or panicles in *Chydenanthus* and *Petersianthus*, or rarely flowers solitary. *Flowers* actinomorphic, hermaphrodite, sessile or pedicellate; bracts and bracteoles usually small and caducous; hypanthium most frequently campanulate or conical, very rarely winged; sepals 2 – 6 often circumscissile; petals present, 3 – 5, free, most often 4, aestivation imbricate, without a corona or pseudocorolla; stamens

numerous, inserted in 3 – 8 (– 12) whorls, usually far-exserted, connate at base into short staminal ring, the ring actinomorphic, inner whorls often staminodal; anthers bilocular, longitudinally dehiscent, latrorse or introrse, pollen syntricolate; disc an intrastaminal annular ring; ovary inferior, usually 2 – 4 locular with 2 – 6 anatropous ovules in each loculus, rarely more; the ovules attached at the apex or axially, basal in *Chydenanthus*; ovules bitegmic, tenuicellate; style slender equalling or usually far exceeding calyx, undivided. *Fruits* indehiscent dry or fleshy, rarely winged; seeds 1 – 5 (– many in *Planchonia*), without wings except in *Petersianthus*; endosperm lacking or very scanty; embryos undifferentiated (*Careya*) or with plano-convex or foliaceous cotyledons. *Secondary xylem* with cortical bundles reversely oriented with xylem outside. $x = 13$ (Sobti & Singh 1961; Morawetz 1986).

DISTRIBUTION. Five genera distributed from India to the Pacific. Four genera are relatively small and *Barringtonia* much larger with 69 species. *Petersianthus* has one species in Africa.

Key to African Barringtonioideae

1. Inflorescence a raceme; fruit quadrangular or tetragonous but not winged **Barringtonia**
 Inflorescence paniculate; fruit winged **Petersianthus**

1. *Barringtonia*

1. *Barringtonia* J. R. Forst. & G. Forst. (Forster & Forster 1776: 75); Payson (1967: 157 – 263); Whitmore (1972: 260); Corner (1988: 350); Pinard (2002: 102); Perrier de la Bâthie (1954: 2); Schatz (2001: 230); Prance (2012a: 1 – 164). Type species: *Barringtonia speciosa* J. R. Forst. & G. Forst. (= *B. asiatica* (L.) Kurz).

Huttum Adans. (Adanson 1763: 88), nom. gen. rejic.

Commersonia Sonn. (Sonnerat 1776: 14), *Butonica* sect.

Commersonia T. Post & Kuntze (1901: 85).

Menichea Sonn. (Sonnerat 1776: 133). Type species:

Menichea rosata Sonn. (= *B. racemosa* (L.) Spreng.

Butonica Lam. (Lamarck 1785, 1: 521).

Stravadium Juss. (Jussieu 1789: 326).

Meteorus Lour. (Loureiro 1790: 499). Type species:

Meteorus coccineus Lour. (= *B. acutangula* (L.) Gaertn.)

Mitraria J. F. Gmel. (Gmelin 1791: 771, 799), non Cav. (Cavanilles 1801). Type species: *Mitraria commersonia*

J. F. Gmel. (= *B. asiatica* (L.) Kurz).

Botryoropsis C. Presl (1851: 220), non *Botryopsis* Miers.

Type species: *Botryoropsis luzonensis* C. Presl

Agasta Miers (1875b: 59). Type: *Agasta splendida* Sol. ex Miers (= *B. asiatica*)

Doxomma Miers (1875b: 98). Type: *Doxomma pendulum* Miers (= *B. pendula* (Griff.) Kurz)

Megadendron Miers (1875b: 109). Type: *Megadendron macrocarpum* (Hassk.) Miers (= *B. macrocarpa* Hassk.)

Michelia Kuntze (1891: 240), non L. (Linnaeus 1753), nom. illeg.

Barringtonia sect. *Eustravadium* Nied. (Niedenzu 1892: 33).

Careya sect. *Barringtoniopsis* Nied. (Niedenzu 1898: 137).

Shrubs or *trees*, pachycaul or leptocaul, bark often fissured. Growth in flushes with an open terminal bud, each flush often provided with reduced leaves (cataphylls) in the basal part; leaf scars distinct. *Leaves* spirally arranged, often clustered at end of branches, lamina usually obovate to linear-lanceolate, always cuneate at base, the apex acute or acuminate, the margins serrate-crenulate or entire, midrib prominent on both surfaces; petiole flat above, semi-terete beneath, often with decurrent leaf bases; stipules very small, triangular, acute, caducous. *Inflorescences* racemes, terminal, lateral or cauliflorous, erect or pendulous, glabrous or pulverulent; peduncle often with a tuft of cataphylls at base; bracts small, sessile, caducous; bracteoles very small, caducous. *Flowers* pedicellate; flower buds globular; calyx tube (ovary) obconical, mostly 4-angular, sometimes 4-winged, glabrous or pulverulent; calyx limbs chartaceous, parallel-veined, convex, in bud connate and closed,

rupturing into 2 – 5 persistent segments, in bud imbricate, persistent, free sepals always fimbriate; petals usually 4 sometimes 3 or 5, cochlear-imbricate, convex, alternate with free sepals, adnate to the short staminal tube; stamens numerous, strongly folded in bud, connate at base, inserted in 3 – 8, the inner whorl or sometimes 2 or 3 reduced to shorter staminodia; anthers basifixed, 2-celled, latrorse; disc a thin or thick undulating ring surrounding the style base; style long, terete, filiform, folded in bud, persistent often even on fruit, the stigma slightly knob-like, sometimes with an apical pore; ovary inferior, usually tapering into pedicel, 2 – 4-celled but the septa often incomplete, ovules usually 2 – 5 per locule, attached apically and axially, pendent, anatropous, apotropous. *Fruit* obovoid, tetragonous, ellipsoid angled; exocarp thin; mesocarp fibrous or

rarely spongy with few fibres; endocarp thin or a layer of fibres; seed 1, rarely more, large; testa brownish, membranous; embryo developing from a pro-embryo, originally with abundant nuclear endosperm which later disintegrates; in later stages embryo solid, spindle-shaped; without cotyledons but with a spiral of minute scales towards apex.

DISTRIBUTION. 69 species, mainly in the Malesian and Pacific regions also in S Asia and Australasia, with two common species reaching East Africa and Madagascar. The genus has three distinct areas of species diversity: the Malay Peninsular, Borneo and New Guinea. Many species occur in fresh-water swamps, near rivers and lakes and other inundated areas.

Key to African species of *Barringtonia*

1. Inflorescence erect; flowers large, petals 5.5 – 8.5 × 2.5 – 4.5 cm; fruit quadrangular **1. *B. asiatica***
 Inflorescence pendulous; flowers small, petals 1.5 – 2.5 × 0.5 – 1.5 cm; fruit tetragonous, but not quadrangular **2. *B. racemosa***

1. *Barringtonia asiatica* (L.) Kurz (1875: A65, B52); Payson (1967: 184); Prance (2012a: 30). *Mammea asiatica* L. (Linnaeus 1753: 512). Type: Indonesia, Prinsen I., *P. Osbeck* s.n. (holotype: LINN!; isotype: S). *Agasta asiatica* (L.) Miers (1875b: 61, t. 12). Type: Indonesia, Java, fl., *T. Horsfield* s.n. (holotype: BM!). *Michelia asiatica* (L.) Kuntze (1891: 240). *Barringtonia littorea* Oken (1841: 1925). Type as for *B. asiatica*. *Barringtonia butonica* J. R. Forst. & G. Forst. (Forster & Forster 1776: t. 38); Perrier de la Bâthie (1954: 2).

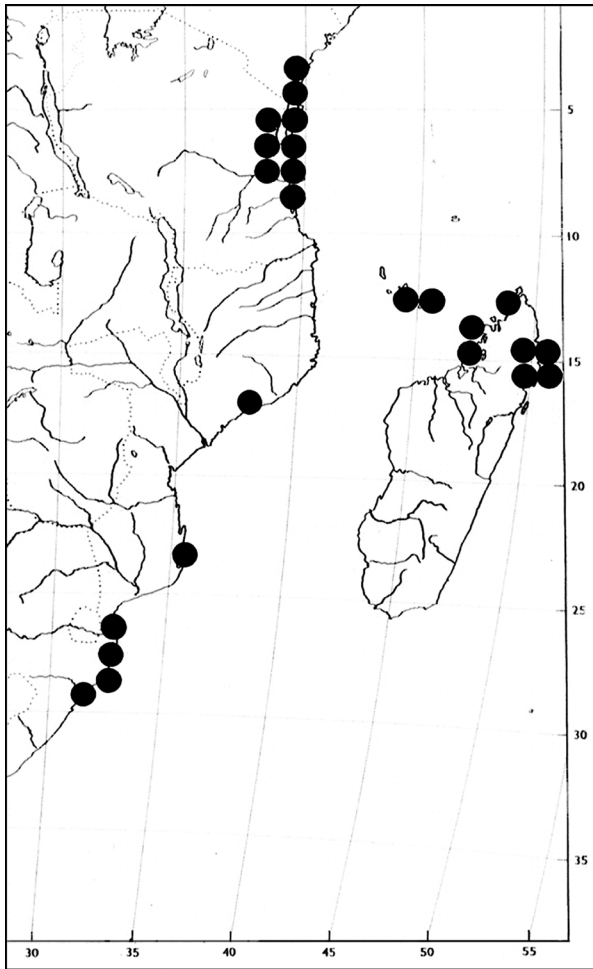
ILLUSTRATION. Prance (2012a: 31).

Tree 7 – 20 (– 30) m tall, often multi-trunked and decumbent when old. *Leaf* lamina subsessile or with petioles c. 5 mm long, lamina obovate or obovate-oblong, subcoriaceous, 15 – 52 × 7 – 21 cm, glabrous beneath, margins entire; apex retuse or rounded; base cuneate; midrib prominulous or plane flattened above, prominulous beneath; primary veins 6 – 10 pairs, cladodromous, branching dichotomously towards margin, prominulous on both surfaces; intercostal veins weakly prominulous on both surfaces; cataphylls 1.5 – 3 × 0.75 – 1 cm long. *Inflorescence* terminal or subterminal racemes, glabrous, erect, 2 – 20 cm long, with 3 – 20 flowers, the rachis 4 – 6 mm diam., accrescent to 10 mm, glabrous, longitudinally striate; bracts sessile, oval, 8 – 20 × 4 – 15 mm, chartaceous; bracteoles triangular 1.5 – 5 × 4 – 15 mm long; calyx closed in bud, apex rounded, calyptrate, rupturing into 2 equal segments, 2.5 – 4 × 2 – 3 cm,

green. *Flowers* with pedicels 4 – 8 cm; hypanthium tetragonous or slightly winged, 5 – 9 mm long, glabrous; sepals glabrous, 3 – 4 × 2 – 3 cm; petals elliptic, 5.5 – 8.5 × 2.5 – 4.5 cm, white; stamens white with pink, red or purple at apex; staminal whorls 6, the inner one staminodal; staminal tube 1.5 – 6 mm high; staminodia 2 – 3.5 cm; ovary 4 (– 5)-locular, 4 (– 5) ovules per locule; disc a thick glabrous ring, c. 1 mm high; style 9 – 17 cm long, pink towards apex. *Fruit* ovate, 8.5 – 11 × 8.5 – 10 cm, tapering to apex, sharply tetragonous to the emarginated base; seed oblong, 4 – 5 cm long, x = 13 (Morawetz 1986).

DISTRIBUTION. A widespread species, East Africa, Pemba I., Comores, Madagascar, Seychelles, Mauritius, Chagos Is., India, Sri Lanka, Andaman Is., Thailand, Cambodia, Vietnam throughout Malesia, Marianas, Carolines, N. Australia, Solomon Is., New Caledonia, Vanuatu, Fiji, Tonga, Samoa, Cook Is., Society Is. Introduced to Hawaii and various Caribbean Islands and Saint Helena. Map 1.

SELECTED SPECIMENS EXAMINED. **ALMIRANTE IS.** St Joseph's I., 5 April 1976, *Stoddart* 7166 (K); Coetivy I., 7°6'S, 56°17'E, 29 Sept. 1967, *Gwynne & Wood* 1119 (K). **TANZANIA.** Dar es Salaam, 7 Oct. 1929, *Burt Davy* 22324 (FHO); Pemba I., Chaki Chaki, 15 Oct. 1929, *Burt Davy* 22502 (FHO); Pemba, Verani, W coast, 18 Feb. 1929, *Greenway* 1468 (K); Zanzibar, no date, *Vaughan* 495 (FHO). **SEYCHELLES.** Mahé, Grand Bois, above Anse Boileau, 16 Dec. 1961, *Jeffrey* 735 (K, L); Denis I., 11 Dec. 1978, *Stoddart* 8147 (K, US). **COMORES IS.** Mohilla I., April 1861, *Meller* s.n. (K); Mayotte,



Map 1. Distribution of *Barringtonia asiatica* in Africa.

Sohoa, W coast, 22 July 1979, *Lorence* 2787 (MO).

MADAGASCAR. St Augustine Bay, *without collector* 93 (NY); Tamatave Prov., Island off coast at Fenerive, 26 April 1974, *Gentry* 11345 (K, MO); Antsiranana, Fivonronama D'Antalaha, near Andrahimbazaha, 15°17'S, 50°27'E, 21 April 1994, *Rahajaso* 271 (MO); Tomasina, Ambanizana, Masoala Peninsula, 15°39'30"S, 49°57'30"E, June 1993, *Zjhra & Hutcheon* 250 (MO).

HABITAT. A littoral species characteristic of sea shores and in some places growing further inland in forests and up to 350 m in the Seychelles. The fruits are buoyant and this accounts for its wide distribution on many islands and shores.

CONSERVATION STATUS. Least concern (LC). A very widespread species.

PHENOLOGY. Flowering and fruiting around the year.

NOTE. For information on pre-Linnean names of this species see Payens (1967) and a full list of the extensive synonymy outside of Africa is given in Prance (2012a).

- 2. *Barringtonia racemosa* (L.) Spreng.** (Sprengel 1826: 127); Lawson (1871:438); Medley Wood (1907: 49); Marloth (1925: 218); Perrier de la Bâthie (1954: 4, fig. 2); Payens (1967: 192); Gomes e Souza (1967: 597, fig. 170); Fernandes (1978: 216); Prance (2012a: 70). *Eugenia racemosa* L. (Linnaeus 1753: 471). Type: *Herb. Hermann* figs 212 (lectotype BM!, selected by Prance (2012a)). *Herb. Hermann* figs 213, 339, (syntypes: BM). *Stravadium racemosum* (L.) Sweet (1826: 159). *Butonica racemosa* (L.) Miers (1875b: 66, t. 13). *Butonica caffra* Miers (1875b: 78). Type: South Africa, no date, fl, *Drège* 5369 (holotype B lost; lectotype K!, selected by Prance (2012a); isotypes BM! frag., CGE!, L!). *Barringtonia caffra* (Miers) E. Mey. ex Knuth (1939a: 19). *Michelia racemosa* (L.) Kuntze (1891: 240). *Huttum racemosum* (L.) Britten (1901: 67), nom. rejic.

ILLUSTRATION. Marloth (1925: fig. 140); Fernández (1978: fig. 50).

Shrub or small to medium sized tree, 2 – 20 m tall. Leaves clustered at apex of branches, petioles 0.25 – 1.0 cm long, slightly winged, not swollen at base; lamina obovate-oblong or obovate-lanceolate, chartaceous, 14 – 42 × 4 – 16 cm, glabrous beneath, acute to acuminate at apex, acumens 5 – 20 mm long, cuneate at base, margins serrate-crenulate; midrib prominulous above, prominent beneath; primary veins 10 – 22 pairs, brochidodromous, merging through network of veins 2 – 5 mm from margin, plane or impressed above, prominent beneath; intercostal veins prominulous on both surfaces, finely reticulate; cataphylls triangular, 5 – 11 × 2 – 8 mm. Inflorescence terminal or ramiflorous racemes or spikes, pendulous, 20 – 100 cm long, the rachis 2 – 3 mm diam., glabrous or pulverulent; bracts triangular, 5 – 6 × 1.5 – 2 mm; bracteoles triangular, acute, 1.5 – 2 × 0.5 mm; calyx closed in bud, rounded not beaked, calyprate, rupturing usually into 2 equal lobes 12 × 8 – 9 mm, or more rarely into 3 – 5 unequal lobes, 0.75 – 1.5 × 0.5 – 1.25 cm. Flowers sessile or with pedicels 3 – 16 mm long; hypanthium funnel shaped, not grooved or winged, (4 –) 6 – 12 mm long, glabrous or usually pulverulent; sepals elliptic, glabrous, 0.75 – 1.5 × 0.5 – 1.25 cm, glabrous; petals 4, elliptic, 1.5 – 2.5 × 0.5 – 1.5 cm, white, sometimes tinged pink; stamens white, pink, purple or red; staminal whorls 5 – 6, the inner one staminodal; staminal tube 3.5 – 6 mm high; staminodia 1 – 2 cm; ovary (2 –) 3 – 4-locular, 2 – 3 ovules per locule; disc a thick grooved ring; style 3 – 5.5 cm long. Fruit ovoid, subtetragonous, truncate, tapering at base, slightly winged when young, 5 – 9 × 2 – 5.5 × 2 – 5.5 cm, exocarp glabrous, calyx persistent; seed ovoid, 2 – 4 × 1 – 2.5 cm, subtetragonous, tapering towards apex. x = 26 (Morawetz 1986). Fig. 1.

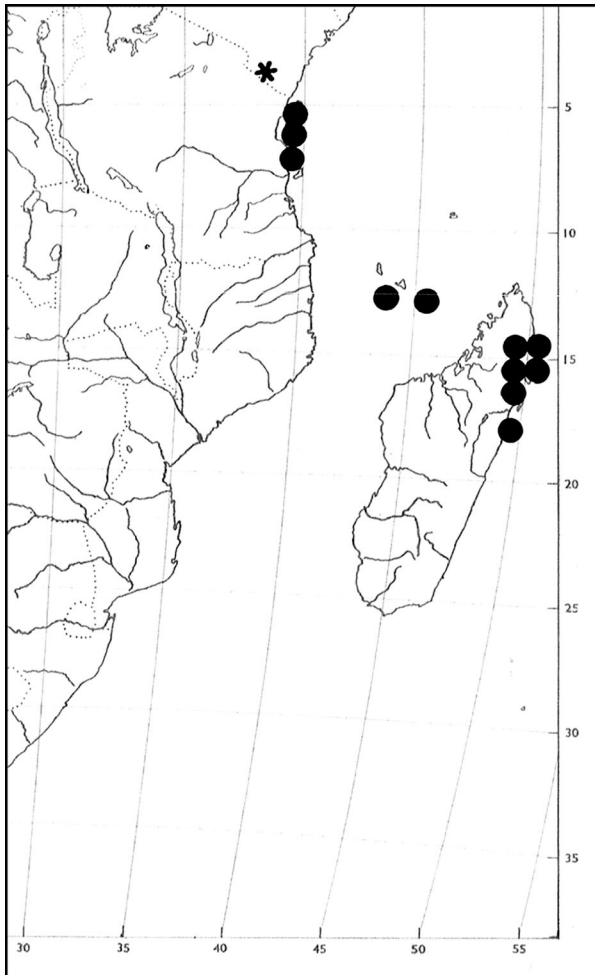


Fig. 1. *Barringtonia racemosa* in Kwazulu Natal, South Africa. PHOTOS: G. PRANCE.

DISTRIBUTION. The most widespread species of *Barringtonia*, E and S Africa, Comores, Madagascar, Seychelles, India, Sri Lanka, Andamans, Nicobars, Myanmar, Thailand, China, throughout Malesia to Marianas, Carolines, N Australia, Solomon Is., Vanuatu, New Caledonia, Fiji, Samoa and many other Pacific islands. Map 2.

SELECTED SPECIMENS EXAMINED. TANZANIA. Dar es Salaam, Temeke Distr. Amani Gomvu village, Minondo, 6°57'04"S, 39°29'31"E, 100 m, 30 March 2011, *Mwangoka & Sulemani* 1924 (BRIT, MO). Tanga Prov.: Pangani distr., Mwera Chiefdom, 13 July 1955, *Tanner* 1993 (K, NY, UC); Muheza Distr., Kibajo, 4°55'18"S, 38°43'47"E, 29 Jan. 2000, *Mwangoka & Haji* 1412 (BRIT, MO); Pwani, Bayamoyo distr., Wani R., 6°12'S, 38°42'E, 12 June 1994, *Gautier & Chatelain* 2312 (MO, WAG); Pemba I., 9 Oct. 1929, *Burtt Davy* 22353 (FHO); E Usumbaras, Sigi, 500 m, 3 Jan. 1933, *Greenway* 3317 (K); Pemba I., 19 Feb. 1929, *Greenway* 1507 (K). Zanzibar, fl. 1907, *Lyne* 71 (K). **KENYA.** Kwale, no date, *R. M. Graham* 1969 (FHO); Kilifi Distr., Pangani, 3°51'S, 39°41'E, 160 m, 16 Feb. 1977, *R. B. & A. J. Faden* 77/445 (F, US); Kwale Distr.,

Shimba Hills, Tanga road, near Marere R., 200 m, 15 April 1968, *Magogo & Glover* 891 (K). **MOZAMBIQUE.** Namagoa; Mocuba, 200 km inland from Quelimane, Dec. 1944 – Jan. 1945, *Faulkner* 73 (BM, NY); Bela Vista & Salamanza, margins of Maputo, 23 April 1948, *Torre* 7688 (BM, FHO); Maputo, Matutuine, Salamanga, 31 Oct. 1978, *Schäfer* 6612 (K); Ponta Barra Falso, 22°55'57"S, 35°32'36"E, 21 Nov. 1958, *Mogg* 28906 (K, WAG). **SOUTH AFRICA.** Kwazulu Natal: Mtunzi, 15 mi N of Gingindhlova, N bank of Umlalazi R., 15 April 1956, *Codd* 9645 (K); Inguavuma Distr., Lake Zilondo, near Mozambique border, 22 Sept. 1965, *Vahrmeyer* 1231 (K); Mdloti Estuary, 29°38'S, 31°7'E, 1 May 1982, *J. & M. C. Ward* 39 (MO, PRE); St. Lucia, beside estuary of Lake St. Lucia, 28.3824S, 32.41952E, 24 July 2013, *Prance* 30919 (K). **COMORES IS.** Mayotte, 100 m, 23 July 1979, *Lorence* 2822 (K, MO); Anjouan, 1 km E of Mutsamudu, 12°09'46"S, 44°23'47"E, 18 Oct. 1990, *Hunter* 60 (MO). **SEYCHELLES.** Mahé, Port Launay, 26 Jan. 1962, *Jeffrey* 788 (K). **MADAGASCAR.** Tamatave Prov. 26.2 km N of Tampolo road, Sonierann-Ivongo, 30 Nov. 1985, *Barnes* 4404 (MO, NY); Antsiranana, Fiv. Vohemar, Antsahafotsy, 13°35'39"S, 49°59'10"E, 13 Nov. 2001, *Randrianaivo* 751 (NY). Toliara:



Map 2. Distribution of *Barringtonia racemosa* in Africa.

R. For. Mandena, 7.5 km N of Tôlanaro, 24°58'S, 46°59'E, 20 March 1989, Gereau *et al.* 3296 (MO); Toamasina: Analanjirofo, 15°30'00"S, 49°46'00"E, 13 Oct. 1987, Schatz 1658 (MO). **MAURITIUS.** E coast opp. Ile aux Cerfs, 9 July 1984, Lorence 4441 (K, MO).

HABITAT. Primary and secondary rainforest, mostly in inundated floodplains and tidal riverbanks and swampy places, along lake and seashores. The fruit are buoyant because of the spongy fibrous pericarp and the wide distribution is on account of its dispersal by water.

CONSERVATION STATUS. Least concern (LC) A very widespread and common species.

PHENOLOGY. Flowering and fruiting around the year.

VERNACULAR NAMES. Africa: *kamlasajawa*, *kawtianalas*, *morongondo*, *mhofo mhofo*, *mtomondo* (Swaheli), *mtomondo* (Kizaramo), *mtoro-toro*, *mtovo-tovo*, *maji maji* (Shambaa), *mkuwukuvu* (Kisambaa), *kufu kufu* (Bondei), *tenimber*, *toebweje*, *tubowe*. Madagascar: *jo'tatra*, *m'gnamba wakeweni*; India: *samutra-pullum*. Bengal: *kumia*, *borwi*.

NOTE. A full list of the many synonyms outside of Africa of this species is given in Prance (2012a).

2. *Petersianthus*

2. *Petersianthus* Merr. (Merrill 1916: 200; 1923: 141); Kartawinata (1982: 388); Prance & Kartawinata (2013: 96 – 97). Type species: *Petersianthus quadrialatus* (Merr.) Merr. (*Terminalia quadrialata*).

Tall tree with tall buttresses; young branches terete, striate, leaf scars triangular, conspicuous. *Leaves* coriaceous, papyraceous when young, glabrous, obovate to elliptic, apex acuminate; margin finely crenulate; base cuneate, lamina extends to base of midrib making leaves sessile. *Inflorescence* paniculate, corymbose, terminal, glabrous, sometimes subtended with dwarfed leaves; bracts early caducous, leaving conspicuous scars. *Flowers* white, pedicels 0 – 20 mm, articulate at the base; calyx tube obconical, distinctly four-winged, gradually enlarged upwards, lobes 4, thick, alternate with the wings, orbicular, rounded, imbricate; petals 4, papyraceous, orbicular-ovate, rounded; stamens multiseriate, subequal, forming tube at the base, filaments slender; anthers basifixed, versatile; ovary inferior, 4-celled, ovules multiseriate, axile; style slender, stigma funnel-shaped. *Fruit*, including wings, ellipsoid or suborbicular, retuse at apex, rounded at base, the seed-bearing portion very narrow, thin-walled, wings four, equal, thinly coriaceous or submembranaceous, transversely nerved; seeds oblong.

DISTRIBUTION. This genus has a curious disjunct distribution between West Africa and the Philippines with one species in each region.

***Petersianthus macrocarpus* (P. Beauv.) Liben** (1968: 207).

Combretum macrocarpum P. Beauv. (Palisot de Beauvois 1820: 90, t.118). Type: Nigeria, *P. de Beauvois* s.n. (holotype G; photo K).

Petersia africana Welw. ex Benth. & Hook. f. (Bentham & Hooker 1867: 721). Type: Angola, E of Queta, foothills of Mount Quetecati, *Welwitsch* 4591 (holotype K!; isotype BM!)

Combretodendron africanum (Welw. ex Benth. & Hook. f.) Exell (1930: 182); Knuth (1939a: 60); Keay (1954: 242).

Petersianthus africanus (Welw.) Merr. (Merrill 1916: 201).

Combretodendron viridifolium A. Chev. (Chevalier 1909a: 150). Type: Ivory Coast, Bouroukrou, *Chevalier* 16102 (holotype P).

Petersia viridifolia (A. Chev.) A. Chev. (Chevalier 1909c: 301).

Combretum viridifolium A. Chev. (Chevalier 1909a: 170).

Petersia minor Nied. (Niedenzu 1892: 31);

Combretodendron africanum (Welw. ex Benth. & Hook. f.) Exell var. *minus* (Nied.) Knuth (1939a:

61); *Petersianthus minor* (Nied.) Merr. (Merrill 1916: 201). Type: Gabon, Munda, Sibange Farm, *Soyaux* 42 (holotype ?, not seen).

Petersia klainei Pierre ex A. Chev. (Chevalier 1909b: 211).

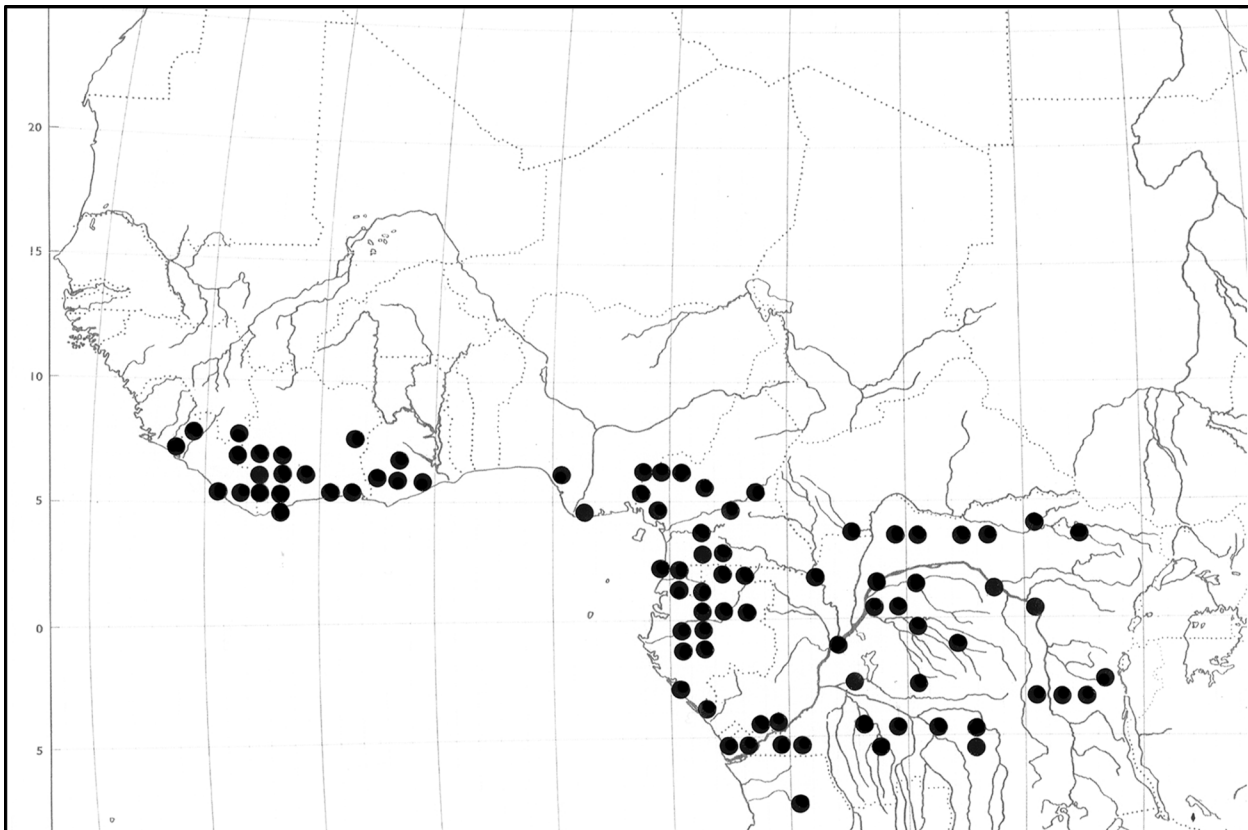
ILLUSTRATION. Keay (1954: 242, fig. 97), sub *Combretodendron africanum*.

Tree to 40 m tall and 1 m trunk diam., the young branches glabrous. *Leaves* sessile or with petioles 1 – 2 mm long, 1.5 – 2 mm wide, puberulous; lamina chartaceous, oblong-spathulate, 10 – 19 × 5 – 7.5 cm, glabrous, acuminate at apex, the acumens 5 – 10 mm long, cuneate at base; margins entire or slightly crenate; venation brochidodromous, primary veins 6 – 8 pairs; midrib prominent above, salient beneath; arcuate and anastomosing near margin; tertiary nerves irregularly transverse, faint above, conspicuous beneath, vein ending in a minute, sharp, black notch at sinus of crenulation. *Inflorescences* terminal corymbose panicles up 18 cm long. *Flowers* with pedicels c. 15 – 20 mm long, minutely puberulous; receptacle sharply angled 5 – 10 mm long, tapering towards base, minutely puberulous; calyx lobes triangular rounded at apex, 3 mm diam., the margins ciliate; petals 4, greenish-white, 6 – 7 mm diam., rounded; stamens

numerous, the filaments to 1 cm long; anthers rounded-elliptic; style 8 – 9 mm long. *Fruit* orbicular, 4-winged, 5.25 cm long, including wings 4 – 5 cm wide, the wings with parallel veins spreading at right angles, the seed-bearing portion very narrow, thin-walled, usually about 5 mm thick; wings equal, thinly coriaceous or submembranaceous, 1.5 – 2.5 cm wide, transversely nerved; seeds oblong, 6 – 7 mm long. $x = 26$ (Mangenot & Mangenot 1962).

DISTRIBUTION. Guinea through West Africa to Angola and Democratic Republic of the Congo. Map 3.

SELECTED SPECIMENS EXAMINED. GUINEA. Nzérékeré. Nimba Mts, near Gbié, 7°40'N, 8°19'W, 474 m, 19 March 2009, *Haba* 84 (FHO). **SIERRA LEONE.** Pendembu. Manoa, *Dawe* 542 (K). **LIBERIA.** Central Prov., Sanokwale Distr., Ganta, 1 Feb. 1948, *Baldwin Jr.* 11030 (NY). **IVORY COAST.** Abidjan, *Aubréville* 203 (K, P). **GHANA.** Ashanti Prov., Bobiri FR, 2 Oct. 1988, 6.6°N, 1.29°W, *Kisseadoo* 18 (NY); Ashanti: Bobiri FR, 6°38'N 1°17'W, 19 Sept. 1988, *Mori & Kisseadoo* 19241 (K, NY). **NIGERIA.** Degema, *Talbot* 3746 (BM). **EQUATORIAL GUINEA.** SE of Parc Nat. Monte Alén, N of Rio Laña, 9 July 2002, *Senterre & Obiang* BRLU7782 (ULB). **CAMEROON.** Kumba Distr., S Bakundu, road facing Victoria, 18 March 1936, *Binuyo & Daramola* FHI 35626 (FHO, K); Mvila



Map 3. Distribution of *Petersianthus macrocarpus*.

R, road Ebolowa to Kribi, 2°49'N, 10°58'E, 550 m, *J. J. de Wilde* 7858 (K, WAG). **GABON.** Ogooue-Ivindo, 0°24'00"N, 11°52'0"E, 18 Feb. 1987, *Wilks* 1340 (MO, WAG). **CENTRAL AFRICAN REPUBLIC.** Ndakan, 3 km E of Sango R., 2°22'N, 16°19'E, 400 m, 10 May 1988, *Gentry et al.* 62681 (K, MO). **DEMOCRATIC REPUBLIC OF THE CONGO.** Eala, 1930, *Corbisier Baland* 1568 (BM, BR, K, WAG); Prov Leopoldville, Kikwit, Kiyaka-Kwango, 4 Nov. 1995, *Devred* 2763 (BR, K). **CONGO-BRAZZAVILLE.** Nouablé-Ndoki National Park, 19 June 2007, *Ndoto Ebika* 100 (BR, WAG). **ANGOLA.** Cazengo Distr. *Gossweiler* 716 (BM, K). **HABITAT.** High rainforests on terra firme and into semi-deciduous forest. **CONSERVATION STATUS.** Least concern (LC), a very widespread and common species. **PHENOLOGY.** Flowering and fruiting almost throughout the year. **VERNACULAR NAMES.** *abing*, *abiñ* (Bulu, Fang); Ivory Coast: *abalé*; Ghana: *essia*, *essaiah* (Ash T., NP), *kwaben*. Nigeria: *idigbo* (Yoruba), *anwushi*, *anwussi*. Cameroon: *kombe* (Bamenda).

NOTE. There has been some confusion over the use of the generic name *Petersia* because of the name *Petersia* Klotzsch in the Capparaceae.

2. Subfamily **Napoleonoideae** *Nied.* (Nieden zu 1892: 33); Morton *et al.* (1997: 530); Mabberley (2008: 473). Type species: *Napoleonaea* P. Beauv. Napoleonaceae A. Rich. (Richard 1827: 432). Myrtaceae suborder Napoleoneae Benth. (Benth 1849: 360) Myrtaceae tribus Lecythideae subtribus Napoleoneae Benth. & Hook. f. (Benth & Hooker 1865: 696) pro parte. Barringtoniaceae tribus Napoleoneae Knuth (1939a: 67).

Trees or *shrubs*. *Flowers* actinomorphic, with a pseudocorolla (*Crateranthus*) or a corona of staminal origin (*Napoleonaea*); stamens united at base into staminal ring; pollen tricolpate; ovary 3 or 5-locular, *Fruit* indehiscent. *Secondary xylem* with cortical bundles oriented with phloem on the outside. $x = 16$ in *Napoleonaea* (Mangenot & Mangenot 1957, 1962).

Key to genera of Napoleonoideae

- Flowers with pseudocorolla with stamens adnate to base inside; calyx lobes 3 **3. Crateranthus**
Flowers with a triple whorled, layered corona; calyx lobes 5 **4. Napoleonaea**

3. Crateranthus

3. Crateranthus *Baker f.* (1913: 35); Knuth (1939a: 65). Type species: *Crateranthus talbotii* Baker f.

Trees, branchlets winged or not. *Leaves* alternate; venation brochidodromous. *Flowers* solitary; receptacle campanulate to broadly turbinate, each flower subtended by a number of bracts. *Calyx* lobes 3,

imbricate, coriaceous. *Petals* absent. *Stamens* numerous in many whorls, outer whorl united into a pseudocorolla, inner whorls filamentose and anther bearing, adnate to the base of the pseudocorolla; anthers oblong, bilocular, basifixed, longitudinally dehiscent, rectangular in cross section. *Ovary* semi-superior, 3 – 5-locular with numerous ovules, placentation apical-axile; style filiform, stigma linear on upper half of style. *Fruit* baccate.

Key to species of Crateranthus

- Leaf base cordate or rounded and markedly unequal, stem winged 2
Leaf base rounded to cuneate, stem not winged; pseudocorolla lobes finely acute **3. C. congolensis**
- Leaves subcoriaceous, 3.5 – 10 cm broad, 15 – 26 cm long, primary veins 8 – 9 pairs; stem wings 2 – 12 mm wide, leaf base rounded, markedly unequal **4. C. cameroonensis**
Leaves 8 – 19 cm broad, 25 – 47 cm long, coriaceous; primary veins 10 – 18 pairs; stem wings 10 – 15 mm wide, leaf base cordate or subcordate 3
- Stem wings not inserted to petiole; pseudocorolla lobes acute; leaves 8 – 13 cm broad **1. C. talbotii**
Stem wings forming two auricles on petiole; pseudocorolla lobes rounded; leaves 15 – 19 cm broad **2. C. letestui**

1. Crateranthus talbotii *Baker f.* (1913: 36, t. 5); Knuth (1939a: 65). Type: Nigeria, Oban, Ndekke, Ekong Road, *Talbot* 5 (holotype BM!; isotype K!).

Crateranthus talbotii Baker f. var. *parvifolius* Baker f. (1913: 36 t. 5). Type: Nigeria: Oban, *Talbot* 5a (holotype BM!).

Crateranthus talbotii Baker f. var. *multibracteatus* Baker f. (1913: 36, t. 5). Type: Nigeria: Talbot 1643 (holotype BM!).

ILLUSTRATION. Knuth (1939a: 66, fig. 15).

Tree to 36 m tall, young branches with foliaceous wings between leaves. Leaves with petioles 3–5 mm long; lamina elongate-oblong-obovate, coriaceous, 25–40 × 8–13 cm, obtusely acuminate at apex, subcordate and unequal at base, margins entire, glabrous on both surfaces; midrib thickened beneath; primary veins 10–18 pairs, arching to form a crenate intermarginal nerve. Flowers solitary, axillary. Bracts in 2 series; receptacle coriaceous; calyx lobes 3, membranaceous, broadly obovate; pseudocorolla cupuliform, c. 30-plicate, margin revolute; stamens numerous, in many whorls, inserted on base of pseudocorolla; style filiform; ovary 3-locular with numerous ovule per loculus. Fruit ?

DISTRIBUTION. Nigeria, Cameroon and Gabon. Map 4A.

SELECTED SPECIMENS EXAMINED. NIGERIA. Cross River, 30 m, 5°07'48"N, 8°40'06"E, 4 Nov. 1995, *Ntui & Bebiem* 749 (MO); Calabar Distr., Oban, Clabar-Mamfe road, 28 April 1952, *Ejiofor* FHI 21878 (K). **CAMEROON.** Southwest, 400 m, 5°03'00"N, 9°18'00"E, 14 May 1986, *Mambo* 36 (MO); SW Prov., Mbu village, 10 km W of Wone, 5°03'N, 9°18'E, 400–500 m, 15 April 1986, *Mabo & Thomas* 36 (K, MO, WAG). **GABON.** Moyen-Ogooue, 15 m, 1°00'00"S, 10°17'00"E, 1 Feb. 1991, *McPherson* 15188 (MO, WAG).

HABITAT. Swamp forest and beside rivers

CONSERVATION STATUS. Near threatened (NT) Few recent collections exist, but does occur in the Korup reserve.

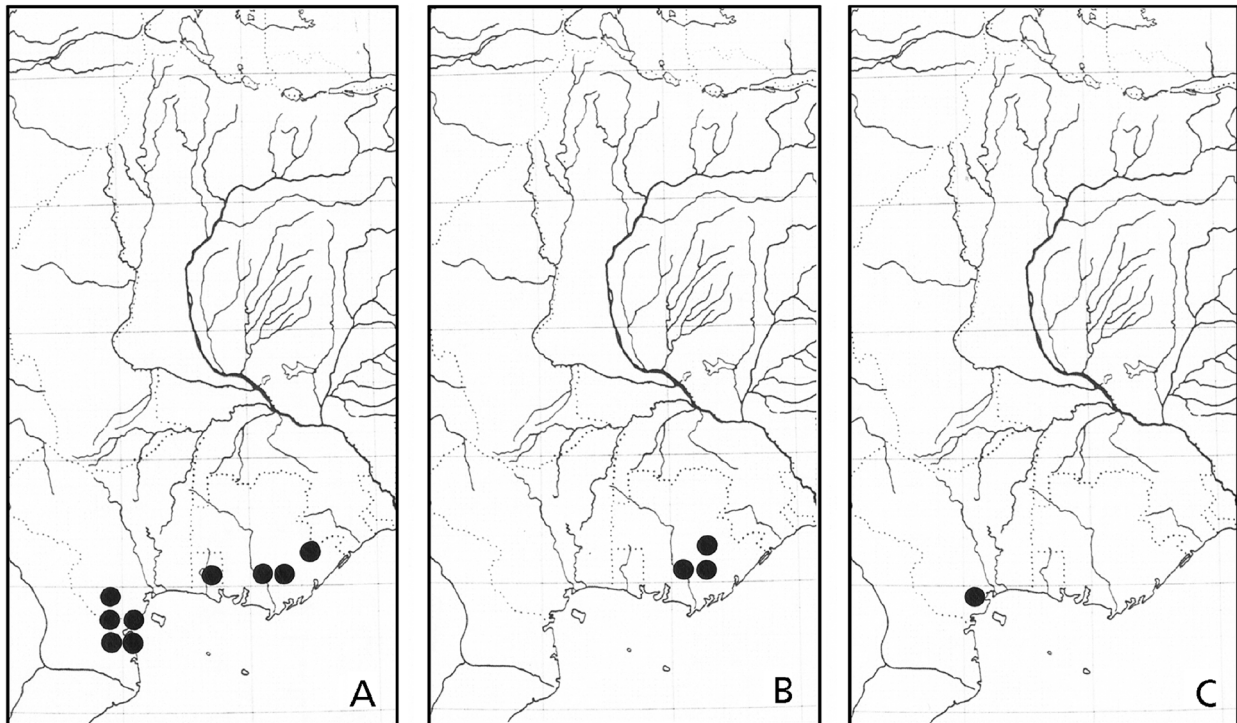
PHENOLOGY. Collected in flower in April and May, and in fruit April and August.

2. *Crateranthus letestui* Lecomte (1920: 68); Knuth (1939a: 65), Type: Gabon, Sindara, N'gounié, *Le Testu* 2285 (holotype P; isotype BM!).

Large tree, young branches winged. Stipules 8–10 cm long, alate. Leaves with petioles 4–5 mm long; lamina subcoriaceous, 38–47 × 15–19 cm, rounded at apex, cordate and unequal at base, margins entire, glabrous on both surfaces; midrib prominent beneath; primary veins 17–18 pairs, prominent beneath. Flowers solitary, axillary; pedicels 1 cm long, thick; with alternate bracts; calyx lobes 3, thickly coriaceous at base, rounded, 2.5–3 cm broad, punctate on exterior; pseudocorolla cupuliform, 30–40 plicate, purple, 4–5 cm tall, margin revolute, with small appendages towards margin; stamens numerous, in many whorls, inserted on margin of receptacle; filaments elongate, compressed at base; anthers 2.5–3 mm long; ovary 4-locular with numerous ovules per locule; style 3–3.5 cm long, curved at apex. Fruit unknown.

DISTRIBUTION. Gabon. Map 4B.

SPECIMENS EXAMINED. GABON. 42 km SE of Laubarène border of R Mamiengue, 1°S, 10°28'E, 27 Sept. 1968,



Map 4. Distributions of: A *Crateranthus talbotii*; B *C. letestui*; C *C. cameroonensis*.

Breteler 5714 (WAG); Sindara, N'gounié, *Le Testu* 2285 (isotype BM).

HABITAT. Unknown.

CONSERVATION STATUS. Data deficient (DD), only two collections with little data.

PHENOLOGY. Collected in flower in September.

3. *Crateranthus congolensis* *Lecomte* (1920: 70); Knuth (1939a: 67). Type: Gabon, Ngoumbi, Ngouyé Region, *Le Testu* 2153 (holotype P; isotype BM!).

Small tree, young branches not winged, slightly angled. Stipules not seen. *Leaves* with petioles 3–4 mm, thick; lamina subcoriaceous, 20 cm long, 8 cm broad, acuminate at apex, rounded to attenuate at base, margins entire, glabrous on both surfaces; midrib prominent beneath; primary veins 7–10 pairs. *Flowers* solitary, axillary; pedicels 5–6 cm long, with glabrous bracts; calyx lobes 3, rounded at apex, punctate on exterior; pseudocorolla c. 30-plicate, yellow, 2 cm tall, apex revolute; stamens numerous, in many whorls, inserted on margin of receptacle; anthers 2.5–2.75 mm long filaments 6–7 mm long; ovary semi-inferior, 3-locular with numerous ovules per locule; style cylindrical, apex recurved. *Fruit* unknown.

DISTRIBUTION. Gabon and Democratic Republic of the Congo.

SPECIMENS EXAMINED. GABON. Moucouca, near Sacamicanda, 6 Dec. 1929, *Le Testu* 7740 (BM, WAG).

DEMOCRATIC REPUBLIC OF THE CONGO. Haut-Zaire, 750 m, 1°25'N, 28°35'E, 23 June 1991, *Hart* 1166 (MO).

CONSERVATION STATUS. Vulnerable (VU A1d).

4. *Crateranthus cameroonensis* *Cheek & Prance*, **sp. nov.** Species *P. talbotii* affinis, foliis ad basim rotundatis haud cordatis, 15–26 × 3.5–10 cm, subcoriaceis, venis 8–9 jugis (haud 10–18) differt. Typus: Cameroon, W. Div., Ebo, Bekob abandoned village, CRES Research Station, 4°23'06"N, 10°25'01"E, 890 m, 21 April 2005, *M. Etuge* 6458 (holotypus K).

<http://www.ipni.org/urn:lsid:ipni.org:names:77143526-1>

Tree 10–15 m tall, young branches with foliaceous wings between leaves, wings 2–12 mm wide on either side, glabrous. *Leaves* with petioles 2–5 mm long, not winged; lamina oblong to oblong-lanceolate, glabrous on both surfaces, subcoriaceous, 15–26 × 3.5–10 cm, bluntly acuminate at apex, the acumen 7–11 mm long, rounded and markedly unequal at base, margins entire, wavy, slightly revolute, with small glands at vein endings; midrib prominulous above, prominent beneath, slightly flattened on both surfaces; primary veins 8–9 pairs, plane above, prominulous beneath. *Flowers* solitary, axillary; bracts 2, elliptic, glabrous, c. 5 × 9 mm; hypanthium conical,

glabrous, calyx-lobes 3, membraneous; pseudocorolla cupuliform, plicate, the margin revolute, curved outwards; stamens numerous in many whorls, attached to base of pseudocorolla; style filiform; ovary 3-locular with numerous ovules per locule, *Fruit* not seen. Fig. 2.

RECOGNITION. Close to *Crateranthus talbotii* but differs in the leaves that are less coriaceous and with fewer primary veins (8–9 vs 10–18), the stem wings narrower, leaves more lanceolate, longer and narrower, the leaf base as unequal but less cordate.

DISTRIBUTION. Endemic to Cameroon. Map 4C.

SPECIMENS EXAMINED. CAMEROON. W. Division, Ebo, Bekob abandoned village, CRES Research Station, 4°23'06"N, 10°25'01"E, 890 m, 21 April 2005, *M. Etuge* 6458 (holotype K); CRES camp to Iboti, 4°19'00"N, 10°25'40"E, 800 m, 23 April 2005, *Cheek* 12499 (K); same locality and date, *Cheek* 12510 (K); Bekob Village, Yabassi, 4°21'14"N, 10°24'56"E, 950 m, 22 April 2005, *B. Tchiengue* 2108 (K), same locality, 1040 m, 21 April 2005, *Tchiengue* 2047 (K).

HABITAT. Forests near streams in damp places.

CONSERVATION STATUS. Vulnerable (VU B1a) known only in a very local area.

PHENOLOGY. Collected in flower in April.

4. *Napoleonaea*

4. *Napoleonaea P. Beauv.* (Palisot de Beauvois 1804: 1); Liben (1971: 363–382). Type species: *Napoleonaea imperialis* P. Beauv.

Napoleona P. Beauv. (Palisot de Beauvois 1810: 29);

Bentham & Hooker (1865: 723) orth. var.

Belvisia Desv. (Desvaux 1814: 130), nom illegit. non

Belvisia Mirb. (Mirbel 1803: 65).

Trees, shrubs or rarely a *geoxylic suffrutex*. The branches often in whorls, twigs round to narrowly winged. *Leaves* alternate, glabrous, stipules absent; petiole 1.5–17 mm long; lamina elliptic, ovate or obovate to oblong, 3–38 × 1.2–15 cm, usually with a number of marginal and submarginal glands, margin often partly or completely sinuate-crenate; apex rounded, mucronate to cuspidate. *Inflorescence* axillary on the twigs, on the branches or on the stem, with a single flower, fasciculate or rarely paniculate; bracteoles imbricate, distichous, concave, with or without small marginal or submarginal glands, usually glabrous, only in *N. egertonii* Baker. f. they are not all just below the flowers but spread on the inflorescence branches. *Flowers* sessile or with very short pedicels except for *N. egertonii*; calyx lobes 5, valvate, every lobe with 0–2 (–4) marginal glands; corolla round or slightly five-lobed, comprising 30–40 fused segments with nerves that merge from the summit, the apex of each segment enlarged into a short, more or less free limb, plicate in bud; corona consisting of three distinct



Fig. 2. *Crateranthus cameroonensis*. A₁ seedling; A₂ serrate leaf margin of seedling; A₃ wings on seedling stem; A₄ habit, showing large leaves; A₅ leaf margin of mature leaf; A₆ shoot showing small leaves with young fruit; B flower bud starting to open; C lateral view of flower with corolla removed; D lateral view of flower with corolla and one sepal removed to show gynoecium; E section of ovaries; F external lateral view of detached corolla; G vertical radial section of detached corolla showing stamens; H stamen; J apical view of fruit in calyx; K lateral view of fruit in calyx; L calyx and receptacle after dehiscence, apical view; M lateral view of seed. A₁, 2, 3 from Cheek 12510; A₄, 5 from Tchiengué 2047; A₆ from Cheek 12499; B from Tchiengué 2108; C – H from Etuge 6458; J – M from Tchiengué s.n. DRAWN BY ANDREW BROWN.

staminodal whorls, outer whorl of 35 – 75 almost free, linear segments, fused at base, glabrous or pubescent; second whorl of 35 – 50 fused segments, free only towards the apex, with a small spur low on the inner surface; the third whorl closely interlocked with the stamen whorl, with 20 free parts only towards the summit near the centre of the flower, this free summit either bearing an anther on its outer surface, oriented horizontal to the stigma, or a small staminodal appendage, the whole consisting of a repeating pattern of 2 paired stamens then 2 paired sterile staminodes; anthers 10, monothealous, oblong, triangular in cross section, longitudinally dehiscent, extrorse; disc annular, 10-lobed; ovary inferior, 5-locular, placentation axile, 4 ovules per locule, arranged in two rows; style thick, 5-angular. *Fruit* a drupe, lobed or not, usually smooth but without pulp and spiny in *N. egertonii*, seeds up to 20, exalbuminous, more or less reniform and surrounded by sweet pulp but angular in *N. egertonii*. $x=16$ (Mangenot & Mangenot 1957, 1962).

DISTRIBUTION. 15 to 17 species, exclusively African from Guinée to CAR and to Angola with one species reaching south to Zambia.

Liben (1971) includes Senegal in the distribution of the genus but strangely does not mention the country any further in the distribution of any of the species. I have not found any specimen from Senegal and *Napoleonaea* is not mentioned in the Flora of that country.

HABITAT. The species occur in all kinds of closed tropical forests, gallery forest and thicket, only *Napoleonaea gossweileri* Baker f. is a real savanna species. Several species prefer riverine habitats or swamp.

NOTE. This genus is notable for its spectacular flowers with multiple whorls which have been variously defined by different authors. The most detailed and definitive study on this subject was published by Frame & Durou (2001) who studied *Napoleonaea angolensis* Welw. (under the name *N. vogelii* Hook. & Planch.). They concluded that the corona is of staminal origin. The flower consists of a single whorl each of sepals and petals, three whorls of staminodes and a single whorl of fertile stamens. The third whorl of staminodes and the whorl of stamens are at first sight just one whorl. The petal, staminode whorls and stamens are basally attached to the annular disc. After anthesis this corolla-corona-stamens unit detaches as a single unit, leaving the sepals, disc and gynoecium as the remaining unit. Nectar accumulates in a channel at the base of the

outer row of vertical staminodes. The varied colours of white, yellow and pink to magenta of the different whorls add to the attractive appearance of the flowers.

In the keys and species descriptions here, I call the three conspicuous, sterile whorls inside the calyx: the corolla followed by an outer and inner corona. The third whorl of staminodes is not acting as a separate corona.

Over time there has been a lot of confusion about the meaning of different *Napoleonaea* names resulting in splitting and lumping of taxa that could have been avoided if more illustrations of the flowers had been made. In herbaria *Napoleonaea* flowers are easily damaged and the descriptions made in the field are often incomplete or non-existent. Happily good colour paintings of at least *N. heudelotii* A. Juss. (Fig. 14) and *N. imperialis* (Fig. 16) were made years ago, nicely matching recent photos from wild and cultivated plants of these species (Figs 13 & 15). Strangely, the illustration in the first publication of the genus by P. de Beauvois (1804) shows bright blue flowers and does not match the colour of any *Napoleonaea* flower. It is a mystery to me as to why these *N. imperialis* flowers were painted in completely the wrong colour. More recently a lot of photos have been taken of the two worldwide commonly cultivated species, *N. heudelotii* and *N. beninensis* Jongkind (Fig. 9). *N. imperialis* is also cultivated, although less commonly: more than a century ago in the Royal Botanic Gardens, Kew Palmhouse and today in the Royal Botanical Garden, Edinburgh (<http://data.rbge.org.uk/living/19715254A>) (Fig. 15). Photos or drawings of wild *Napoleonaea* are less common, but they represent more species: *N. angolensis* (Fig. 8), *N. cuneata* Jongkind (Fig. 11), *N. egertonii* (Fig. 12), *N. heudelotii* (Fig. 13), *N. leonensis* Hutch. & Dalziel (Fig. 17), *N. saopense* Jongkind (Fig. 18), *N. talbotii* Baker f. (Fig. 19) and *N. vogelii* (Fig. 20). These illustrations and photos show most of the taxonomically important flower characters that vary in the genus. The colour patterns of different parts of the flower and the shape and relative size of the corolla and coronas make it easy to recognise some of the species from a good flower photo.

The fruit of at least some *Napoleonaea* species is edible by man and tasty. It is not impossible that some species are partly spread by people taking the fruits home or even taking them to another village. In Liberia I have seen dense *Napoleonaea* thicket close to villages making this idea more likely. I have observed that the seeds can stay viable for weeks and are easy to grow.

Keys to species of *Napoleonaea*

Key to the West African species (west of Cameroon) including Bioko

- 1 Shrublets, shrubs or trees 2
- 1' Lianas or scandent shrubs — doubtful species, probably not seen for many years. Nigeria 13
- 2 Large tree with flowers in branched inflorescences, outer circle of corona tomentose towards the base. Spiny fruits on stem and branches more than 10 cm diam. Nigeria to Gabon. 5. ***N. egertonii***

- 2' Flowers solitary or clustered but never in branched inflorescences. Corona glabrous. Fruit never spiny 3
- 3 Twigs continuously, narrowly winged (Figs 3B & 4) 4
- 3' Twigs not at all, or very rarely, winged
- 4 Calyx lobes always with one gland at the apex, rarely more. Leaves 10 – 23 × 3.5 – 10.5 cm. Guinée, Liberia and Sierra Leone. 1. **N. alata**
- 4' Calyx lobes with two or more glands but none exactly at the apex. Leaves 7.5 – 30 × 2.5 – 9 cm. 5
- 5 Leaves 12 – 30 cm long and (3 –) 5 – 9 cm wide. Twigs c. 3 mm wide, sometimes winged but then not especially horizontal. Mature fruits (always?) dark purplish. South-east Nigeria to Congo-Brazzaville. . . . 14. **N. talbotii**
- 5' Leaves 7.5 – 17 cm long and 2.5 – 5 cm wide. Twigs 1 – 1.5 mm wide, always with narrow horizontal wings. Mature fruits yellow or orange. South-east Nigeria to Democratic Republic of the Congo. . . 2. **N. angolensis**
- 6 Inner corona about as large as the corolla, with red base and tips. Corolla red all around the base, often reflexed. Gallery forest and dry thicket. West Nigeria to Ivory Coast 3. **N. beninensis**
- 6' Inner corona comparatively smaller and often differently coloured. Corolla partly red but often not continuously so, reflexed or not. Usually in closed forest 7
- 7 Large bracts with a conspicuous “midrib” ending in a short free tip. Bracts enclosing flower bud until shortly before opening. Leaves 18 – 38 cm long and 5.5 – 11.5 cm wide. Always near water or in swamp. Liberia only 12. **N. sapoensis**
- 7' Bracts small and smooth without midrib. Leaves often much smaller. Usually on dry ground 8
- 8 Corolla continuously deep red with only a narrow apricot-yellow edge. Inner corona red at base and apex. Leaves 10 – 17 × 4 – 8 cm. Sierra Leone and Guinée. 8. **N. heudelotii**
- 8' Corolla not as above 9
- 9 Linear rays of outer corona conspicuous, pure white and about as long as inner cup-shaped corona that is white with a red ring near the base. Corolla larger than both, yellowish with red lines. Calyx glabrous, shiny. Leaves 13 – 24 × 6 – 9 cm. Nigeria and Benin. 9. **N. imperialis**
- 9' Different to above. 10
- 10 Most leaves more than 5 cm wide 11
- 10' Most leaves less than 5 cm wide. 12
- 11 Inner corona white at apex. Nigeria to Congo-Brazzaville 14. **N. talbotii**
- 11' Inner corona lobes with red tips. Bioko. 11. **N. mannii**
- 12 Leaves 10 – 15 × 4 – 6 cm, at least twice as long as wide, lateral nerves prominently looped. Inner corona white at top. Sierra Leone, Guinée and Liberia 10. **N. leonensis**
- 12' Leaves 4 – 13 × 1.5 – 6 cm, twice as long as wide or less, laterals more ascending. Inner corona usually pink to red at top. Sierra Leone to Ghana. 15. **N. vogelii**
- 13 Leaves obovate-elliptic, obtuse at base. Calyx glabrous. 16. **N. lutea**
- 13' Leaves oblong-elliptic, rounded at base. Calyx puberulous 17. **N. reptans**

Key to the Central African species (east of Nigeria)

- 1 Large tree with flowers in branched inflorescences, outer circle of corona tomentose towards base, inner corona sparsely puberulous on nerves. Spiny fruits more than 10 cm diam. Nigeria to Gabon. 5. **N. egertonii**
- 1' Flowers solitary or clustered but never in branched inflorescences. Corona glabrous. Fruit not spiny. 2
- 2 Geoxylic suffrutex under 1.8 m tall. Leaves 5.5 – 11 × 1.5 – 3.5 cm, apex blunt, acute or mucronate, never long acuminate. Flowers solitary, axillary. In savannah or open forest. Angola, Congo and Zambia. 7. **N. gossweileri**
- 2' Shrub or tree from closed forest. Most leaves wider, apex (long) acuminate 3
- 3 Twigs continuously narrowly winged (Figs 3B & 4) 4
- 3' Twigs not at all or discontinuously winged 5
- 4 Leaves oblong, 7.5 – 17 cm long and 2.5 – 5 cm wide. Twigs 1 – 1.5 mm wide, always with narrow horizontal wings. Mature fruits yellow or orange. Nigeria to Democratic Republic of the Congo. 2. **N. angolensis**
- 4' Leaves 12 – 30 cm long and (3 –) 5 – 9 cm wide. Twigs c. 3 mm wide, sometimes winged but then not especially horizontal. Mature fruits (always?) dark purplish. Nigeria to Congo-Brazzaville. 14. **N. talbotii**
- 5 Flower bracts 7 – 10 mm long, with small hairs. Leaves 12 – 30 × 5 – 11 cm, most main laterals short looping onto next lateral. Gabon. 6. **N. gabonensis**
- 5' Bracts <5 mm long. Leaves often smaller, laterals looping or not. 6
- 6 Leaves 9 – 24 × 3 – 10 cm, coriaceous, with (5 –) 8 – 9 (– 11) pairs of laterals, most long stretching (Fig. 3J, K). Leafbase usually cuneate. Gabon 4. **N. cuneata**
- 6' Leaves 12 – 31 × 3 – 10 cm, at most the first one or two pairs of laterals long stretched the others more directed

- outward and looping near the leaf margin. Leaf base rounded to acute. 7
- 7 Leaves 12 – 30 × 3 – 9 cm wide. Flower buds often much wider than high. Fruits (always?) dark purplish-brown when mature. Wetter forest. Nigeria to Congo-Brazzaville. 14. **N. talbotii**
- 7 Leaves 14 – 31 × 5 – 10 cm. Flower bud with closed calyx about equally wide as high. Fruits orange-brown when mature. Drier forest. Central African Republic and Democratic Republic of the Congo 13. **N. septentrionalis**

1. *Napoleonaea alata* Jongkind sp. nov. Type: Liberia, Loffa county, on the road between St Paul river and Zorzor, fl. 20 Dec. 1966, *Bos* 2534 (holotype WAG).

<http://www.ipni.org/urn:lsid:ipni.org:names:77143528-1>

Understorey *shrub* or *tree*. Twigs green, narrowly but conspicuously, horizontally winged, glabrous. *Leaves* alternate; petiole 3 – 5 mm long; lamina 10 – 25 × 3.5 – 10.5 cm, coriaceous, glabrous, with 6 – 9 pairs of main lateral nerves; base rounded to cuneate; apex acuminate. *Inflorescences* cauliflorous but also between the leaves; small bracts wider than long, glabrous. *Flowers* sessile or almost so. *Calyx* c. 1.5 cm in diam., papillate outside, green, always with one conspicuous gland at the top at the outside of each of the 5 valvate lobes, rarely with more glands. *Corolla* c. 2.5 cm in diam., inside red with white ring and base. Outer corona rays 6 mm long, white; inner corona c. 1.5 cm in diam., white with red ring near base. *Fruit* not seen. Figs 3A & 4.

RECOGNITION. *Napoleonaea alata* is the only species of the genus with winged twigs in the area in which it is found.

DISTRIBUTION. Guinée, Sierra Leone, Liberia. Map 5.

SPECIMENS EXAMINED. GUINÉE. Kouria et environs, Bowali, 6 Nov. 1905, *Caille* in *Chevalier* 15054 (paratypes of *N. leonensis* K, P); Benna, Nov. 1937, *Jacques-Felix* 2100 (P); south-west of Zabia, 7°40.9'N, 9°14.5'W, 426 m alt., 30 April 2011, *Jongkind* 10492 (WAG); Mont Yonon, east slope, 7°57.0'N, 9°06.8'W, 500 m alt., 4 Feb. 2012, *Yonon Botanic Team* 160 (WAG). **SIERRA LEONE.** near Kasasi, 24 March 2006, *Hawthorne* 206a-704b (FHO); Loma Mountains, below camp 1, 24 Nov. 1965, *Morton* SL 2811 (FHO, K, WAG). **LIBERIA.** Piatah, 8 Dec. 1947, *Baldwin* 15054 (K); Loffa county, on the road between St Paul river and Zorzor, 20 Dec. 1966, *Bos* 2518 (WAG).

HABITAT. Forest.

CONSERVATION STATUS. Vulnerable (VU). The species is found scattered in a botanically relatively well-known area. It is conspicuous when flowering or fruiting but is still known from few collections. Most of the area where it is found is more and more changed into farmland.

PHENOLOGY. Flowering and fruiting in the dry season.

NOTE. *Bos* 2534 is mentioned in the revision by Liben under *Napoleonaea vogelii* for its exceptionally large leaves and it was with doubt that he identified it as that species.

2. *Napoleonaea angolensis* Welw. (Welwitsch 1859: 586); Miers (1875a: 12 tab. 1, fig. 9 – 12); A. & R. Fernandes (1970: 112). Type: Angola, Serra de Queta, pr. Comuange, 21 May 1856, *Welwitsch* 4592 (holotype LISU; isotypes BM, COI, K, M, P; LISU).

Napoleonaea parviflora Baker f. (1913: 30); Keay (1954: 243). Type: Nigeria, Oban, anno 1911, *Talbot* 193 (holotype BM).

Napoleonaea natividadei A. Fern. & R. Fern. (Fernandes & Fernandes 1969: 1; 1970: 113). Type: Angola, near Caio - Buco Zau - Mayombe, Rio Lufo, 7 March 1919, *Gossweiler* 7901 (holotype BM).

Tree up to 11 m high and 10 cm diam., but usually smaller. Thin twigs with clear but narrow, mostly horizontal, wings. *Leaves* alternate; petiole 2 – 4 mm long; lamina oblong, 7.5 – 7 × 2.5 – 5 cm, with 5 – 9 pairs of main lateral nerves, first pairs of laterals long arching; base acute to rounded; apex usually long caudate-acuminate, often spatulate. *Inflorescences* cauliflorous but also between the leaves. *Flowers* sweet scented. *Calyx* green and whitish or purplish. *Corolla* 3 – 4.5 cm in diam., with pink radiating lines. Corona 15 mm diam. at base; outer corona white; inner corona white with red ring near base. *Fruit* 4.4 cm wide and 3.3 cm high. Figs 3B – G, 5, 6, 7, & 8.

DISTRIBUTION. Nigeria to Angola and the Congos. Map 6.

SELECTED SPECIMENS EXAMINED. CAMEROON. près de Meyo Centre, 24 March 1970, *Letouzey* 10223 (BR, P, WAG); Likouk-Lokoundji, 14 Jan. 1974, *Mezili* 248 (BR, P, WAG); Korup National Park, 19 Jan. 1985, *D. W. Thomas* 4285 (MO, P); Lolodorf, March 1895, *Staudt* 187 (COI, K, P); between N'Kolandom and N'Koemvone, 26 Feb. 1975, *J. J. de Wilde* 8007 (BR, MO, P, WAG); Bipindi, anno 1911, *Zenker* 3951 (BM, BR, K, P). **EQUATORIAL GUINEA.** Bebai, Campo Gebiet, 3 Dec. 1908, *Tessmann* 688 (K). **GABON.** c. 30 km E of Lastoursville, 29 April 1992, *Breteler et al.* 11156 (BR, LBV, MO, NY, WAG); Makande surroundings, 11 Feb. 1999, *Breteler et al.* 15010 (BR, LBV, MO, NY, WAG); Plateaux Batéké National Park, 10 Oct. 2003, *Walters* 1511 (MO, WAG); 12.4 km from Gamba airport, 1 Dec. 1994, *J. J. de Wilde* 11269 (LBV, WAG); Mission Otouma, 30 Jan. 1992, *Wilks* 2559 (BR, MO, P, WAG). **CONGO-BRAZZAVILLE.** village Oyoué II, 11 Dec. 1970, *Sita* 2970 (P). **DEMOCRATIC REPUBLIC OF THE CONGO.** Beonde, 21 April 1959, *Bamps* 592 (BR); Kiyaka – Kwango, 1 Sept. 1955, *Devred* 2527 (BR, WAG); Luki,

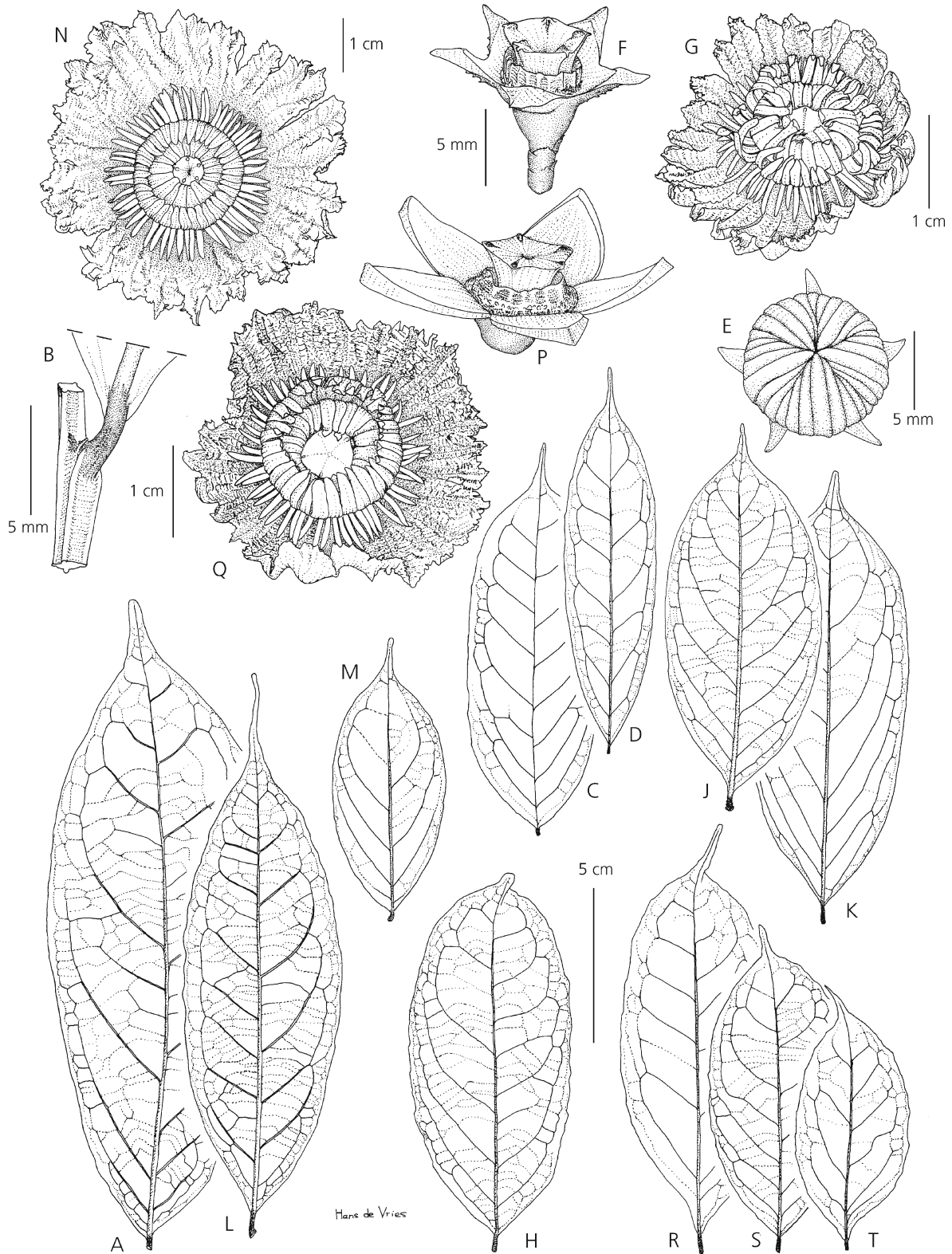


Fig. 3. A *Napoleonaea alata*, leaf; B – G *N. angolensis*: B twig; C & D leaves; E flower bud; F calyx; G flower. H *N. beninensis*, leaf. J, K *N. cuneata*, leaves. L *N. leonensis*, leaf. M *Napoleonaea* sp., leaf. N *N. talbotii*, flower; P – T *Napoleonaea vogelii*: P calyx; Q flower; R – T leaves. A from Bos 2534; B – D from Wieringa & van der Pol 1477; E – G from J. de Wilde 7830B; H Akoegninou 2333; J from Breteler 14169; K from Breteler & de Wilde 531; L from Yonon Bot. Team 159; M from Breteler 6695; N from Bissengou 380; P & Q from J. de Wilde 3446; R from Leeuwenberg 3945; S from Breteler 6117; T from Jongkind 7497. DRAWN BY HANS DE VRIES.



Fig. 4. *Napoleonaea alata*, winged twig. Yonon Botanic Team 161. PHOTO: CAREL JONGKIND.

11 March 1948, *Donis* 1734 (BR); Lombiolo, 22 Nov. 1957, *Evrard* 3019 (BR, WAG); Lodja, July 1932, *Lebrun* 6221 (BR, WAG); Yangambi, 2 March 1938, *J. L. P. Louis* 8311 (BR, WAG); Bene-Dibele, 1 May 1899, *Luja*

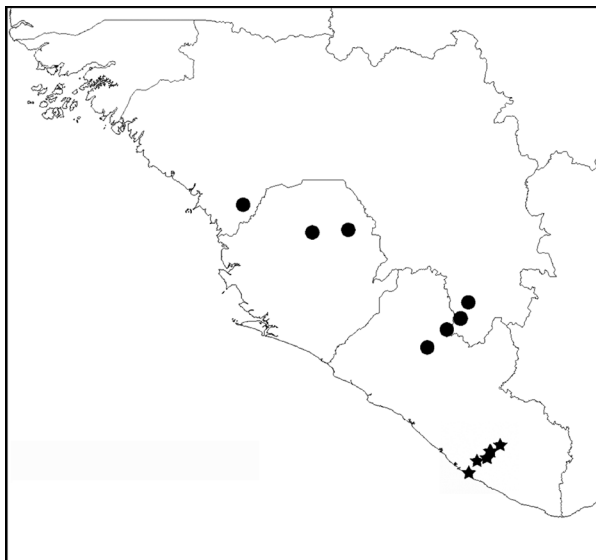
268 (BR, WAG); Dundusana, Sept. 1913, *Mortehan* 514 (BR); Kipasa, June 1932, *Vanderyst* 32086 (BR). **ANGOLA.** Cazengo, Monte Lau, *Gossweiler* 4595 (BM, COI).

HABITAT. Understorey of closed forest.

CONSERVATION STATUS. Least concern (LC). The species is widespread and there is still a lot of forest in the area where it is found.

PHENOLOGY. Flowering and fruiting mainly in the rainy season.

NOTE. This is the most common and widespread *Napoleonaea* species in central Africa. It is usually easy to recognise with its continuous, narrowly winged twigs and small to medium-sized leaves with often more or less parallel sided lamina and long acuminate apex.



Map 5. Distribution of *Napoleonaea alata* ● and *N. sapoensis* ★.

3. *Napoleonaea beninensis* *Jongkind* sp. nov. Type: Benin, Savè, Inselberg des 2 mamelles, 8°28'N, 2°37'E, 19 Nov. 2000, *Oumorou Aliou* 1311 (holotype BR; isotype BRLU).

<http://www.ipni.org/urn:lsid:ipni.org:names:77143529-1>

Napoleonaea vogelii auct. non., Akoègninou *et al.* (2006: 607).

Napoleonaea vogelii auct. non., Brunel *et al.* (1984: 233, 234).

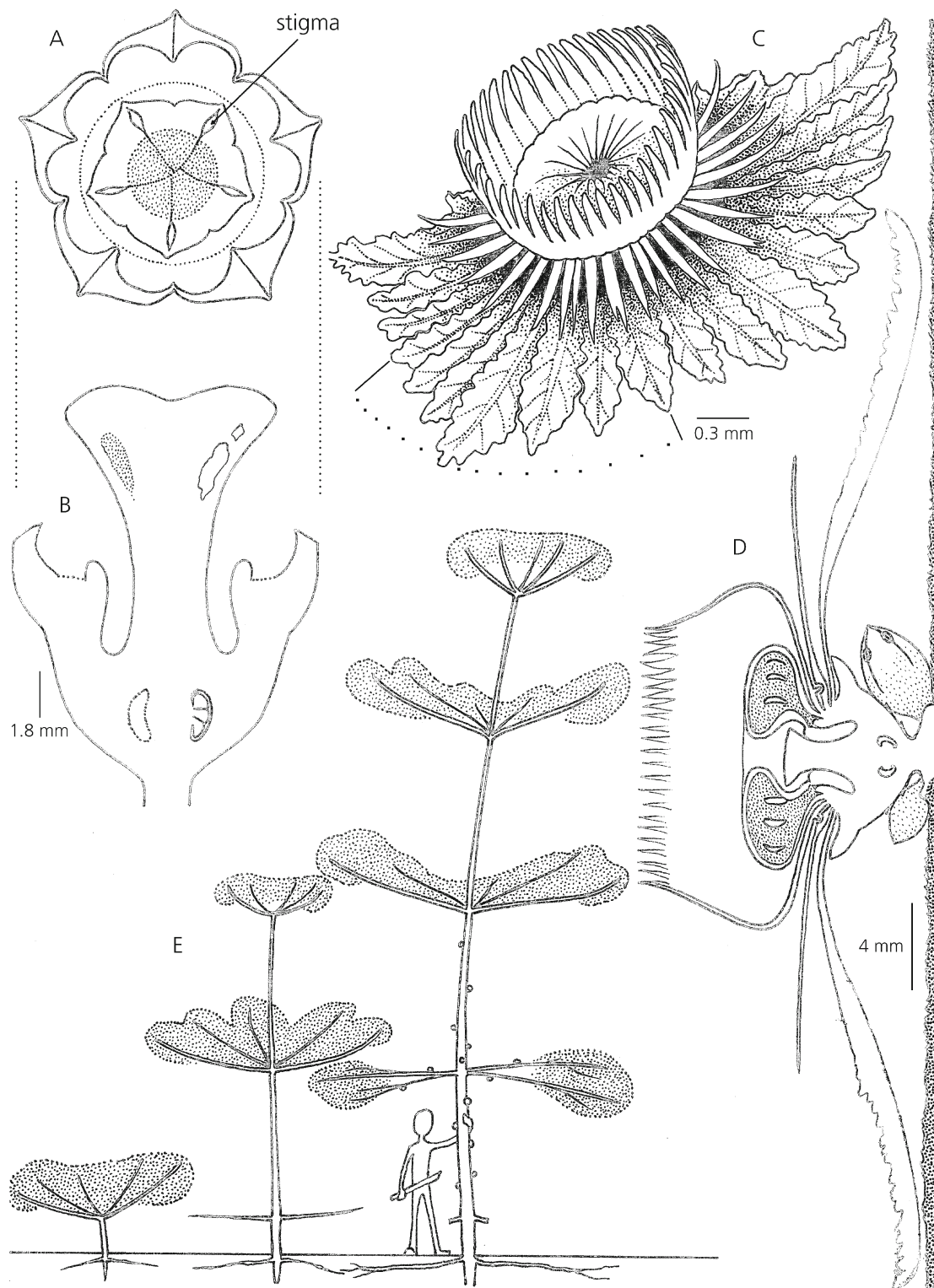


Fig. 5. *Napoleonaea angolensis*, flower and tree in detail. **A** valvate calyx, annular ring (denoted by dotted circle) and pentagonal gynoecium with five stigmatic crests as seen from above after corolla-corona dehiscence; **B** l.s. sepal disk-gynoecium unit, with dotted line between disk and sepals denoting attachment point of corolla-corona; **C** flower, with dotted line indicating a petal; **D** schematic longitudinal view of flower (inner vertical staminode heads not depicted) and neighbouring buds on tree trunk; **E** three stages in the growth and development of a tree. DRAWN BY FRANCIS HALLÉ. First published in *Biotropica* 33: 460 – 463 (2001) by Frame & Durou.

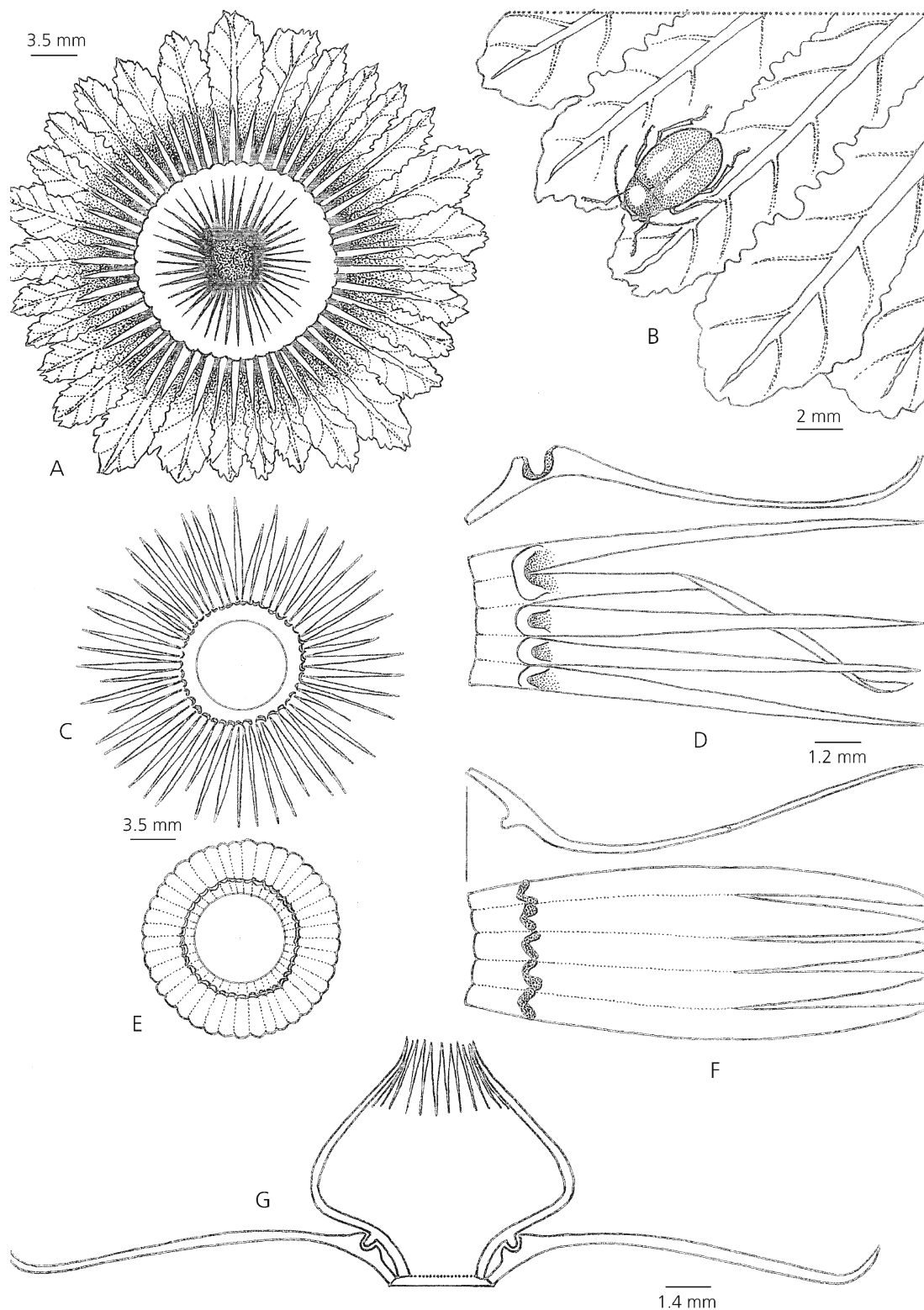


Fig. 6. *Napoleonaea angolensis*, flower, highlighting corolla and interlocking staminodes. **A** flower seen from above; **B** detail of corolla with *Monolepta* sp.; **C** detached ring of horizontal staminodes seen from above; **D** detail of horizontal staminodes, one shown in lateral view and the rest from above; **E** detached ring of outer vertical staminodes seen from below; **F** detail of outer vertical staminodes, one shown in lateral view and the rest flattened for simplicity; **G** longitudinal view of interlocking staminodes (nectar accumulates in canal below lock). DRAWN BY FRANCIS HALLÉ. First published in *Biotropica* 33: 460 – 463 (2001) by Frame & Durou.

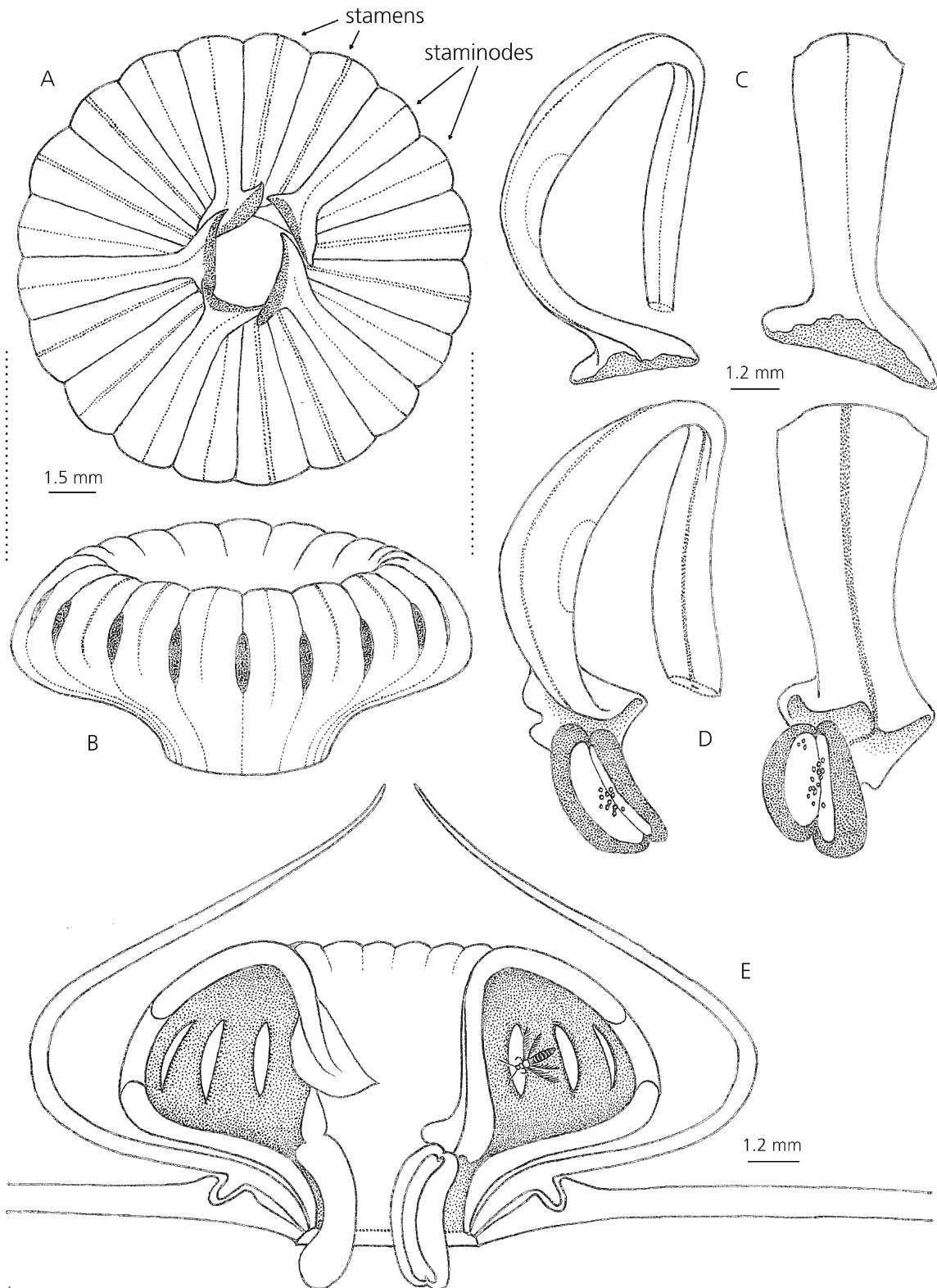


Fig. 7. *Napoleonaea angolensis*, flower, highlighting inner vertical staminodes and stamens, and floral chambers. **A** detached inner whorl of ten staminodes alternating with ten stamens seen from above; **B** same viewed from side to show holes formed between each appendage (staminode heads not depicted); **C** inner vertical staminodes viewed from side and above; **D** stamens viewed from side and above; **E** longitudinal view of staminodes and stamens (attached corolla not shown). Note inner chamber created by curvature and fusion of the inner vertical staminodes and stamens, and outer chamber between inner one and outer vertical staminodes. DRAWN BY FRANCIS HALLÉ. First published in *Biotropica* 33: 460 – 463 (2001) by Frame & Durou.

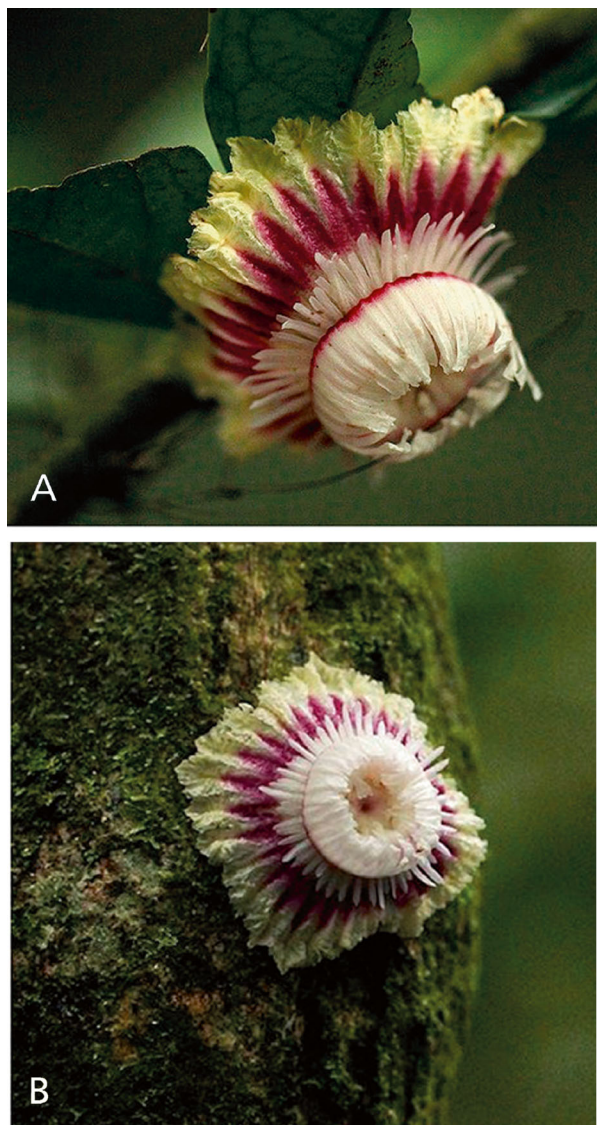


Fig. 8. *Napoleonaea angolensis*, flower. 30 Oct 2012, near Yangambi, Democratic Republic of the Congo. Specimen in BR. PHOTOS: BART WURSTEN.

Shrub 2 m high to 15 m high tree. *Leaves* alternate; petiole 3 – 6 mm long; lamina 7 – 15 × 3 – 7 cm, obovate to elliptic, glabrous, with 4 – 7 pairs of main laterals; base rounded to acute; apex acuminate. *Inflorescences* cauliflorous but also between the leaves. *Flowers* sessile or almost so. *Calyx* with 5 valvate lobes. *Corolla* to 5 cm in diam., basal half completely dark red spreading out in star-pattern. Free outer corona rays 10 mm long, often with red tip; inner corona 15 mm long, red at base and apex, pale yellowish in between. *Fruit* up to 6 cm wide and 5 cm high, yellow or orange, with colourless, edible pulp. Figs 3H, 9, 10.

RECOGNITION. *Napoleonaea beninensis* is easy to recognise by its cup-shaped inner corona with red rim, that is as large as the corolla.

DISTRIBUTION. Ivory Coast, Ghana, Togo, Benin, Nigeria. Map 7.

SPECIMENS EXAMINED. **IVORY COAST.** 33 km S of Dabakala, 6 Dec. 1967, *Geerling & Bokdam* 1673 (BR, K, WAG). **GHANA.** Asuansi, 26 Oct. 1941, *Box* 3332 (BM); Pokoase, 12 Nov. 1971, *Hall & de Wit* GC 43147 (WAG); near Swedru, 28 Feb. 1927, *Dalziel* 8303 (K); E from Dadiasi, 20 May 1996, *Jongkind & Nieuwenhuis* 2789 (WAG); Tainso, on banks of Tain R., Jan. 1935, *Vigne* FH 3536 (BR, K, P); Worobong, Nov. 1936, *Vigne* FH 4271 (BM). **TOGO.** Boulohou, Nov. 1984, *Brunel* 9106 (TOGO); Gati, 15 km N of Tsévié, 1 Nov. 1977, *Ern* 2323 (B, P). **BENIN.** Savè, Inselberg des 2 mamelles, 8°28'N, 2°37'E, 19 Nov. 2000, *Oumorou Aliou* 1311 (holotype BR; isotype BRLU); Banamè, 29 Jan. 1999, *Akoegnuinou et al.* 2143 (BENIN, BR, MO, WAG); Gbanango, 2 Feb. 1999, *Akoegnuinou et al.* 2219 (BENIN, MO, WAG); entre Pira et Cabolé, 25 May 1910, *Chevalier* 23762 (P); Togbota agué, Djessa, 6°43'N, 2°24'E, 9 Nov. 2000, *Dan & Hanon* 29 (BR); Adja Ouéré, *Le Testu* 66 (BM, P); Pobè, 4 Nov. 1989, *Sokpon* B206 (BR, BRLU). **NIGERIA.** between Oyo and Beyin, 4 Feb. 1948, *Brenan & Keay* 8955 (K, P); Forestry Hill, 24 Nov. 1960, *Charter* FHI 43251 (K); Olokemeji Forest Reserve, 4 Nov. 1971, *Gbile & Wit* 889 (WAG); Ibadan North Reserve, 5 Nov. 1949, *Chizea* FHI 23964 (K, WAG); Lagos, 3 March 1906, *Foster* 26 (K); near Ibadan, 28 Dec. 1949, *Meikle* 903 (BR, K, P); Okolemeji, 25 Nov. 1931, *Ross* 28 (K); Abeokuta Prov., anno 1917, *Unwin* 8 (BM); Ado Rock, 8 Dec. 1972, *Wit et al.* 2341 (K)

HABITAT. Stream banks in dry forest and in fringing forest in the savanna zone.

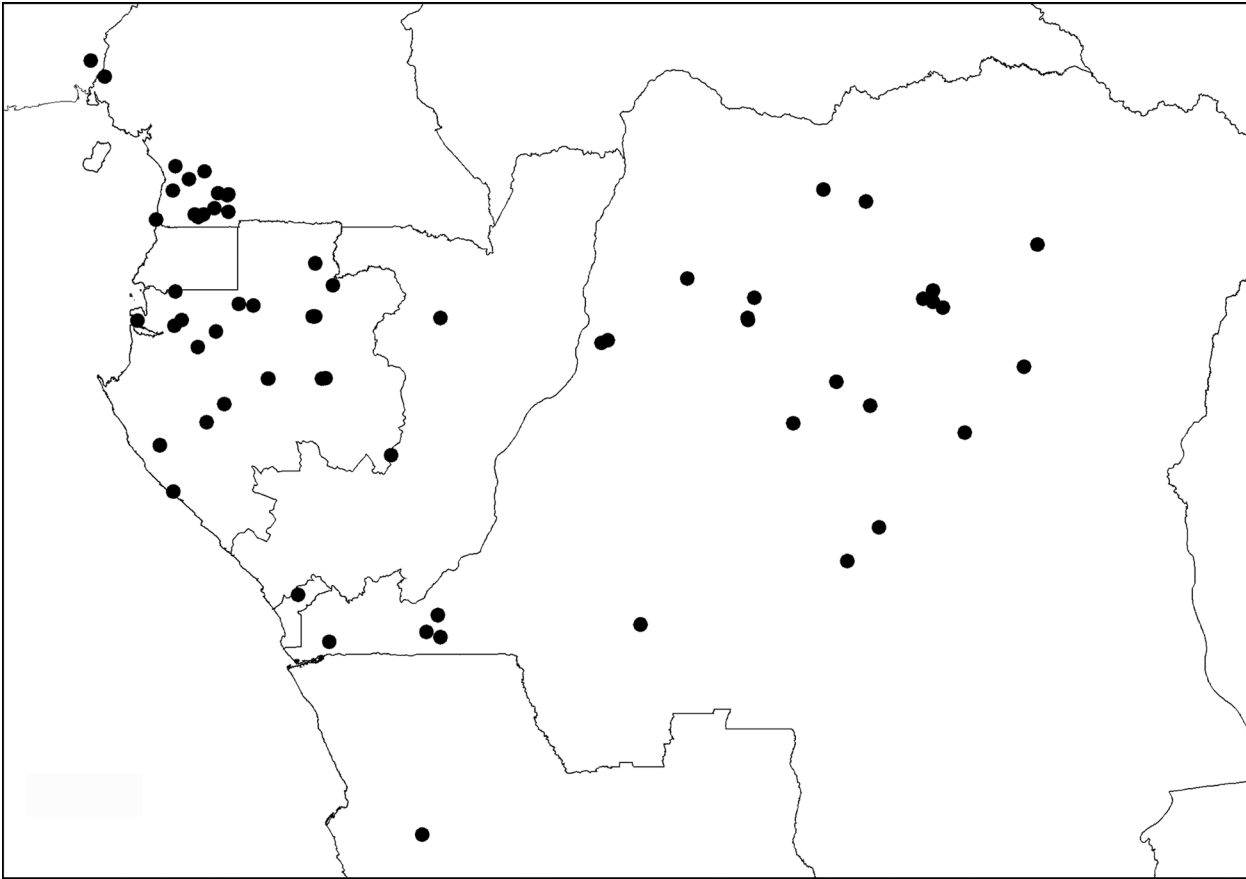
CONSERVATION STATUS. Least concern (LC). Relatively widespread species that is likely to survive some disturbance considering its natural habitat.

PHENOLOGY. Flowering and fruiting in the dry season.

NOTE. This species is without doubt the same taxon as the second form of *Napoleonaea vogelii* from Ghana described by Hall & Swaine (1981: 242, 243). It was seen by them to the north and east of the closed forest region and also in several places in the Volta Region. While the first form (here *N. vogelii* s.s.) was only seen in the understorey of moist forest the second form (here *N. beninensis*) was seen on stream banks in dry forest and in fringing forest in the savanna zone.

In the *Flora of West Tropical Africa* this species was included in *Napoleonaea vogelii* and Liben (1971) included part in *N. imperialis* and part in *N. vogelii*. In Benin it is the most widespread *Napoleonaea* species and in Togo it is the only one.

Napoleonaea beninensis is one of the two commonly cultivated *Napoleonaea* species in botanical gardens and greenhouses around the world. Photos showing it in Sri Lanka (Peradeniya BG), Florida (Fairchild Tropical BG), Hungary (Vácrátót Botanical Garden), Germany (Berlin-Dahlem BG)



Map 6. Distribution of *Napoleonaea angolensis*.

and the UK (RBG Edinburgh) leave no doubt about this.

4. *Napoleonaea cuneata* Jongkind sp. nov. Type: Gabon, c. 30 km E of Lastoursville, 3 Oct. 1997, *Breteler & Leal* 14169 (holotype WAG; isotypes BR, BRLU, E, K, M, MA, MO, NY, P, US).

<http://www.ipni.org/urn:lsid:ipni.org:names:77143530-1>

Tree 8–10 m high and up to 10 cm diam. *Leaves* alternate; petiole 10–17 mm long; lamina elliptic, 9–24 cm long and 3–10 cm wide, coriaceous, with (5–)8–9(–11) pairs of long arching main laterals, most laterals passing by the next and slowly fading; base cuneate; apex acuminate. *Inflorescences* cauliflorous but also between the leaves. *Flowers* sessile or almost so. *Calyx* pubescent, lobes with two glands. *Corolla* 4 cm in diam. Corona 13–16 mm wide at base; outer corona 5–6 mm long, white; inner corona, 9 mm high, red near base. *Fruit* up to 5 cm wide and 3 cm high, orange-brown. Figs 3J, K, 11.

DISTRIBUTION. Gabon. Map 8.

SELECTED SPECIMENS EXAMINED. GABON. 40 km Lalara – Makokou, then 32 km in southerly direction, 9 Sept.

1978, *Breteler & de Wilde* 531 (BR, C, K, LBV, MA, MO, P, PRE, SRGH, WAG); c. 30 km E of Lastoursville, 18 Nov. 1991, *Breteler & Jongkind* 10570 (LBV, WAG); E of Ndambi, 27 Nov. 1993, *Breteler et al.* 12387 (BR, G, LBV, MA, MO, WAG); Makande surroundings, 25 Jan. 1999, *Breteler et al.* 14781 (LBV, WAG); Along Ogooué R. between Booué 2nd confluence with Ivindo River, 12 Nov. 1983, *A. M. Louis* 616 (LBV, WAG); E of Lastoursville, near Bambidie, C.E.B. chantier, 15 Sept. 1996, *McPherson* 16620 (BR, MO, WAG); idem, 19 Sept. 1996, *McPherson* 16634 (BR, WAG); idem, 23 Sept. 1996, *McPherson* 16671 (BR, MO, WAG); 40 km ENE of Lastoursville, 16 Nov. 1994, *Wieringa et al.* 3206 (LBV, WAG).

HABITAT. Forest understorey.

CONSERVATION STATUS. Least concern (LC). The species seems to be common in a relatively large area that is still for a large part densely forested.

PHENOLOGY. Flowering at the start of the rainy season and fruiting after a month.

NOTE. Some of the specimens of this new species were previously identified as *Napoleonaea septentrionalis*. However, the nearest certain location for *N. septentrionalis*, near Bangui, is almost 700 km away and the leaves of the new species do not resemble that species or that of any other *Napoleonaea*.

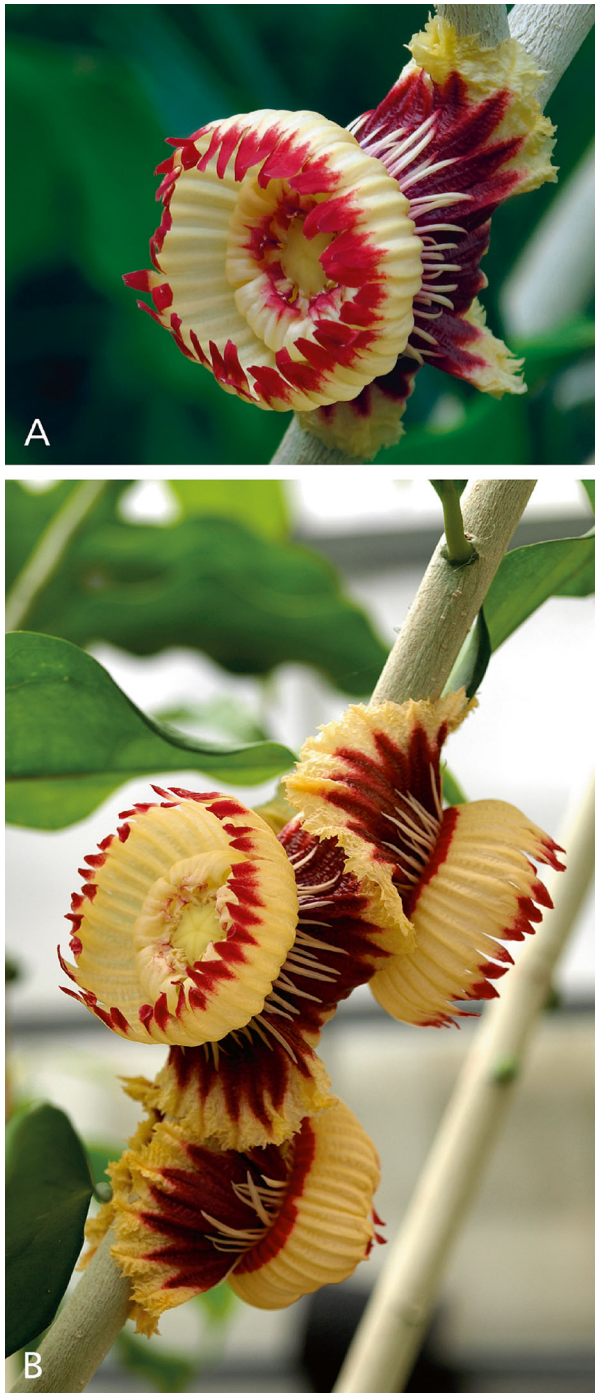


Fig. 9. *Napoleonaea beninensis*, flower. Biology Dept. greenhouse of the Florida International University (2009). PHOTOS: SCOTT ZONA.

Two flowering specimens from the same part of Gabon, *Breteler* 6695 from Koulamoutou and *Le Testu* 8429 from Ikembélé, resemble the new species except for the much smaller and thinner leaves ($6 - 9.5 \times 2 - 4$ cm). They might represent a different taxon but more information is needed.

5. *Napoleonaea egertonii* Baker f. (1913: 33 t. 4 fig. 3-4); Keay (1954: 244); Liben (1971: 367 – 369). Type: Nigeria, Oban, anno 1911, *Talbot* 997 (holotype BM). *Napoleonaea le-testui* Pellegr. (Pellegrin 1936: 434). Type: Gabon. Mahounda, 30 July 1930, *Le Testu* 8194 (syntype P; isosyntype BM); Ikembélé, 10 May 1931, *Le Testu* 8812 (syntype P; isosyntype BM).

Large tree to 30 m high and 68 cm dbh. Leaves alternate; petiole 5 – 6 mm long; leaf lamina 18 – 32 × 7 – 15 cm, oblong-elliptic to obovate, coriaceous, with 5 – 12 pairs of main lateral nerves; base rounded to acute; apex acute to acuminate. Inflorescences paniculate, on trunk and branches. Flowers conspicuously pedunculate. Calyx without glands, pale green. Corolla 3 – 4 cm in diam., first white, later partly purplish; outer corona rays with purple tip, conspicuously hairy on the basal half; inner corona glabrous, with purple margin. Fruits up to 20 cm diam., subglobose, pale green or whitish, with many c. 2.5 cm long, spines; seeds angular, up to 8 × 6 cm. Fig. 12.

DISTRIBUTION. Nigeria, Cameroon & Gabon. Map 9.

SELECTED SPECIMENS EXAMINED. NIGERIA. Oban FR, Mankoara, 5°25'N 8°35'E, 400 m alt., 14 Jan. 1978, *J. B. Hall FHI* 88214 (FHO). **CAMEROON.** Manehas FR, 4°49'N 9°44.4'E, 900 m alt., Oct. 1998, *Pollard* 125 (K); 15 km S. Akwaya, 26 July 1975, *Letouzey* 14114 (BR, P, WAG); Takamensu FR, footpath Mbilishi to Kaluma, 6°15'N 9°26'E, 650 m alt., 1 May 1987, *D. W. Thomas et al.* 7403 (BR, K, MO, WAG). **GABON.** NE of Lastoursville, 15 April 1990, *Breteler et al.* 10006 (BM, BR, K, P, MO, WAG); Makande surroundings, 25 Jan. 1999, *Breteler et al.* 14785 (WAG); E of Lastoursville, 0°46'S 13°00'E, 250 m alt., 30 Sept. 1996, *McPherson* 16743 (MO, WAG); Lopé Reserve, 30 July 1995; *White et al.* 1449 (MO); c. 27 km ENE of Lastoursville, 0°44.36'S, 12°57.66'E, 310 m alt., 17 March 2013, *Wieringa et al.* 7504 (WAG); Ogooue-Ivindo, 0°05'S 11°45'E, 15 May 1987, *Wilks* 1517 (MO, P, WAG).

HABITAT. Forest.

CONSERVATION STATUS. Least concern (LC). The species is, being a forest tree, likely to be undercollected. The area where it grows in Gabon is still largely closed forest. I agree with Darbyshire & Cheek (2004) that the population in Nigeria and Cameroon is “Vulnerable”.

PHENOLOGY. Not enough data, maybe flowering and fruiting all year round.

NOTE. This is the only large forest tree in the genus, clearly standing apart with its paniculate inflorescence and spiny fruit.

6. *Napoleonaea gabonensis* Liben (1971: 370, 371). Type: Gabon, Libreville, 29 Sept. 1900: *Klaine* 1951 (holotype P).

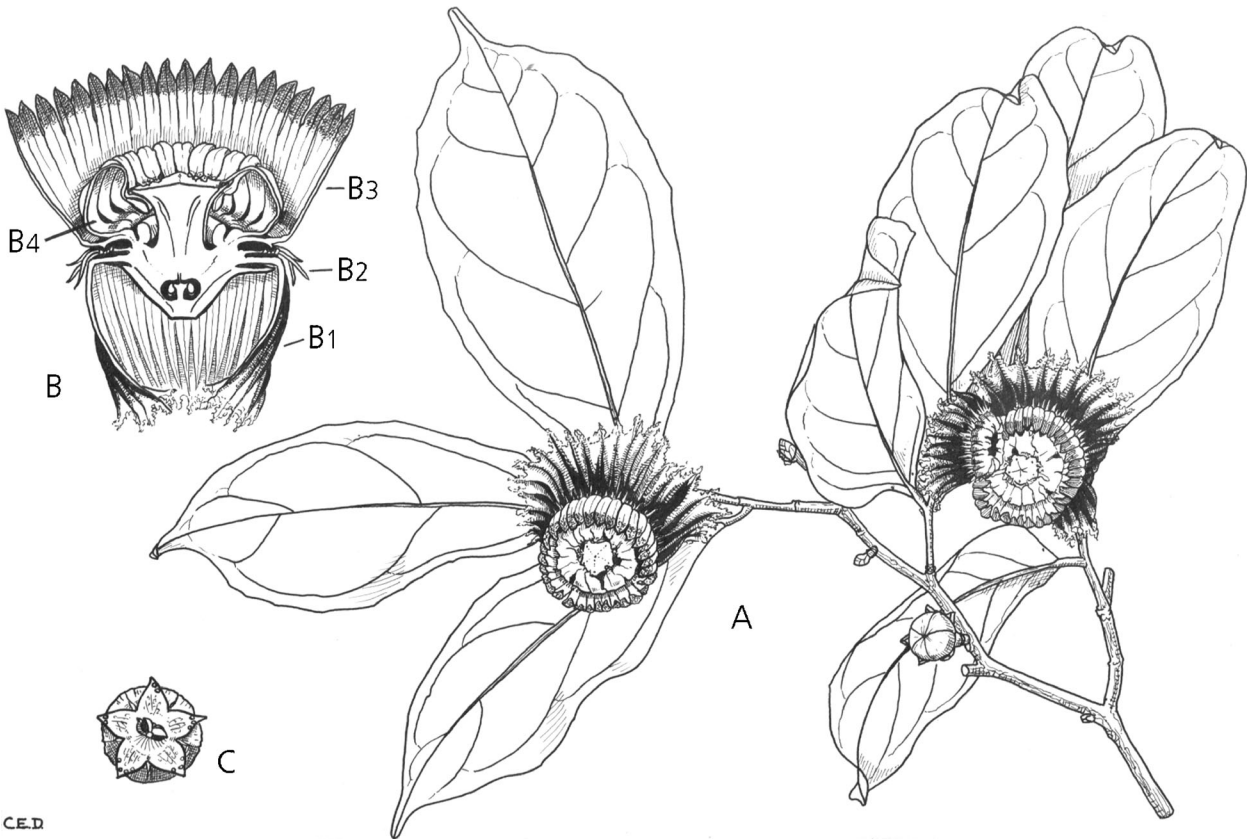
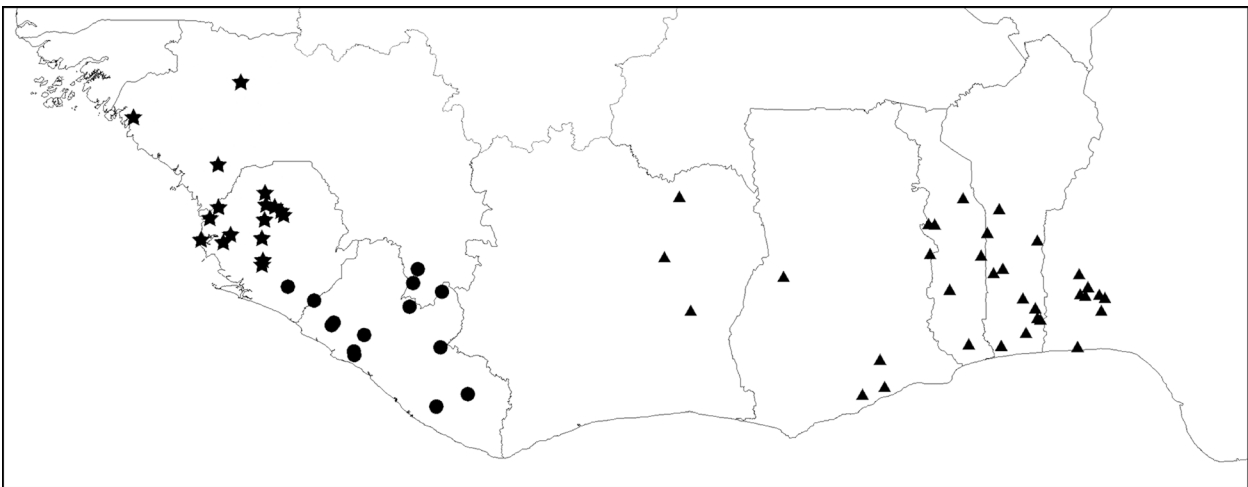


Fig. 10. *Napoleonaea beninensis*. A flowering shoot; B flower l.s.: B₁ corolla; B₂ outer corona; B₃ inner corona; B₄ stamens; C bud showing glands on sepals. November 1960 in Ibadan after living material of *Charter* FHI 43251. First published in *Kew Bull.* 17: 176 (1963). Reproduced with permission of the Trustees of the Royal Botanic Gardens, Kew. DRAWN BY CHRISTINE E. DARTER.

Tree 8 – 10 m high. *Leaves* alternate; petiole 5 – 8 mm long; lamina 12 – 30 × 5 – 11 cm, oblong-elliptic, 6 – 9 pairs of main laterals, most main laterals short looping

and joining next lateral. *Inflorescences* cauliflorous but also between the leaves; bracts large, not glabrous, up to 1 cm long. *Flowers* sessile or almost so. *Calyx* lobes 7 –



Map 7. Distribution of *Napoleonaea beninensis* ▲; *heudelotii* ★, *N. leonensis* ●.



Fig. 11. *Napoleonaea cuneata*, flower. Dauby 2911 from Gabon. PHOTOS: GILLES DAUBY.

12 mm long and 6–8 mm wide with small glands. *Corolla* 4 cm in diam., with red radial marks. Outer corona rays 6–8 mm long, white; inner corona 15 mm diam., red near base otherwise white. Fruit not known.

DISTRIBUTION. Gabon. Map 10.

SELECTED SPECIMENS EXAMINED. GABON. 5–15 km from Ndjolé, 0°05'S 10°45'E, 12 Nov. 1991, *Breteler & Jongkind* 10432 (BR, K, LBV, MO, NY, WAG); 20–30 km from Ndjolé, c. 0°03'N 10°45'E, 2 Oct. 1994, *Breteler et al.* 13131 (BR, E, K, LBV, MO, NY, WAG); S of Estuaire du Gabon, 0°00'N 9°50'E, 24 Oct. 1991, *McPherson* 15454 (MO, WAG).

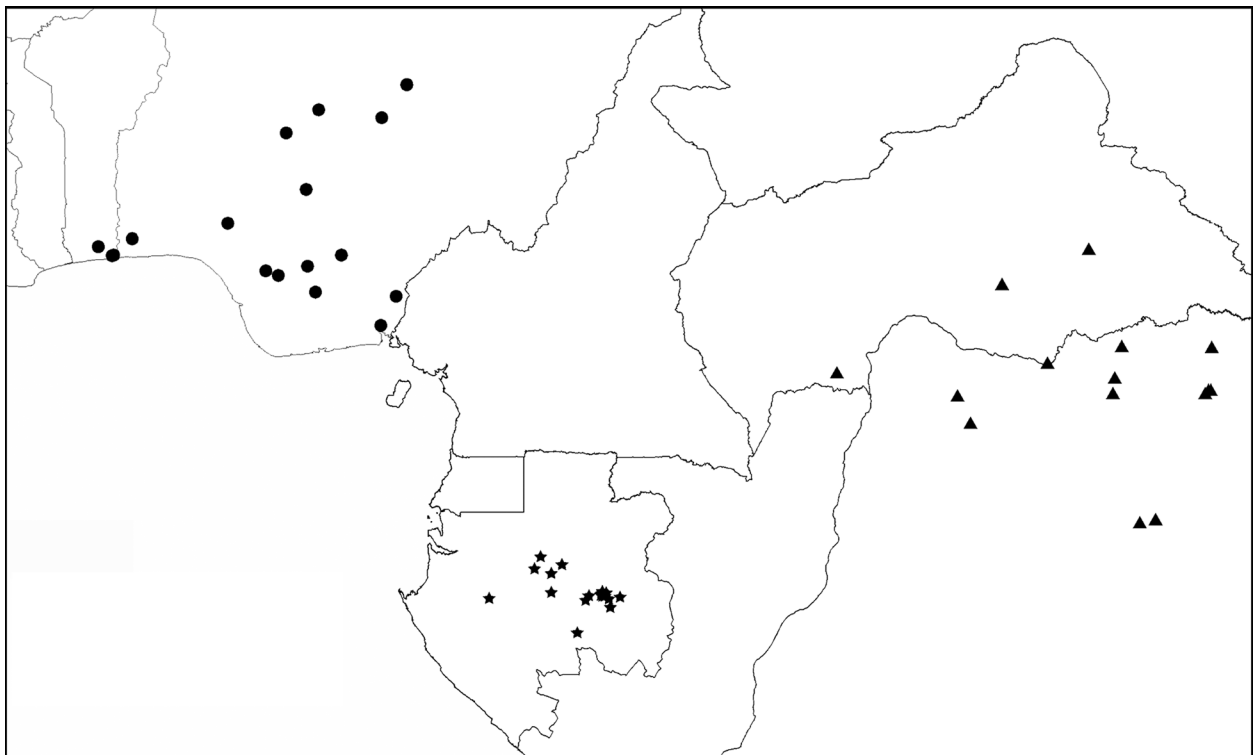
HABITAT. Forest understorey.

CONSERVATION STATUS. Vulnerable (VU), for the moment. It looks like the species is only found in a narrow band of forest 240 km long and it seems to be rare. Of course, the forests in Gabon are still for a large part botanically unknown.

PHENOLOGY. Not enough data.

NOTE. *Napoleonaea gabonensis* is probably a rare species, looking at the small number of specimens compared to *N. cuneata*. It is not too difficult to recognise with the large leaves and large flower bract.

7. *Napoleonaea gossweileri* Baker f. (1913: 32); White (1962: 274); A. & R. Fernandes (1970: 113); Liben (1971: 366); Fernandes (1978: 219). Type: Angola, Benguela, between Rios Cambamba and Cuatiri, 16 June 1906, *Gossweiler* 2609 (holotype BM; isotypes BR, COI, K, LISC).



Map 8. Distribution of *Napoleonaea cuneata* ★; *N. imperialis* •; *N. septentrionalis* ▲.

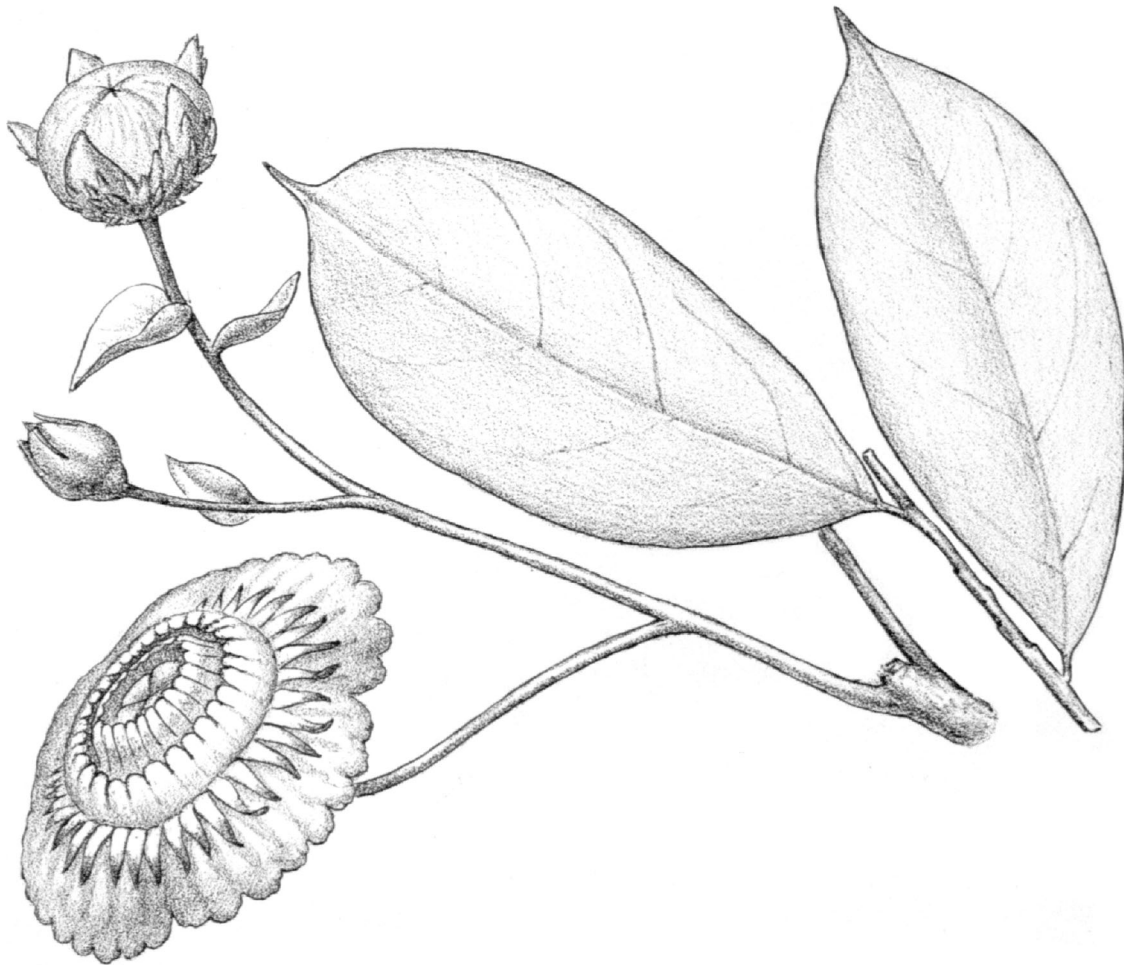


Fig. 12. *Napoleonaea egertonii*, inflorescence and leaves. From *Catalogue of the plants collected by Mr & Mrs P. A. Talbot in the Oban district, South Nigeria*, t. 4 (1913). DRAWN BY MRS TALBOT.

ILLUSTRATION. Fernandes (1978: 219 tab, 51).

Evergreen *shrub*, up to 1.8 m high with a woody rootstock. *Leaves* alternate; petiole 3 – 7 mm long; leaf lamina 3 – 11 × 1.2 – 3.5 cm, oblong-lanceolate or oblong, margin entire, with midrib and 6 – 10 pairs of main lateral nerves impressed above and prominent beneath; base acute or cuneate; apex blunt, acute or mucronate, never long acuminate. *Flowers* solitary, axillary, fragrant, 3.5 – 5 cm in diam. *Calyx* lobes 6 × 4 mm, ovate, acute, biglandular near the apex. *Corolla* cup-shaped, pink along the ribs, concolorous inside, sometimes deeper magenta on the ridges; coronas white. *Fruit* 2.5 – 3 cm in diam., depressed-globose.

DISTRIBUTION. Democratic Republic of the Congo, Angola, Zambia.

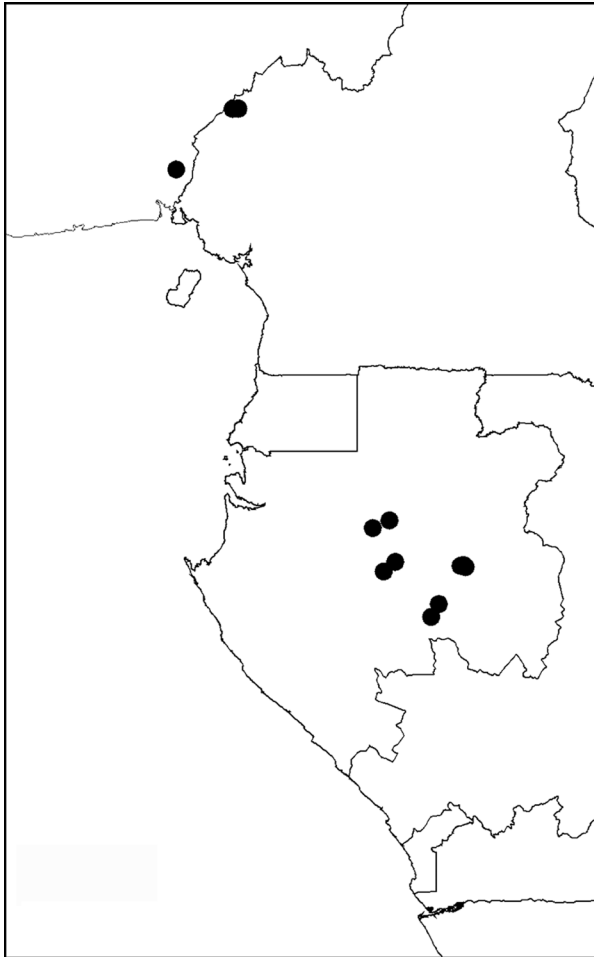
SELECTED SPECIMENS EXAMINED. DEMOCRATIC REPUBLIC OF THE CONGO. Gungu-Katuta, 13 Jan. 1989, *Breyne* 5696 (BR); Mwana-Uta, 14 April 1953, *Callens* 1418

(BR); between Kiyaka and Kikwit, 5 May 1955, *Devred* 1929 (BR, P). **ZAMBIA.** 2 mi NW of Masese Valley, 11 Aug. 1947, *Brenan & Keay* 7675 (BM, BR, K); Kalabo, 13 Oct. 1963, *Fanshawe* 8058 (K); Mangu Distr, 9 mi S of Namushakende, 22 July 1961, *Angus* 3029 (BR, FHO, K, LISC, NY); W prov., Mongu-Senanga, 35.7 km, 10°23'20"S 23°16'26"E, 100 m, 3 July 1997, *Bingham et al.* 11476 (K). **ANGOLA.** Cuito – Cuanavale, 1280 m, July 1967, *Gomes Pereira* s.n. (LISC); Menongue, *Gossweiler* 3059 (BM, COI); Kassuango Kuiriri, anno 1906, *Gossweiler* 3362 (BM); Cissacala, am Sunsuneja-Bache, June 1880, *Mechow* 501 (M).

HABITAT. Mixed woodlands.

CONSERVATION STATUS. Data deficient (DD). The species is found in a large area but seems undercollected for a species that must be conspicuous when flowering or fruiting. Maybe it grows only in a very specific habitat or flowers very rarely? More research is needed.

PHENOLOGY. Flowering and fruiting in the dry season.



Map 9. Distribution of *Napoleonaea egertonii*.

NOTE. This is the only species of the genus that is a geoxylic suffrutex. For the large area where it is found there are remarkably few collections in herbaria. It is not clear if the species is really rare or just undercollected.

8. *Napoleonaea heudelotii* A. Juss. (Jussieu 1844: 227, tab. 4); Keay (1954: 244); Liben (1971: 376, 377). Type: Guinée, Fouta-Djallon, Heudelot 748 (holotype P; isotypes BR, K).

Napoleonaea whitfieldii Lem. (Lemaire 1845: 2); Miers (1985a: 9, tab. 1 fig. 2 – 7). Type: Sierra Leone, s.l., Whitfield s.n. (holotype K).

Tree 3 – 6 m high. Leaves alternate; petiole 3 – 7 mm long; lamina 10 – 17 × 3.5 – 8 cm, elliptic to elliptic-obovate, with 7 – 9 pairs of main lateral nerves; base acute; apex acuminate. Inflorescences cauliflorous but also between the leaves. Flowers sessile or almost so. Corolla up to 4 cm diam., dark reddish with a narrow yellow edge; linear rays of outer corona shorter than the low cup-

shaped inner corona, and not very conspicuous, yellowish and red; inner corona comparatively low, with the free part dark reddish and bending inward. Fruit 3 cm diam. and 2.5 cm high. Figs 13 & 14.

DISTRIBUTION. Guinée and Sierra Leone. Map 7.

SELECTED SPECIMENS EXAMINED. GUINÉE. Riviere Molota, pied de falaise, 14 Jan. 1940, Chillou 1791 (P). **SIERRA LEONE.** Makeni, 12 Nov. 1965, Adam 21869 (P); Near Kambia, 29 Dec. 1927, Deighton 927 (K); near Mano, 28 Jan. 1932, Deighton 2445 (K); Masasa – Karina, 16 Oct. 1928, Glanville 9 (K); Fourah Bay College, 2 March 1964, Jarr SL 4137 (K, WAG); Southern Sula Mts, 30 Nov. 2009, Kanu, Sesay, Clark & van der Burgt 34 (K); just S of Laminaia Village, 25 Nov. 2012, Moriba, van der Burgt & Lopez-Poveda 6 (K, WAG); Ochra Hills Forest Reserve, 22 Dec. 1963, Morton & Gledhill SL 251 (K); Hill opposite Bumban School, 28 Nov. 1965, Morton SL 2894 (K, WAG); Daragbe, 26 Dec. 1891, Scott Elliot 4299 (K).

HABITAT. Closed forest and gallery forest.

CONSERVATION STATUS. Least concern (LC). For the moment this species seems not to be rare and is found in a relatively large area.

PHENOLOGY. Flowering and fruiting in the dry season.

NOTE. *Napoleonaea heudelotii* is one of the two commonly cultivated *Napoleonaea* species in botanical gardens and greenhouses around the world. Photos taken in Hawai (Foster BG), Reunion, Mauritius (Sir Seewoosagur Ramgoolam BG), Sri Lanka (Peradeniya BG), Malaysia (Penang BG), New Zealand and Ireland (NBG Glasnevin) leave no doubt about this.

9. *Napoleonaea imperialis* P. Beauv. (Palisot de Beauvois 1804: 1; 1810: 30, tab. LXXVIII); Keay (1954: 244); Liben (1971: 377 – 379); Akoègninou *et al.* (2006: 607). Type: Nigeria, Warri, Pal. de Beauvois s.n. (holotype G; isotype K).

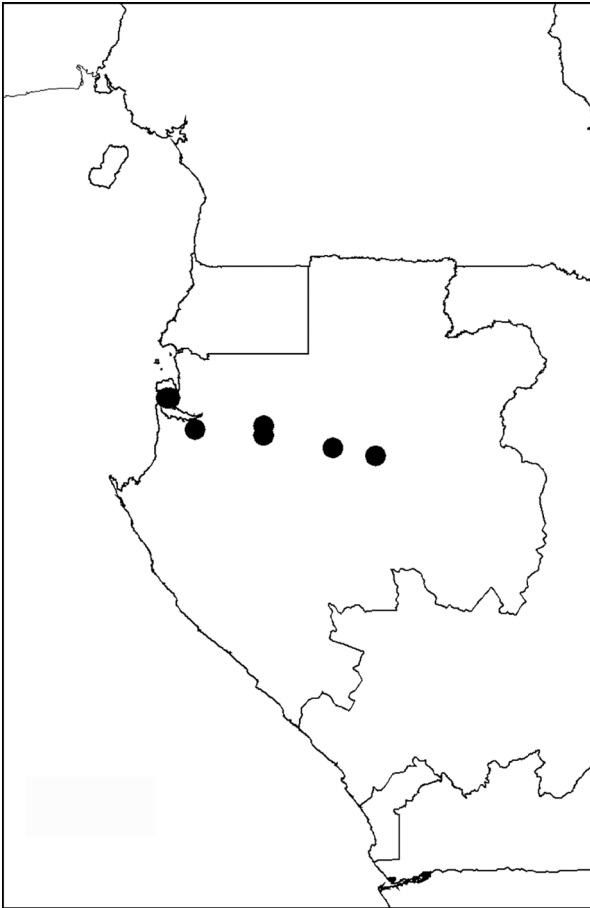
Napoleonaea miersii Hook. f. (Hooker 1891: tab. 7199).

Type: Kew Gardens, 10-1899 (holotype K).

Napoleonaea cuspidata Miers (1875a: 10, tab. 2 fig. 4-6).

Type: Nigeria, Old Calabar River, Feb. 1863, Mann 2272 (holotype K).

Treelet 1.5 – 7 m high. Leaves alternate; petiole 3 – 8 mm long; lamina 12 – 25 × 5.5 – 10.5 cm, elliptic to obovate, with 5 – 8 pairs of main lateral nerves; base acute to rounded; apex acuminate. Inflorescences cauliflorous but also between the leaves. Flowers sessile or almost so. Calyx glabrous outside. Corolla 3.5 – 5 cm in diam., outer half cream-yellow, inner half dark reddish. Linear rays of outer corona long, white and conspicuous, about as long as the inner cup-shaped corona, inner corona white with a red line around the base. Fruit to 4.5 cm diam. and 3.5 cm high, yellowish when ripe. Figs 15 & 16.



Map 10. Distribution of *Napoleonaea gabonensis*.

DISTRIBUTION. Benin and Nigeria. Map 8.

SELECTED SPECIMENS EXAMINED. BENIN. Djèrègbé, 13 Dec. 2000, *Adjakidjè* 4058 (WAG); village de Tohoué, 20 Jan. 1910, *Chevalier* 22771 (P). **NIGERIA.** Idanre Hills, on the lower slopes of Carters Peak, 1 Jan. 1948, *Brenan et al.* 8645 (K, P); Lokoja, 4 April 1904, *Elliot* 50 (K); *Eimunjese* FHI 66495 (WAG); between Uwani and Ogbete market, 20 Jan. 1972, *Emwioybon* FHI 63135 (WAG); Bankemo, 4 Feb. 1969, *Gbile, Olorunfemi & Binyo* FHI 20544 (K); Sapoba, *Kennedy* 2610 (BM, BR); 2 – 3 miles N of Jos, 23 Feb. 1971, *Magaji & Tuley* 2140 (K); 50 ml S of Vom. 2500 ft. alt., 6 Feb. 1955, *McClintock* 179 (K); Usonigbe Forest Reserve, 14 Nov. 1949, *Meikle* 573 (P); Ilaro F.R. S of Igbogun road, 16 Dec. 1952, *Onochie* FHI 32444 (K, P); Awo-Omama, 14 Jan. 1957, *Onochie* FHI 35995 (K); Orem, 12 Feb. 1957, *Onochie* FHI 36345 (K); Oban, *Talbot* 1400 (BM); Agaie, 9 Feb. 1912, *Yates* 33 (K).

HABITAT. Forest.

CONSERVATION STATUS. Near threatened (NT). The species is found in one of the most densely populated areas in Africa. Looking at the deforestation in Nigeria, it is likely that part of the forests from which it is known no longer exist.

PHENOLOGY. Flowering and fruiting in the dry season. **NOTE.** *Napoleonaea imperialis* is said to have been found in the wild in several other countries, like Togo, Gabon and Angola, but I cannot confirm this. Some specimens on which this is based are very poor or have only fruits. Only from Nigeria and Benin have I seen sufficient specimens that represent this species without doubt. *Soyaux* 50 from Gabon could be *N. imperialis* (Liben 1971: 379) but it also could be cultivated. I found no *Napoleonaea imperialis* among the many recently collected *Napoleonaea* specimens from Gabon.

Napoleonaea alexanderi is here not a synonym of *N. imperialis* but of *N. talbotii*. The description and the illustration (by Talbot) of the flowers of *N. alexanderi* do not match *N. imperialis* but do fit *N. talbotii*.

10. *Napoleonaea leonensis* Hutch. & Dalziel (Hutchinson & Dalziel 1927b: 204; 1928: 220); Keay (1954: 244). Type: Sierra Leone, Talla hills, Commendi, 7 Nov. 1918, *Aylmer* 264 (holotype K).

Shrub or *treelet* to 4 m high. *Leaves*; petiole 3 – 10 mm long; lamina oblong to oblong-elliptic, 9 – 22 × 2.5 – 9 cm; base acute to almost rounded; apex long acuminate. *Inflorescences* cauliflorous but also between the leaves. *Flowers* sessile or almost so. *Calyx* lobes with two glands, pubescent. *Corolla* 3 – 4.5 cm in diam.; corona 12 – 14 mm diam. at base; free part of outer corona c. 7 mm long, inner corona 0 – 2 mm longer than outer corona. *Fruit* c. 6 cm wide, orange. x = 16 (Mangenot & Mangenot 1957). Figs 3L & 17.

DISTRIBUTION. Sierra Leone, Guinée and Liberia. Map 7.

SELECTED SPECIMENS EXAMINED. GUINÉE. W of Zabia, 16 Feb. 2012, *Yonon Botanic Team* 159 (WAG). **SIERRA LEONE.** Gola Forest, Block III, 6 May 1952, *Small* 600 (K). **LIBERIA.** Dukwia R., 26 Oct. 1928, *Cooper* 86 (K); 15 km from Monrovia, 11 Oct. 1963, *van Harten* 141 (WAG); 3 mls N of settlement of MMAL, 12 Feb. 1970, *J. W. A. Jansen* 1789 (BR, WAG); Bomi Hills, 9 Oct. 1970, *J. W. A. Jansen* 2229 (BR, MO, P, WAG); Sapo NP, along Sinoe R., 25 Nov. 2002, *Jongkind et al.* 5423 (WAG); W of Sapo National Park, 5°34.54'N, 8°12.56'W, 268 m, 7 Sept. 2013, *Jongkind et al.* 11922 (BR); c. 50 km W of Greenville, 5°06.07'N, 8°32.45'W, 101 m, 12 March 2014, *Jongkind et al.* 12397 (BR); Gola National Forest, 17 Oct. 1965, *P. P. C. van Meer* 216 (BR, K, WAG); Firestone Plantation, 25 Oct. 1970, *Stoop - v.d. Kastele* 231 (MO, WAG); near Tiatown, 11 Oct. 1961, *Voorhoeve* 528A (WAG).

HABITAT. Understorey of wet forest.

CONSERVATION STATUS. Least concern (LC). For the moment this species seems to be relatively common in a relatively large area where there is still a lot of forest.

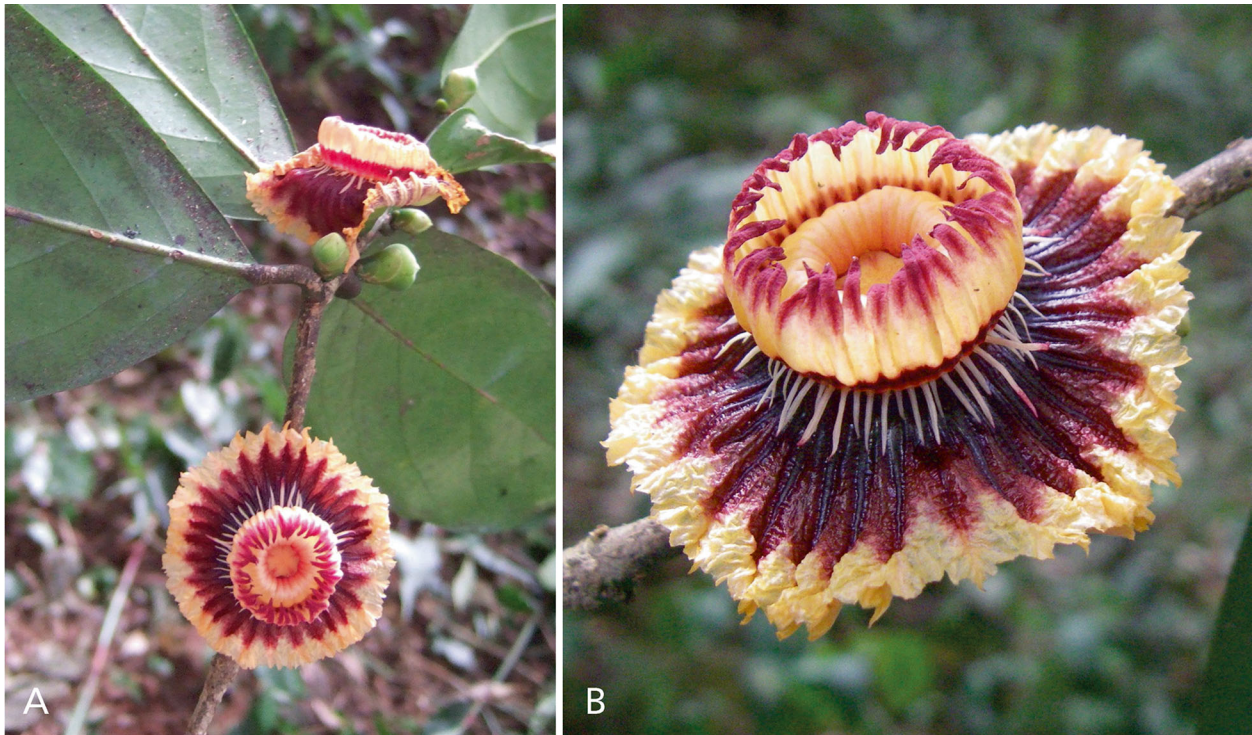


Fig. 13. *Napoleonaea heudelotii*, flowers. Sierra Leone (2009), K. Kanu 34. PHOTOS: XANDER VAN DER BURGT.

PHENOLOGY. Flowering mostly around the end of the rainy season, fruiting in the dry season.

NOTE. This species is really distinct from *Napoleonaea vogelii* and easy to recognise by the long leaves with looping laterals and the comparatively small inner corona with a purely white rim. *N. leonensis* and *N. vogelii* also seem to have a different ecology with *N. leonensis* in the wetter forest and *N. vogelii* in the drier forest. I have never seen the two together. I expect the lumping with *N. vogelii* was caused by the many specimens from Ivory Coast and Ghana in herbaria that were earlier identified as *N. leonensis* but that are indeed *N. vogelii*.

11. *Napoleonaea mannii* Miers (1875a: 11, tab. 2 fig. 1 – 3); Keay (1954: 244). Type: Bioko (Fernando Po), Nov. 1860, Mann 590 (holotype K; isotype BM).

Treelet. Leaves alternate; lamina 15 – 30 × 6 – 10 cm, oblong – obovate, with 9 – 14 pairs of main laterals; base rounded; apex short acuminate. Flowers sessile or almost so. Corolla 2.5 – 3.5 cm diam.; outer corona up to 8 mm long, white; inner corona white with red tips on the free lobes. Fruit not known.

DISTRIBUTION. Bioko.

SPECIMEN EXAMINED. BIOKO. Malabo – Cupapa, km 22 – 23, 10 April 1989, M. F. de Carvalho 3899 (BR, K, MA).

HABITAT. Forest?

CONSERVATION STATUS. Data deficient (DD). At the moment it is not yet clear if *Napoleonaea mannii* is indeed a separate species.

PHENOLOGY. Not enough data.

NOTE. This species was made synonym of *Napoleonaea imperialis* by Liben (1971: 378) without explanation. Surprisingly, because it does not look much like it. The leaves and flowers are different from *N. imperialis*, the leaves have more lateral nerves and a different shape, the calyx is not glabrous and the inner corona has red tips. It resembles *N. talbotii* much more but seems to be slightly different. I retain it as a separate species until more is known about it. A specimen collected as recently as 1989 shows that at that time it was not yet extinct.

12. *Napoleonaea sapoensis* Jongkind sp. nov. Type: Liberia, W of Sapo National Park, 5°26.57'N, 8°43.99'W, 134 m alt., 15 Sept. 2013, Jongkind, de Wet & Sambolah 12022 (holotype BR; isotypes MO, P, WAG).

<http://www.ipni.org/urn:lsid:ipni.org:names:77143531-1>

Treelet to 3.5 m high and to 11 cm in diam. Leaves alternate; petiole 4 – 8 mm long; lamina 18 – 38 cm long and 5.5 – 11.5 cm wide, coriaceous, dark green above, much paler below, with 7 – 12 main pairs of laterals, glabrous; base rounded to acute; apex acuminate. Inflorescences cauliflorous; larger bracts with a conspicu-



Fig. 14. *Napoleonaea heudelotii*. Curtis's Bot. Mag. 74 [ser. 3, vol. 4]: t. 4387 (1848). PAINTED BY WALTER HOOD FITCH.

ous “midrib” ending in a small free tip. *Flowers* sessile or almost so. Flower buds almost completely covered by bracts until shortly before opening when the bracts drop. *Calyx* lobes on the outside usually with two glands near apex. *Corolla* with a continuous red ring and pale yellow edge, c. 5 cm across; outer corona white, inner corona

white with red ring near base. *Fruit* up to 5 cm across, brownish; seeds violet in cross-section. Fig. 18.

DISTRIBUTION. Sino county, Liberia. Map 5.

SPECIMENS EXAMINED. LIBERIA. Sapo National Park, near rapids in Sinoe R., 23 Nov. 2002, *Jongkind et al.* 5369



Fig. 15. *Napoleonaea imperialis*, flowers, RBG Edinburgh glasshouse. PHOTO: ANDRIY KOVALCHUK.

(WAG); Sapo NP, close to Sinoe R., 5°50.08'N, 8°47.43'W, 100 m alt., 7 March 2009, *Jongkind et al.* 8867 (WAG); W of Greenville, 5°04.77'N, 9°05.91'W, 21 m alt., 18 Sept. 2013, *Jongkind et al.* 12050 (BR, FHO); E of main Greenville-Zwedru road, 5°16.69'N, 8°57.61'W,

86 m alt., 23 Sept. 2013, *Jongkind et al.* 12100 (BR, FHO, WAG); N of Sapo National Park, 27 Sept. 2013, 5°32.80'N, 8°34.80'W, 138 m alt., *Jongkind* 12162 (BR, MO); W of Sapo National Park, 15 Sept. 2013, 5°26.82'N, 8°544.66'W, 164 m alt., *Jongkind et al.* 12320 (WAG); c.



Fig. 16. *Napoleonaea imperialis*, leaves and flowers. *Curtis's Bot. Mag.* 117 [ser. 3, vol. 47]: t. 7199 (1891), after plant flowering in the Palmhouse, RBG Kew (as *Napoleonaea miersii*). Specimen in the Kew herbarium. PAINTED BY MATILDA SMITH.



Fig. 17. *Napoleonaea leonensis*, flower. Liberia (2013) after Jongkind 11922. PHOTO: CAREL JONGKIND.

50 km W of Greenville, 12 March 2014, 5°05.95'N, 8°32.46'W, 112 m alt., *Jongkind* 12399 (BR); c. 50 km W of Greenville, 17 March 2014, 5°05.67'N, 8°33.97'W, 112 m alt., *Jongkind* 12485 (BR).

HABITAT. Only known from swampy forest and river-side forest.

CONSERVATION STATUS. Vulnerable (VU), for the moment. The species is found in a relatively small area (c. 80 × 15 km) in swamp forest but seems to be common there. However recently a lot of new economic activities are being planned in this area like mining, road building and palm oil plantations. Just east of the area where it is known from there is a larger forest area still botanically unknown where the species could occur.

PHENOLOGY. Not enough data (half of the specimens sterile).

13. *Napoleonaea septentrionalis* Liben (1971: 375). Type: Democratic Republic of the Congo, Bondo, March 1931, *Lebrun* 2356 (holotype BR; isotype WAG).

Tree 6 – 13 m high, to 20 cm dbh. *Leaves*; petiole 5 – 6 mm long; lamina 11 – 26 (– 31) × 4.5 – 9 (– 10) cm,

with 6 – 9 pairs of main laterals; base rounded to acute; apex acuminate, often spatulate. *Flowers* sessile or almost so. *Calyx* with many short hairs on the outside, green. *Corolla* 3 – 4 cm diam., whitish with red star-shaped pattern, individual parts of red pattern usually not connected; outer corona white; inner corona white with red base. *Fruit* 3.5 cm diam. and 2.5 cm high, orange-brown with paler lenticels.

DISTRIBUTION. Central African Republic and Democratic Republic of the Congo. Map 8.

SELECTED SPECIMENS EXAMINED. CENTRAL AFRICAN REPUBLIC. Yalinga, 16 March 1921, *Le Testu* 2543 (BM, BR, P); station de Boukoko, 26 Feb. 1951, *Tisserant (Equipe)* 2010 (BM, BR, P); Gboyo, 100 km E de Bambari, Feb. 1927, *Tisserant* 1383 (BM, BR, P).

DEMOCRATIC REPUBLIC OF THE CONGO. Tukpwo, galerie de la Mapuso, 12 March 1954, *Gérard* 1146 (BR); Dembia, 16 April 1936, *J. L. P. Louis* 1682 (BR); Yafunga, rive gauche, près d'Isangi, 7 Sept. 1938, *J. L. P. Louis* 11164 (BR, P); environ de Likimi, 24 April 1910, *Malchair* 275 (BR); La Kulu, 4 Feb. 1931, *Vanden Brande* 405 (BR).

HABITAT. Forest.



Fig. 18. *Napoleonaea saopensis*, flowers and leaves, in Liberia (2009 & 2013). A & B Jongkind 12022; C Jongkind 9761; D ????. PHOTOS: CAREL JONGKIND.

CONSERVATION STATUS. Data deficient (DD). The species is known from a large area but has not been recollected for more than 50 years.

PHENOLOGY. Flowering and fruiting at the start of the rainy season.

14. *Napoleonaea talbotii* Baker f. (1913: 32, tab. 4 fig. 1 – 2); Keay (1954: 244); Liben (1971: 369, 370). Type: Nigeria, Oban, anno 1911, *Talbot* 195 (holotype BM).

Napoleonaea megacarpa Baker f. (1913: 31); Keay (1954: 243). Type: Nigeria, Oban, anno 1911, *Talbot* 194 (holotype BM).

Napoleonaea gascoignei Baker f. (1913: 33); Keay (1954: 243). Type: Nigeria, Oban, Sept. 1911, *Talbot* 1223 (holotype BM).

Napoleonaea alexanderi Baker f. (1913: 31). Type: Nigeria, Oban, anno 1911, *Talbot* 997a (holotype BM).

Understorey shrub or tree 2 – 10 m high and up to 15 cm diam. Twigs heavy, c. 3 mm diam., with or without wings, wings often not horizontal. *Leaves* alternate; petiole 3 – 5 mm long; lamina 16 – 38 × 5.5 – 12 cm, coriaceous, above much darker green than below, with 8 – 12 pairs of main laterals; base rounded to acute; apex (long) acuminate. *Inflorescence* cauliflorous but also between the leaves. *Flowers* sessile or almost so, scented. *Calyx* green or whitish. *Corolla* up to 4.5 cm in diam., pinkish and white; coronas white but inner corona with red ring near the base. *Fruit* up to 7 cm wide and 3.5 cm high, blackish- or purplish-brown with pale lenticels. Figs 3N & 19.

DISTRIBUTION. Nigeria to Congo-Brazzaville. Map 11.

SELECTED SPECIMENS EXAMINED. NIGERIA. Stubbs Creek Forest Reserve, 6 April 1971, *P. P. C. van Meer* 1166 (WAG).

CAMEROON. 17 km N of Kribi, 4 March 1969, *Bos* 4046 (WAG); 12 km W of Songbong, 9 March 1965, *Leeuwenberg* 5041 (P, WAG); 22 km S of Kribi, 14 March 1975, *J. J. de Wilde* 8066 (BR, EA, K, MA, MO, P, PRE, WAG, YA); Bipindi, anno 1897, *Zenker* 1567 (BM, P). **GABON.** 41 km de Tchibanga, 3°05.4'S, 10°44.2'E, 20 Oct. 2009, *Bissengou et al.* 380 (LBV, WAG); c. 40 km Mouila to Yeno, 24 Sept. 1986, *Breteler et al.* 8176 (BR, LBV, WAG); Monts de Cristal, 14 km de Kinguélé, 20 Jan. 1968, *Hallé & Villiers* 4620 (P). **CONGO-BRAZZAVILLE.** Mayombe à Goumina, 18 Oct. 1990, *Dousett-Lemaire* 1568 (BR); Kakamoeka, rive gauche du fleuve Kouilou, 11 Oct. 1990, *Lisowski* B 8044 (BR).

HABITAT. Forest understorey.

CONSERVATION STATUS. Least concern (LC). The species is found in a large area which still has a lot of forest and grows partly in protected areas.

PHENOLOGY. No clear pattern, maybe changing from North to South.

NOTE. *Napoleonaea talbotii* shows a lot of geographical variation, but I agree with Liben that it seems impossible to keep *N. talbotii*, *N. megacarpa* and *N. gascoignei* apart as Keay did in the *Flora of West Tropical Africa*. The lobed fruit is not a useful taxonomic character, and the place and number of the flowers and fruits seem to be more individual plant characters and are maybe related to the age of the plant. The shape and size of the calyx is exceptionally variable. It is possible that a better knowledge of the fruits or photos of the flowers will show differences that can be used to recognise different taxa that we can not yet recognise.

15. *Napoleonaea vogelii* Hook. & Planch. (Hooker & Planchon 1848: tab. DCCXCIX-DCCC.); Bentham

(1849: 360, tab. 49 – 50); Keay (1954: 244, fig. 9); Liben (1971: 371 – 375). Type: Liberia, Cap Palmas, *Vogel* 45 (holotype K).

Small tree 4 – 10 m high, up to 18 cm in diam. *Leaves* alternate; petiole 1.5 – 6 mm long; lamina 4 – 13 cm long and 1.5 – 6 cm wide, long-obovate to elliptic, often gradually narrowing to the base, above much darker green than below, with 4 – 7 pairs of main lateral nerves; base acute to almost rounded; apex (long) acuminate. *Inflorescence* cauliflorous but also between the leaves. *Flowers* sessile or almost so. *Corolla* c. 4 cm in diam., red and whitish, from mostly white to mostly red; coronas clearly smaller than corolla, outer corona filaments white often with reddish apex; inner corona white with red ring near base and with red or pinkish tips. *Fruit* 5 cm wide and 4 cm high, brownish-orange to reddish. Figs 3P – T & 20.

DISTRIBUTION. Guinée to Ghana. Map 12.

SELECTED SPECIMENS EXAMINED. SIERRA LEONE. Kemadougou, 15 Jan. 1966, *Adam* 23096 (P, WAG); Kuru Hills, 5 Jan. 1964, *Morton & Gledhill* SL 507 (K, WAG). **GUINÉE.** Simandou Range, 15 Sept. 2008, *van der Burgt* 1308 (K, WAG); Nimba Mts, 7.42.12°N 8.21.48°W, 762 m, 19 Oct. 2012, *Jongkind et al.* 11509 (MO, WAG). **LIBERIA.** NE of Nekebuzu, 8°10.65'N, 9°35.01'W, 405 m, 11 March 2013, *Jongkind et al.* 11886 (BR, K, MO, WAG). **IVORY COAST.** 12.5 km SW of Guitry, 2 Nov. 1975, *Beentje* 1296 (MO, WAG); Tai forest, MAB station, 15 Feb. 1984, *Hepper & Maley* 8262 (K, WAG); Anguedou Forest, 23 Nov. 1975, *de Koning* 6207 (WAG); km 24 road Sassandra – Monogaga, 5 Nov. 1981, *de Kruif* 693 (BR, FHO, IFAN, K, MO, NY, UCJ, WAG). **GHANA.** Bia National Park, 27 Oct. 1976, *Hall & Abbw* GC 46476 (BR, WAG); Atewa Range, 14 Nov. 1995, *Schmidt et al.* 1675 (MO, WAG).

HABITAT. Understorey of closed forest.

CONSERVATION STATUS. Least concern (LC). The species is found in a large area including several forest reserves.

PHENOLOGY. Flowering in the dry season and fruiting in the dry season and early rainy season.

NOTE. This species is here taxonomically much more restricted than by Liben in his revision (1971) and even than by Keay in the *Flora of West Tropical Africa* (1954). Liben's description includes *Napoleonaea vogelii* s.s., *N. leonensis*, *N. beninensis* and *N. angolensis*. Keay's description of *N. vogelii* includes only *N. vogelii* s.s. and *N. beninensis*. Even with this taxonomically much narrower *N. vogelii* I am not sure if it is narrow enough, because the coastal specimens seem to be different from the inland plants. More photos and pickled flowers and fruits are needed to describe the variation of this species in more detail.



Fig. 19. *Napoleonaea talbotii*, leaves. Gabon (2013) after Bidault 1353. PHOTO: EHOARN BIDAULT.

Dubious species

Napoleonaea lutea Baker f. ex Hutch. & Dalziel and *N. reptans* Baker f. ex Hutch. & Dalziel reputedly lianas but doubtful. Both of these reputed species seem close to *N. imperialis* and should maybe be placed there. Manning 1175, collected in 1986 in the South-west Province, of Cameroon, is said to be a liana but it also resembles *N. imperialis*. It seems to be the only possible lianescent *Napoleonaea* specimen collected after the work of Talbot a century ago. There is not enough known of these two doubtful species to speculate about their possible distribution, phenology and conservation status.

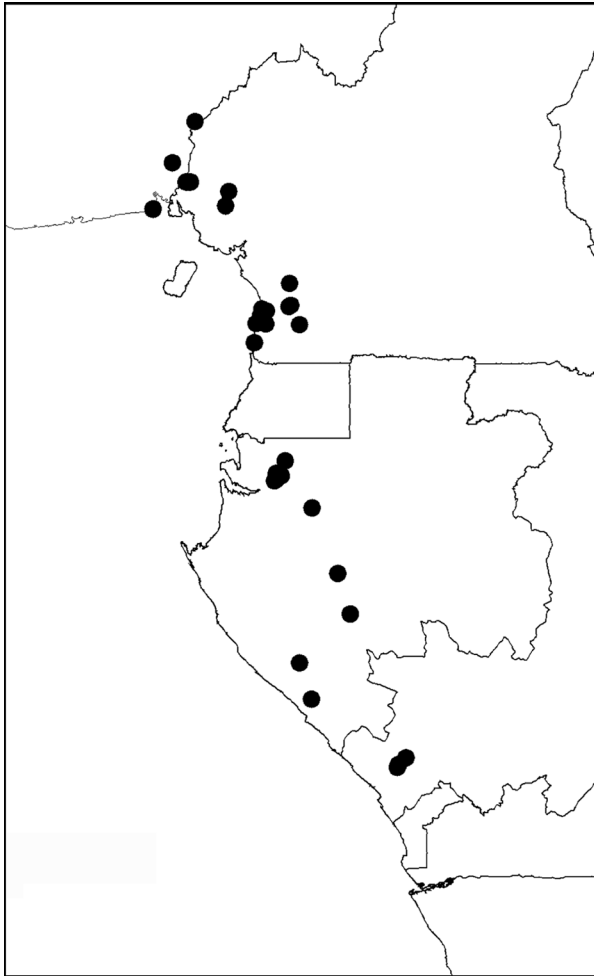
16. *Napoleonaea lutea* Baker f. ex Hutch. & Dalziel (Hutchinson & Dalziel 1927b: 204; 1928: 220); Liben (1971: 379, 380). Type: Nigeria, Eket, anno 1911, Talbot 3173 (holotype BM).

Liana with stems to 20 m long. Leaves alternate; petiole 5 – 6 mm long; lamina obovate-elliptic, coriaceous, obtuse at base, 15 – 20 × 6 – 9 cm, with two glands towards base of acumen. Flowers axillary, solitary. Fruit ramiflorous, depressed subglobose, 5 – 8 cm broad, 5 cm high, pedicel 15 mm long.

NOTE. There is strong evidence that this specimen is indeed a vine. A letter from Mrs Dorothy Talbot to Mr Baker describes their collection number 3173. “Number 3173 is the first *Napoleona* (*stet*) we have ever found growing as a creeper. The longer trails were as much as 60 f. long and we cut off the end of one of them to send to you, so that you might see exactly how it branches. The stems grow out from the ground, and are unbranched up to the height of 7 f. — then throw off 5 – 6 twigs radiating from the central stem, as you will see from the piece sent. These circles occur all along the creeper, but the whorls get further apart towards the base.” This is her comment on flower colour: “The flowers are small. The outer rim of apricot yellow bends upwards in a cup — or rather saucer-shape, and is never split as so many are.”

17. *Napoleonaea reptans* Baker f. ex Hutch. & Dalziel (Hutchinson & Dalziel 1927b: 204; 1928: 220); Liben (1971: 380, 381). Type: Nigeria, Eket, anno 1911, Talbot 3175 (holotype BM).

Scandent shrub or liana. Leaves alternate; petiole 3 – 6 mm long; blade chartaceous, oblong-elliptic, 15 – 20 ×



Map 11. Distribution of *Napoleonaea talbotii*.

5 – 8 cm, rounded at base, apex cuspidate, acumen 10 – 20 mm long, with 2 glands near base. *Inflorescence* dense, fasciculate. *Fruit* not known.

NOTE. Dorothy Talbot's notes on this collection also support its vining habit and read: "3175 was also a creeper, i.e the trails came straight out of the ground — not quite 4 inches in circumference at the base, and then climbed upwards, supporting themselves on neighbouring trees. The longest trail we found was only about 20 feet. It must have lain on the ground if the surrounding tree had been cut away so we thought it would go under the category of creeper."

Its pistil was pale mauve, and the colours pale apricot and white."

3. Subfamily **Scytopetaloidae** (Engl.) O. Appel (1996: 225), ampl.; Morton *et al.* (1997: 530 – 540); Mabberley (2008: 473).

Scytopetalaceae Engl. (Engler 1897: 242 – 245; 1921: 475); Hutchinson & Dalziel (1927a: 237); Keay (1958: 299); Germain (1963: 320 – 331); O. Appel (1996: 207).

Lecythidaceae subfam. Rhaptopetaloidae O. Appel (1996: 225).

Type species: *Scytopetalum* Pierre ex Engl.

Trees or *shrubs*. *Leaves* without stipules, chartaceous to coriaceous, margins entire or serrate. *Inflorescences* axillary or ramiflorous or cauliflorous, panicles, racemes or thyrses. *Flowers* actinomorphic, hypogynous or rarely perigynous; sepals fused; calyx cupuliform, thick, leathery, often persistent on mature fruit; petals lacking and substituted by a pseudocorolla of 6 – 28 fused staminodes forming a showy corolla-like structure; stamens numerous, filaments united at base and adnate to base of pseudocorolla; anthers basifixed, longitudinally or poricidally dehiscent, pollen grains tricolpate or tricolporoidate; ovary syncarpous, 3 – 8-locular, placentation axile; style solitary, undifferentiated or lobed; ovules bitegmic, anatropous, pendulous 2, 4 or many per locule. *Fruits* 1 (– 2) or many-seeded, drupes, loculicidally dehiscent capsules or berry-like. *Seeds* large, endosperm often ruminant; cotyledons large, flat, cordate.

DISTRIBUTION. Six genera, five of which are mainly West African and into the Democratic Republic of the Congo, one species east in Uganda and one, *Asteranthos brasiliensis* Desf. from northern South America.

NOTE. The description of the subfamily does not include the characteristics of the South American genus *Asteranthos*. There is little doubt that *Asteranthos* belongs in this subfamily, see Appel (1996), Morton *et al.* (1998), Tsou (1989, 1994). Appel (2004) elevated Engler's two tribes of the Scytopetalaceae to the rank of subfamily. This grouping makes sense and so these are maintained as tribes within the subfamily recognised here.

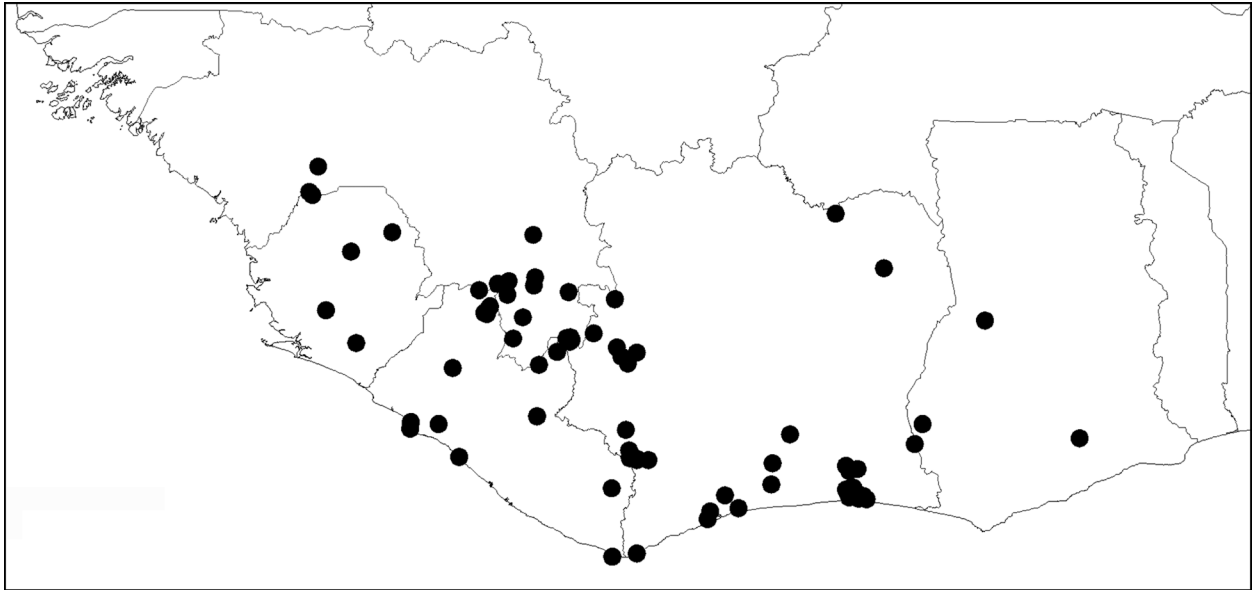
Key to genera of Scytopetaloidae

- 1. Inflorescence or solitary flowers axillary on young branches; number of staminodes evident in buds, their apices curved inwards in bud; anther dehiscence longitudinal; fruits 1-seeded; seeds glabrous. Tribe **Scytopetaleae**. 2
- Inflorescence ramiflorous or cauliflorous; number of staminodes not evident in buds; apices not curved inwards; anthers poricidal; fruits many seeded, seeds pubescent Tribe **Rhaptopetaleae** 3

- 2. Inflorescence paniculate with pubescent axes; carpels 3 – 5; fruits capsular; endosperm not ruminant **5. Oubanguia**
 Inflorescence racemose with glabrous axes; carpels 6 – 8; fruits drupaceous; endosperm ruminant . . . **6. Scytopetalum**
 - 3. Pedicels articulate at summit; filaments shorter than anthers; stigma simple; endosperm ruminant . . . **9. Rhaptopetalum**
 Pedicels not articulate at summit; filaments longer than anthers; stigma lobed; endosperm not ruminant 4
 - 4. Older inflorescences in dense clusters; filaments long, anthers short; fruit globose, rounded at apex. . . **7. Brazzeia**
 Older inflorescences not in dense clusters; filaments and anthers almost equal in length; fruit fusiform, apex pointed **8. Pierrina**
-



Fig. 20. *Napoleonaea vogelii*, flowers. Guinea (2011) after McPherson 21486. PHOTO: EHOARN BIDAULT.



Map 12. Distribution of *Napoleonaea vogelii*.

Tribe: Scytopetaleae stat. nov.

Subfamily Scytopetaloideae O. Appel (1996: 121).

Tribe Oubanguieae Engl. (Engler 1921: 470).

Type species: *Scytopetalum* Pierre ex Engl.

Trees or shrubs. Inflorescences or solitary flowers on youngest branches. Staminodes 6 – 28, distinguishable in bud, apically incurved. Stamens 100 – 240, filaments more than 3 times longer than anthers; anther dehiscence longitudinal, pollen grains tricolpate; ovary 3 – 8-locular, ovules 2 or 4 per locule; placentation axile. Fruit usually 1-seeded, indehiscent except in *Oubanguia*. Seeds glabrous.

5. Oubanguia

5. Oubanguia Baill. (Baillon 1890: 869); Engler (1897: 233); Van Tieghem (1905: 324); Engler (1908: 218; 1921: 471); Letouzey (1961: 108); Germain (1963:

327); Hutchinson (1967: 469); Letouzey (1978a: 151); Appel (2004: 428). Type species: *O. africana* Baill. *Egassea* Pierre ex De Wild. (De Wildeman 1903: 31).

Trees or shrubs, young stems slightly angular or winged. *Leaf* shortly petiolate, symmetric or asymmetric at base, margin entire or serrate, sometimes with minute glands. *Inflorescence* paniculate, 1 – 3 times branched, axillary, terminal or subterminal; flower buds ellipsoidal; *calyx* cupuliform, persistent; pseudocorolla 6 – 12-lobed, pubescent; stamens numerous inserted in whorls; filaments threadlike, anthers longitudinally dehiscent; carpels 3 – 5, superior; ovules 2 per locule. *Fruits* capsular, 1 (– 2) seeded, seeds glabrous; endosperm not ruminant.

DISTRIBUTION. Equatorial Guinea to Central African Republic and Democratic Republic of the Congo.

NOTE. This genus is distinguished from others in the Scytopetaloideae by its axillary or terminal paniculate inflorescence.

Key to species of Oubanguia

1. Young branches winged; leaf lamina 10 – 16 (– 25) × 4 – 8 cm; pseudocorolla lobes 6 – 8; capsule oblong-ovoid **2. O. alata**
1. Young branches not winged, slightly angular; leaf lamina not more than 13 (– 16) × 6.5 cm; pseudocorolla lobes 6 – 12; capsule globose or slightly obovoid 2
 2. Leaf lamina coriaceous; base asymmetric, margin slightly recurved beneath, often denticulate; pseudocorolla lobes 6 – 8; capsule slightly obovoid, 15 – 20 mm diam., midrib plane above **1. O. africana**
 2. Leaf lamina subcoriaceous, base symmetric, margin plane; pseudocorolla lobes 8 – 10; capsule globose, 10 – 12 mm diam., midrib slightly sunken **3. O. laurifolia**

1. *Oubanguia africana* Baill. (Baillon 1890: 869); Engler (1897: 233); Van Tieghem (1905: 325); Engler (1921: 471); Letouzey (1961: 111); Germain 1963: 328); Letouzey (1978a, b: 152). Type: Gabon, Oubangui R., *Thollon* s.n. (holotype P).

Oubanguia denticulata Tiegh. (Van Tieghem 1905: 328). Type: Gabon, Oubangui, May 1889, *Thollon* s.n. (holotype P; isotypes FHO!, K!).

Oubanguia africana Baill. var. *denticulata* (Tiegh.) Letouzey (1961: 112. t. 1, fig. 6).

Oubanguia thollonii Tiegh. (Van Tieghem 1905: 327). Type: Gabon, *Thollon* 32 bis (holotype P; isotypes FHO!, K!).

Egassea laurentii De Wild. (De Wildeman 1908: 310, t. 17). Type: Democratic Republic of Congo, Eala, 1 Aug. 1905, *M. Laurent* 1126 (holotype BR; isotype K!).

Oubanguia laurentii (De Wild.) De Wild. in Durand (1909: 67).

Egassea laurifolia auct non Pierre ex De Wild. (De Wildeman 1903: 32), quoad *Duchesne* 28.

Oubanguia laurifolia auct non (Pierre ex de Wild) Tiegh. (Van Tieghem 1905: 326), De Wildeman (1905: 150); Letouzey (1961: 114).

?*Scytopetalum duchesnei* Engl. (Engler 1902: 101; Letouzey 1961: 113). Type: Democratic Republic of the Congo, *Duchesne* s.n. (holotype P).

?*Oubanguia duchesnei* (Engl.) Tiegh. (Van Tieghem 1905: 328).

ILLUSTRATIONS. Germain (1963: 329, Fig. 30); Letouzey (1961: 110, Plate 1); Letouzey (1978a: 155, Plate 43).

Tree or *shrub* to 10 m tall, rarely to 27 m, young branches angled, not winged, glabrous. *Leaves* with petioles 3 – 5 mm long, flattened on upper surface; lamina lanceolate to oval, rarely elliptic, 8 – 16 × 3.5 – 6.5 cm, but often much smaller (4 × 1.5 cm), long-acuminate at apex, acumen 6 – 20 mm long, base cuneate, asymmetric, margin slightly recurved with minute glands, denticulate; midrib prominulous above, prominent, glabrous beneath; primary veins 6 – 8 pairs, brochidodromous, plane above, prominent beneath. *Inflorescence* of terminal or axillary panicles, 2 – 3-branched, 12 – 15 cm long, puberulous; bracts and bracteoles minute, to 1.5 mm, lanceolate, caducous; pedicels 5 – 6 (– 8) mm long; calyx cupuliform, 3 – 4 mm diam., margin entire or slightly lobed; pseudocorolla 5 – 6 mm in buds, breaking into 6 – 8 segments 6 – 8 mm long; stamens 5 mm long, yellow; ovary ovoid; style 5 mm long. *Capsule* slightly obovoid, 15 – 20 × 10 – 15 mm, covered with a blue to violet indumentum. *Seeds* usually 1 rarely 2, slightly ruminant.

DISTRIBUTION. Nigeria, Cameroon, Gabon, Equatorial Guinea, Congo-Brazzaville and Democratic Republic of the Congo. Map 13A.

SELECTED SPECIMENS EXAMINED. NIGERIA. SE State, 23 miles from Calbar road to Oban, 23 April 1971, *van Meer* 1436 (WAG). **CAMEROON.** Central, 600 m, 9 km E of Makak, 3°33'00"N, 11°07'00"E, 9 June 1987, *Manning* 2013 (K, MO) Southwest, Fako Div, Mabeta/Moliwe, 50 m, 21 April 1992, *Wheatley* 200 (K, WAG). **GABON.** Ogooue-Ivindo, 500 m, 0°34'00"N, 12°52'00"E, 29 July 1981, *Gentry* 33720 (MO, P). **EQUATORIAL GUINEA.** Rio Muni. Okorobiko nr R. Benito, Feb. 1968, *Sabater Pi* s.n. (K). **CONGO-BRAZZAVILLE.** near Brazzaville, mouth of R. Loua, 15 Sept. 1960, *Trochain* 11451 (FHO, K, P, WAG). **DEMOCRATIC REPUBLIC OF THE CONGO.** Equateur Prov., Sikore Territ., Lac Tumba, 14 Oct. 1958, *Thonet* 262 (BR, K); Leopoldville Prov., Inongo Territ., Salenge, beside lake, Oct. 1940, *Flamingi* 6015 (BR, K); Eala, 23 Aug. 1946, *J. Leonard* 356 (BR, FHO, K, P). **HABITAT.** Common along margins of rivers and lakes in inundated forests.

CONSERVATION STATUS. Least concern (LC).

PHENOLOGY. Mainly flowering from April to October and fruiting July until February.

VERNACULAR NAMES. Cameroon & Gabon: *nkwètè*, *nkwèttyè*, (Bakèkè); *mupapambu* (Bavili); *dékimokè* (Béséki); *menyouminsi* (Boulou); *akok*, *ekôm*, *eyô*, *eyôs*, *eyôze*, *kème* (Fang); *mangouri* (Pahouin); *omburwè* (Galoa); *mburwè* (Mpongwè). Democratic Republic of Congo: *bofali*, *bondojo*, *mbole*, *mboyo* (Lonkundu); *mbonzo* (Pama).

NOTE. I follow Letouzey (1978a, b) in placing *Scytopetalum duchesnei* (Engl.) Tiegh. dubiously under this species. The type (*Duchesne* s.n.) is missing and Engler's inadequate description makes this name hard to place. Letouzey also indicated that the *Thollon* types of this species and two of its synonyms are from Gabon near to the River Oubangui, rather than from the Central African Republic.

2. *Oubanguia alata* Baker f. (1913: 15); Keay (1958: 300, t.113); Letouzey (1961: 113); Letouzey (1978a, b: 156). Type: Nigeria, Oban, *Talbot* 1513 (holotype BM!; isotype K, 3 sheets!).

ILLUSTRATIONS. Letouzey (1978a, b: 157, Plate 44, 4 – 8).

Tree to 20 m tall, stem often fluted and irregular, young branches winged, glabrous. *Leaves* with short petioles 1 – 2 mm long; lamina elliptic to oblong-elliptic, chartaceous, glabrous on both surfaces, 10 – 16 (– 25) × 4 – 8 cm, acuminate at apex, the acumen 12 – 20 (– 30) mm long; cuneate at base, margins crenulate-undulate; midrib prominulous above, prominent, glabrous beneath; primary veins 6 – 9 pairs, brochidodromous, arching and anastomosing 4 – 5 mm from margin, slightly sunken above, prominent

beneath. *Inflorescence* of terminal panicles, 10 – 15 cm long, 1 – 3 times branched, grey-puberulous; bracts and bracteoles small, to 1.5 mm, oval, persistent; pedicels 8 – 10 mm long, puberulous; *calyx* cupuliform, 5 mm diam., margin slightly dentate; pseudocorolla splitting into 6 – 8 irregular lobes, 8 – 10 mm tall, rose on interior, white on exterior; *stamens* numerous, anthers 1 mm long, yellow; ovary 4-locular. *Capsule* oblong-ovoid, c. 7 × 12 mm, bright blue- mauve coloured. *Seed* 1.

DISTRIBUTION. Nigeria, Cameroon, Gabon. Map 13B.

SELECTED SPECIMENS EXAMINED. NIGERIA. Calbar Prov., Oban Distr., N of Aningeje towards Oba, 11 March 1955, *Onochie* FHI 34801 (K, P). **CAMEROON.** Southwest, 250 m, 5°25'00"N, 9°04'00"E, 30 May 1988, *Thomas* 6708 (K, MO, WAG); Korup NP, P plot, 5°02'N, 8°48'E, 60 m, 20 Feb. 1987, *van der Burgt* 673 (K, P, WAG); NE of Besingi, 60 m, 4°55'28"N, 8°55'01"E, 27 Feb. 2008, *Pearce* 14 (K, WAG). **GABON.** Ezanga, 30 km S of Lambaréné, 9 March 1953, *Bernard & Corbet* SRF 1056 (P).

HABITAT. Rainforest on sandy soil.

CONSERVATION STATUS. Least concern (LC). The collection *Gartan* 3 notes that this is the commonest species in Korup Reserve, and there are many other collections from there to back this up.

PHENOLOGY. Flowering February to December, collected in fruit May to November.

VERNACULAR NAME. *mbang* (fang).

NOTE. The striking blue colour of the fruit even in dried specimens is notable.

3. *Oubanguia laurifolia* (*Pierre ex De Wild.*) *Tiegh.* (Van Tieghem April 1905: 327); *Engler* (1908: 218); *Chevalier* (1917: 84); *Engler* (1921: 471); *Pellegrin* (1924: 61); *Keay* (1958: 300); *Letouzey* (1961: 114); *Letouzey* (1978a: 159).

Egassea laurifolia *Pierre ex De Wild.* (De Wildeman 1903: 31, t. 17). Type: Gabon, 1903, *Klaine* 1925 (lectotype P, selected by *Letouzey* (1961)).

Oubanguia laurifolia (*Pierre ex De Wild.*) *De Wild.* (De Wildeman Oct. 1905: 150).

Oubanguia klainei *Tiegh.* (Van Tieghem 1905: 328, t. 1); *Letouzey* (1961: 114). Type: Gabon, Libreville, Oct. 1904, *Klaine* 3511 (holotype P).

Oubanguia ledermannii *Engl.* (*Engler* 1909: 373). Type: Cameroon, Nkolebunda, near Kribi, Oct. 1908, *Ledermann* 819 (holotype B lost).

ILLUSTRATIONS. *Letouzey* (1978a, b, Plate 44, 1 – 3).

Small *tree* to 15 m tall, young branches slightly angular but not winged, glabrous. *Leaves* with petioles 2 – 5 mm long; lamina elliptic to oblong-elliptic, subcoriaceous, 5 – 13 × 2.5 – 6 cm, caudate acuminate at apex, the acumen

to 18 mm long, cuneate at base, usually symmetric; margins slightly crenulate-undulate; midrib prominent and glabrous on both surfaces; primary veins 6 – 8 pairs, brochidodromous, arching and anastomosing 4 – 5 mm from margin, plane or slightly sunken above, prominent beneath. *Inflorescence* of terminal and axillary panicles, 5 – 10 cm long, once or twice branched, branches angular, puberulous; bracts and bracteoles minute, caducous; pedicels 8 – 10 mm long; *calyx* patelliform-cupuliform, 3 mm diam., margin sparsely denticulate; pseudocorolla splitting into 8 – 12 lobes, 6 – 8 mm tall. *Capsule* globose, 1.5 cm diam., 3 – 4 valves. *Seed* spherical, 12 mm diam.

DISTRIBUTION. Nigeria, Cameroon, Gabon, Congo-Brazzaville. Map 13C.

SELECTED SPECIMENS EXAMINED. NIGERIA. Calabar, Oban, *Talbot* 1693 (BM, K). **CAMEROON.** Younou, Ndougou, near Ocounza, 25 km NNE of Mouila, *Le Testu* 2144 (BM, FHO, P). **GABON.** Ngounie, 500 m, 1°42'00"S 11°23'00"E, 20 July 1986, *Thomas & Wilks* 6531 (MO); Lastourville, 1929 – 1931, *Le Testu* 7444 (BM, K, P); Cantier Oveng, 25 km W of Mintsic, 0°44'N 11°22'E, 9 Nov. 1986, *Reitsma* 2570 (NY, WAG); Omebourrou, L'Ouinbo, affl. Ogooué, 26 July 1912, *Fleury* in *Chevalier* 26530 (FHO, P). **CONGO-BRAZZAVILLE.** 20 km N of Loundji, 23 March 1969, *Attins* 113 (P); Kouilo, Kakamoeka, 10 Feb. 1990, *Lisowski* B-7079 (P).

HABITAT. This species occurs on terra firma; it is close to *Oubanguia africana* which is confined to wetter inundated habitats.

CONSERVATION STATUS. Near threatened (NT) as there are few recent collections.

PHENOLOGY. No data.

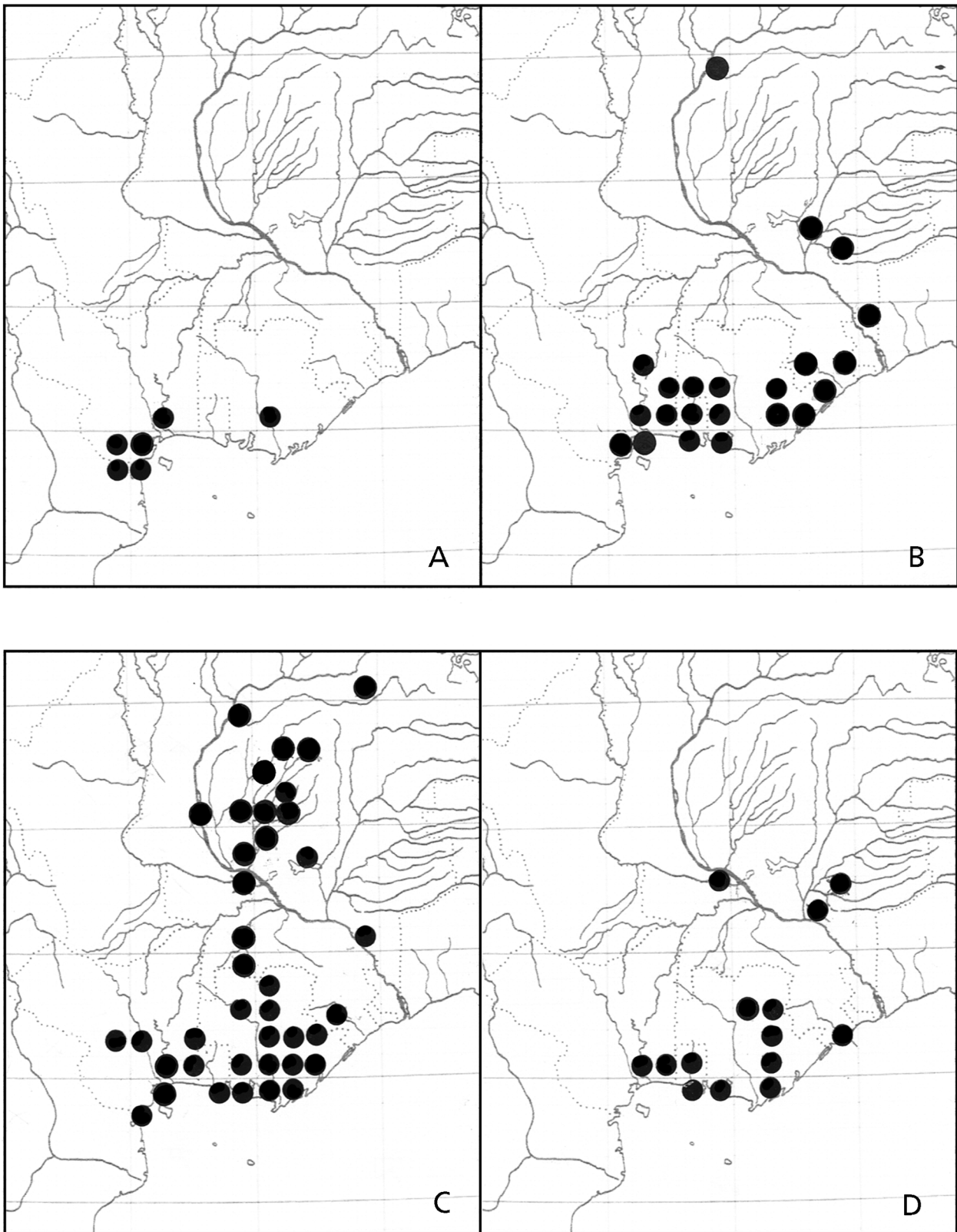
VERNACULAR NAMES. *menyiminsi* (Éwondo); *akok*, *nkonengui* (Fang); *ombourroué* (Galoa); *amebourrou* (Pahouin).

NOTE. *Letouzey* (1978) tentatively placed *Oubanguia ledermannii* *Engl.* into synonymy under this species. The type (*Ledermann* 819) is missing and *Engler's* description is inadequate. *Letouzey* also indicated that there was much confusion about the numbers of the *Klaine* collections and presented reasons for choosing *Klaine* 1925 over the mixed collection *Klaine* 2042. This species is close to *O. africana* which is confined to wetter inundated habitats.

6. *Scytopetalum*

Scytopetalum *Pierre ex Engl.* (*Engler* 1897: 244); *Engler* (1908: 218); *Germain* (1963: 326); *Hutchinson* (1967: 470); *Letouzey* (1978: 178); *Appel* 2004: 429). Type species: *S. klaineanum* *Pierre ex Engl.*

Trees or *shrubs*, young branches cylindrical or slightly angular, glabrous. *Leaf* with short petiole, flattened beneath, symmetric or asymmetric, margin entire.



Map 13. Distribution of: A *Oubanguia africana*; B *O. alata*; C *O. laurifolia*; D *Brazzaea soyauxii*.

Inflorescence racemose, axillary, glabrous; pseudocorolla 12 – 16 (– 20)-lobed, glabrous; *stamens* numerous inserted in 3 – 5 whorls; anthers longitudinally

dehiscent; carpels 6 – 8, superior; ovules 2 per locule. *Fruits* drupaceous 1 seeded, seeds glabrous; endosperm ruminant.

Key to species of *Scytopetalum*

1. Leaves elliptic, apex abruptly caudate-acuminate, base rounded to subcuneate; pedicels 8 – 22 mm 2
Leaves oblong-elliptic, gradually tapering to apex, base cuneate 3
2. Leaves thickly coriaceous. 5.5 – 14 × 3 – 6 cm 2. **S. klaineianum**
Leaves chartaceous, 4 – 8 × 2.5 – 4 cm 1. **S. kamerunianum**
3. Pedicels 8 mm long, round, leaf apex often curved, riverine 3. **S. pierreanum**
Pedicels 3 mm long, flattened, leaf apex straight, upland 4. **S. tieghemii**

1. *Scytopetalum kamerunianum* Engl. (Engler 1909: 373). Type: Cameroon, Bipindi, *Zenker* 2707 (holotype B, lost; lectotype K!; isotypes BR, P).

Scytopetalum klaineianum var. *kamerunianum* (Engl.) Letouzey (1961: 120).

Tree to 20 m tall, young branches glabrous, cylindrical. *Leaves* with petioles 2 – 3 mm long, flattened; lamina oblong to elliptic, chartaceous, 4 – 8 × 2.5 – 4 cm, abruptly caudate at apex, acumen 5 – 15 mm, subcuneate and asymmetric at base, margins entire slightly undulate; midrib plane above, prominent beneath, glabrous; primary veins 5 – 7 pairs, plane above, prominulous beneath, inconspicuous on both surfaces, brochidodromous. *Inflorescence* terminal and axillary racemes, glabrous, to 3 cm long, bearing 1 – 5 flowers; pedicels 7 – 10 mm long; *calyx* patelliform, 1 – 2 mm high, margins entire to slightly crenulate; pseudocorolla splitting into many segments (c. 20); stamens 40 – 50, in 3 whorls; ovary ovoid, 6 – 7-locular with 2 ovules per locule. *Fruit* ovoid, tapering towards apex with a small beak from style remaining, longitudinally ridged, 18 – 20 mm long, 1 cm broad.

DISTRIBUTION. Cameroon, Gabon, Cabinda and Congo-Brazzaville. Map 14C.

SPECIMENS EXAMINED. CAMEROON. 40 km NW of Eséka, W of Yaoundé, 12 Dec. 1963, *de Wilde & de Wilde-Duyffes* 1431 (K, P, WAG); Bipinde, 1906, *Zenker* 2707 (BM, K, P); SW Prov. Mt Cameroon, Thump Mt, 4°20'N, 8°57'E, 200 m, 9 Nov. 1993, *Thomas* 9861 (K); Korup NP, NW plot near transect P, 100 m, 5°01'N, 8°47'E, *Van der Burgt* 759 (K, P, WAG). **GABON.** 5 – 10 km E of Saint Germain, E of R Okano, 11°38'E, 0°38'N, 450 m, 20 April 1988, *Breteler et al.* 8857 (K, P); Ogooue-Ivindo, Res. de la Lopé, S of Ayen, 200 m, 0°25'S 11°38'E, 20 March 1989, *McPherson* 13779 (K, MO, NY, P), same loc. and date, *McPherson* 13782 (K, MO, NY, P). **CONGO-BRAZZAVILLE.** Kakamoeka-Sounda road, 1 Feb. 1966, *Farron* 4933 (K, P, WAG). **CABINDA.** (Maiomhe): Chilungo, 1919, *Gossweiler* 7560 (BM, K). **HABITAT.** Rainforest and secondary forest.

CONSERVATION STATUS. Least concern (LC) widespread and several recent collections made in reserves.

PHENOLOGY. Collected in flower and fruit in March and April.

NOTE. This species was placed in synonymy under *Scytopetalum klaineianum* by Letouzey (1978), but is quite distinct in its smaller thinner leaves. I have listed in detail all the specimens that I have studied.

2. *Scytopetalum klaineianum* Pierre ex Engl. (Engler 1897: 244; 1908: 218); van Tieghem (1905: 341); Engler (1910, t. 601); Chevalier (1917: 471); Letouzey (1961: 116); Letouzey (1978: 187). Type: Gabon, vicinity of Libreville, 1896, *Klaine* 446 (holotype P; isotype K!).

Scytopetalum klaineianum Pierre, Herb. L. Pierre 1896 nomen.

Scytopetalum brevipes Pierre ex Tiegh. (Van Tieghem 1905: 343). Type: Gabon, Libreville, *Klaine* 1324 (holotype P; isotypes K!, NY!).

Scytopetalum latifolium Tiegh. (Van Tieghem 1905: 343). Type: Gabon, *Klaine* 446 (holotype P).

ILLUSTRATIONS. Engler (1910: 702, fig. 601; 1921: 472, fig. 218); Letouzey (1961: 118, Plate 2); Letouzey (1978a, 1978b: 189, fig. 55).

Tree to 40 m tall, young branches subcylindrical, glabrous. *Leaves* with short petioles to 2 (– 5) mm long, flattened; lamina elliptic to oval, rarely obovate or oblong-elliptic, coriaceous, 5.5 – 14 × 3 – 6 cm, abruptly acuminate at apex, the acumen 6 – 15 mm long, rounded and symmetric at base, margins entire slightly undulate; midrib prominulous above, prominent, glabrous beneath; primary veins 6 – 8 pairs, plane above, prominulous beneath, brochidodromous. *Inflorescence* of terminal and axillary racemes, the rachis not angled, glabrous, to 5 cm long, bearing 1 – 5 flowers; pedicels 8 – 22 mm long, longer in fruit; *calyx* patelliform, 4 mm diam., entire or denticulate; pseudocorolla splitting into 12 – 16 segments 8 – 10 mm long; stamens c. 50, in 3 – 5 whorls; disc papillose;

ovary subglobose, 3 – 4 mm tall; style 1.5 – 2 mm long. *Capsule* with pedicel to 35 mm long, 20 – 30 × 10 – 15 mm, pointed, faintly ribbed endocarp dehiscent towards apex by 6 – 9 valves.

DISTRIBUTION. Cameroon, Gabon and Equatorial Guinea, Congo-Brazzaville. Map 15.

SELECTED SPECIMENS EXAMINED. CAMEROON. SW Prov.: Korup, 5°01'N, 8°48'E, 100 m, 27 Jan. 2004, *van der Burgt* 652 (K, P, WAG); Buea-Douala, S Korup Reserve, 4°55'N, 8°50'E, 50 m, 6 – 16 July 1983, *Thomas* 2251 (K, MO). **GABON.** Oveng, Forest Exploitation Camp, 0°42'N, 11°23'E, 9 Nov. 1983, *A. M. Louis et al.* 532 (K, P); 50 km SW of Doussala, 2°56'S, 10°35'E, 17 Oct. 1985, *Reitsma* 1636 (NY, WAG). **SÃO TOMÉ & PRINCEPE.** Vila Clothilde, 11 Sept. 1978, *Groendijk* 27 (WAG); Porto Allégre, 1905, *Chevalier* 15860 (BM, FHO, K, P, WAG). **EQUATORIAL GUINEA.** Bata-Bome, 3 May 1991, *Carvalho* 4699 (WAG), **CONGO-BRAZZAVILLE.** Dongou, 27 Jan. 1966, *Bouquet* 2076 (FHO, P).

HABITAT. Mainly lowland rainforest and on high river banks on well drained soil.

CONSERVATION STATUS. Near threatened (NT).

PHENOLOGY. Little data but flowering in January.

VERNACULAR NAMES. *longa* (Apindji); *isèsègu* (Banzabi); *ivisi ibônga*, *ndunga* (Bapunu); *musafu*, *ngôndu* (Bapanu, Bavarama, Bavungu, Éshira); *mutusèsègu* (Bavili); *osago a ngôndó* (Bavoré, Mitsogo); *ndounga* (Bayaka); *mafun bantschu* (Bipindi); *gouboula* (Echira); *odzékouna*, *odzakouna*, *odzikouna*, *ósimkuna* (Fang, Pahouin); *ongotsingo* (Galoa); *guelélé*, *viro preto* (Sao Tomé).

NOTE. The names *Scytopetalum brevipes* and *S. latifolium* were based on the characters of diseased fruit that commonly occur in this species. This is discussed in Letouzey (1961: 117 & 1978a, b: 190).

3. *Scytopetalum pierreanum* (De Wild.) Tiegh. (Van Tieghem 1905: 343); Engler (1908: 218; 1921: 471); Germain (1963: 326); Letouzey (1961: 120; 1978a: 191, t. 56).

Egassea pierreana De Wild. (De Wildeman 1903: 32, t. 18).

Type: Democratic Republic of the Congo, Wangata, Jan. 1896, *Devèvre* 666 (holotype BR; isotype P).

Oubanguia pierriana (De Wild.) De Wild. (De Wildeman 1905: 150).

ILLUSTRATIONS. Letouzey (1978a, b: 193, Fig. 56).

Tree 3 – 30 m tall, young branches subcylindrical, glabrous. *Leaves* with petioles 1 – 2 (– 3) mm long, flattened beneath; lamina oval, 7 × 4 cm or oblong-elliptic, 5 – 8 × 2 – 3.5 cm, subcoriaceous, acuminate at apex, the acumen gradually tapering to 10 mm long, sometimes curved, cuneate and asymmetric at base;

margins entire, often wrinkled and undulate when dry; primary veins 4 – 6 pairs, brochidodromous, inconspicuous on both surfaces. *Inflorescence* of terminal and axillary racemes, the rachis 5 – 6 cm long, bearing up to 10 flowers; pedicels to 8 mm long in flower to 12 mm on fruit; *calyx* patelliform 2.5 – 3 mm long, denticulate; pseudocorolla 6 – 8 mm tall, breaking into 10 – 16 lobes; stamens yellow; ovary 3 mm high; style 3 mm long. *Fruit* a drupe, ovoid, rounded at base, pointed at apex 10 × 18 – 20 mm; mesocarp thin, endocarp thin, opening by valves; seeds 7 × 10 mm.

DISTRIBUTION. Cameroon, Gabon, Congo-Brazzaville, Democratic Republic of the Congo. Map 15.

SELECTED SPECIMENS EXAMINED. CAMEROON. E Prov. W bank of Sangha R. 2°21'N, 16°09'E, 350 m, 4 Feb. 1989, *Harris & Fay* 1772 (BR, K, WAG). **GABON.** Oveng Forest Expl. Camp, 0°42'N 11°23'E, 9 Nov. 1983, *A. M. Louis et al.* 532 (K, P, WAG); 20 km N of Libreville, 0°35'N, 9°22'E, 11 March 1887, *Reitsma* 3160 (NY).

CONGO-BRAZZAVILLE. Impfondo, 25 Feb. 1963, *de Nere* 1041 (P); Kakamoeka, 4°07'S, 12°04'E, 6 June 1966, *Sita* 1337 (FHO, P). **DEMOCRATIC REPUBLIC OF THE CONGO.** Orientale Prov., Ango Territ, Api, 30 Dec. 1925, *Robyns* 1307 (K, WAG); Equateur Prov., Ingende, Ruki R., 22 Sept. 1925, *Robyns* 667 (K); Léopoldville Prov., Kasangulu, Kalina, 3 Aug. 1947, *Jans* 559 (BR, K).

HABITAT. Riverine gallery forest.

CONSERVATION STATUS. Least concern (LC), a widespread and common species.

PHENOLOGY. Collected in flower February, March and October and in fruit March and August to November.

VERNACULAR NAMES. Democratic Republic of Congo: *bonkombe* (Lokundu); *bosombo bo libande*, *inaolo a bosombo*, *imbea* (Turumbu); *libenge* (Zande); *lingindzi* (Furu); *mbayo* (Lingala); *mboyo* (Lokundu); *sanga* (Azakala).

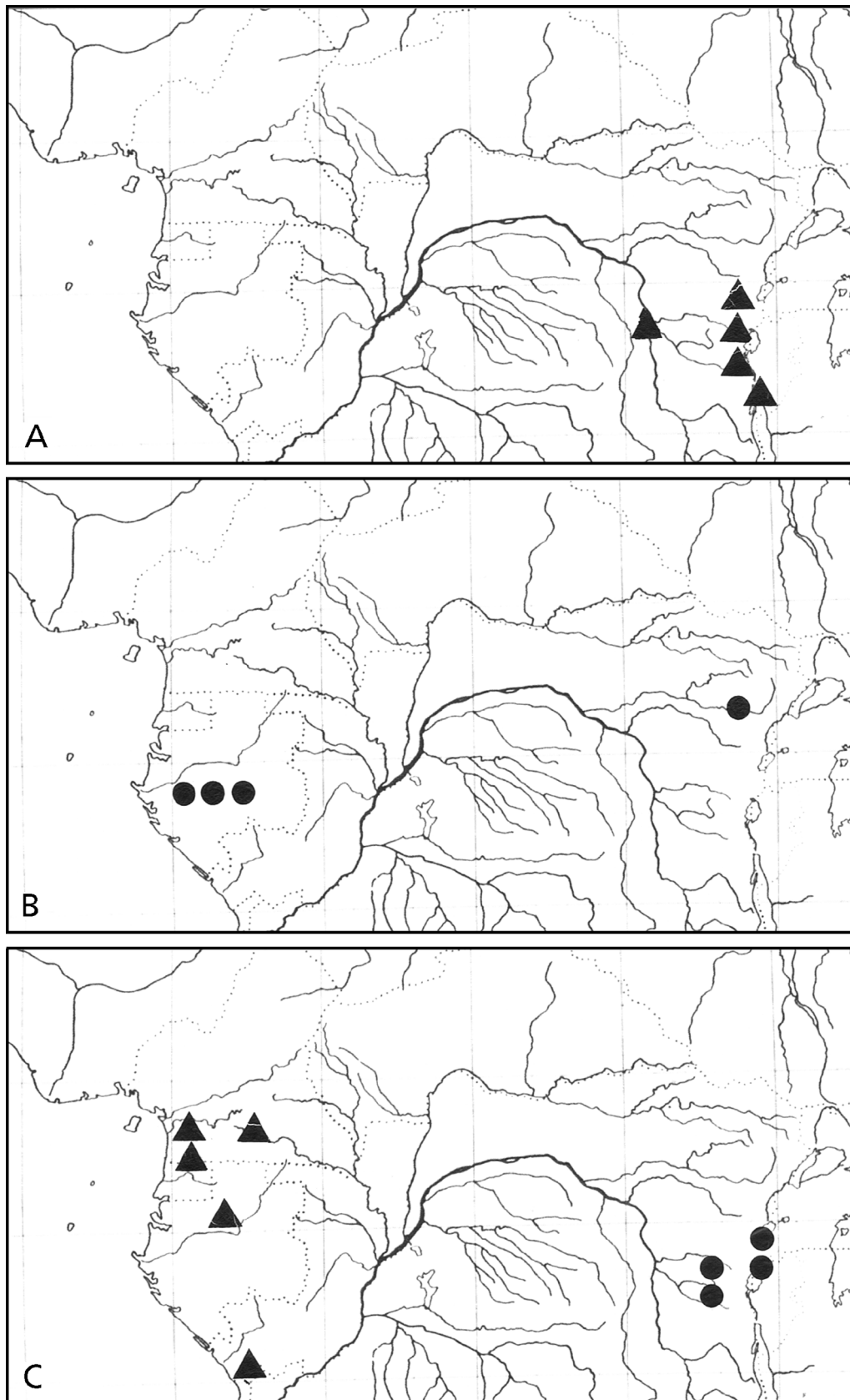
4. *Scytopetalum tieghemii* (A. Chev.) Hutch. & Dalziel (Hutchinson & Dalziel 1927a: 238; 1928: 228); Keay (1958: 300); Letouzey (1961: 121).

Rhaptopetalum tieghemii A. Chev. (1909b: 220). Type:

Ivory Coast, Malamalesso, Comoé, 9 March 1907, *Chevalier* 16252 (lectotype P, selected by Hutchinson & Dalziel (1928); isotypes FHO!, K!).

Scytopetalum tarquense Chipp (1913: 14), nomen nud. (*Chipp* 209, BM!, K!).

Large *tree* to 40 m tall, with small buttresses, branchlets weeping, glabrous. *Leaves* with petioles 1 – 3 mm long; lamina oblong-elliptic, 4.5 – 12 × 2 – 4 cm, chartaceous, apex tapering gradually to a long thin acumen to 2.5 cm long, often curved; acutely cuneate at base; margins entire, wavy; midrib plane above, prominent, glabrous beneath; primary veins 4 – 6 pairs, plane and inconspicuous above, plane or slightly



Map 14. Distribution of A *Rhapsopetalum roseum*; B *Crateranthus congolensis*; C *Scytropetalum kamerunianum* ▲; *Brazzeia longipedicellata* ●.

prominulous beneath, brochidodromous; plane above, plane to prominulous beneath. *Inflorescence* of short axillary racemes, glabrous; flowers white to pale pink, scented; pedicels c. 3 mm long, flattened and twisted; pseudocorolla 5 – 6 mm long, breaking into 5 – 7 lobes. *Fruit* a drupe, ovoid to pyriform, red when ripe, 1.6 – 2 cm long, acute at apex, longitudinally ribbed, fruiting pedicel 3 – 8 mm long.

DISTRIBUTION. Sierra Leone, Liberia, Ivory Coast, Ghana. Map 15.

SELECTED SPECIMENS EXAMINED. SIERRA LEONE. Njala, 19 March 1946, *Deighton* 4283 (K, P); Bumbuna Dam to Kabatu, 9°07'N, 11°42'W, 188 m, 24 March 2006, *Hawthorne et al.* 206a672 (FHO). **LIBERIA.** R. Dukwia, 26 Feb. 1929, *Cooper* 247 (BM, FHO, K, NY); Mano road, NW of Bomi Hills, 21 July 1966, *Bos* 2080 (K, WAG). **IVORY COAST.** 42 km WNW of Sassandra, 50 m, 16 April 1959, *Leeuwenberg* 7991 (K, P, WAG); 30 km SE of Yakassé Mé, 5°44'N, 3°45'W, 25 April 1974, *Breteler* 7456 (FHO, WAG). **GHANA.** Simpa near Tarkwa, 24 June 1973, *Enti FE* 1239 (K); near Simpa, July 1934, *Kinloch* 63 (FHO).

HABITAT. Dense rainforest and rarely in secondary forest.

CONSERVATION STATUS. Least concern (LC). Noted as common on several collections.

PHENOLOGY. Flowering January to May, fruiting June to August.

VERNACULAR NAMES. Sierra Leone: *abambarimi* (T), *maguenbui* (M), *degbeme-wali* or *dengbemi-wali* (Mendi); Liberia: *dueke* (Kono), *zabblo*, *zeb-blo*, *ka-bibia* (Port Loko Temne); Ghana: *anene* (Nzima), *aprim*, *efrim*, *penim* (W).

USES. Inner bark used for gassy stomach; wood used for native houses.

Tribe **Rhaptopetaleae** *Engl.* (Engler 1921: 470).

Subfamily Rhaptopetaloideae O. Appel (1996: 225).

Type species: *Rhaptopetalum* Oliv.

Inflorescences ramiflorous or cauliflorous. *Flowers* with the staminodes completely fused into a thick leathery pseudocorolla, their number not distinguishable in bud, not curved inwards at apex. *Stamens* 60 – 100; anthers poricidally dehiscent, pollen grains tricolporoidate; ovules many per locule. *Fruits* many-seeded; seeds pubescent on testal bundles.

7. *Brazzeia*

***Brazzeia* Baill.** (Baillon 1886: 609); Van Tieghem (1905: 352); Engler (1908: 218; 1921: 471); Letouzey (1961: 129); Germain (1963: 321); Hutchinson (1967: 470); Verdcourt (1968: 1); Letouzey (1978: 141); Appel (2004: 429). Type species: *Brazzeia congoensis* Baill.

Trees, young branches glabrous or puberulous, not winged. *Leaf* with short petiole, margin entire or serrate. *Inflorescence* cauliflorous or ramiflorous, densely clustered or single flowers; *calyx* patelliform or cupuliform; pseudocorolla with 3 – 5 lobes; stamens numerous, inserted in 4 whorls, anthers opening by apical pores; filaments longer than anthers; carpels (5 –) 6 (– 7), superior, numerous ovules per locule. *Fruits* globose, rounded at apex, many-seeded, seeds pubescent.

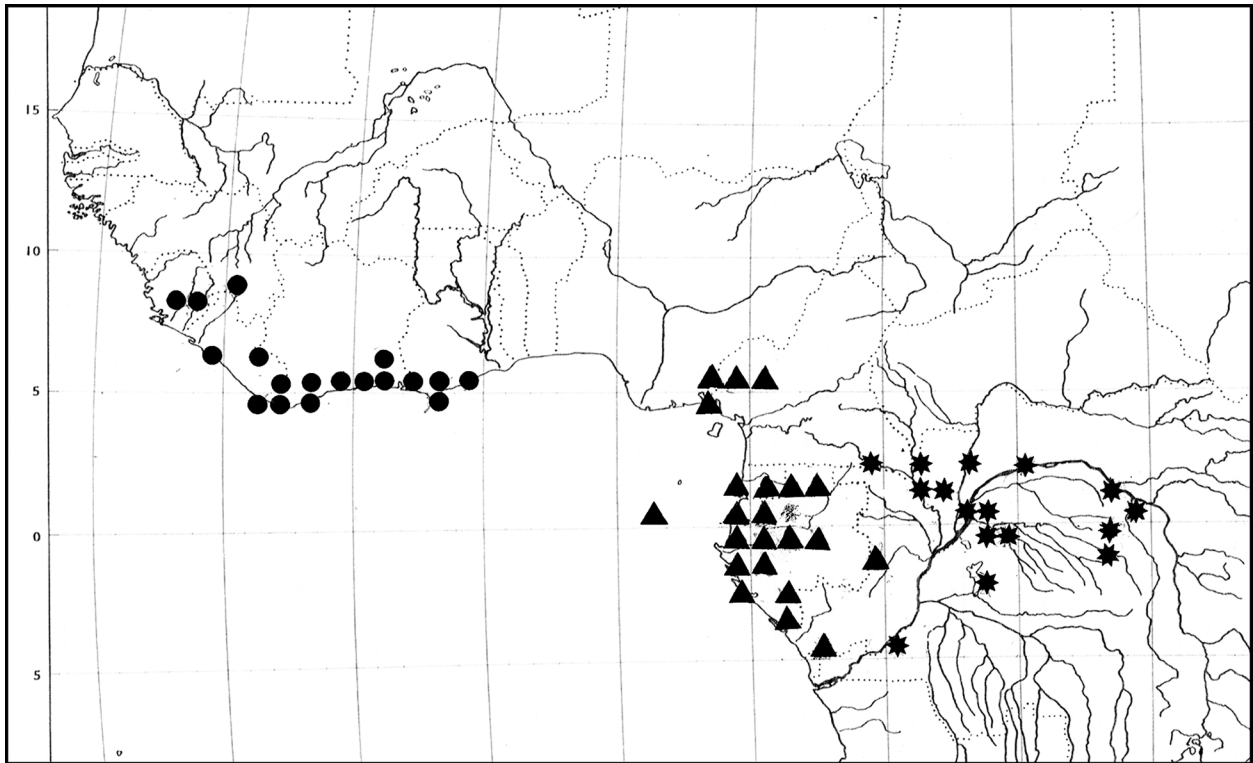
DISTRIBUTION. 2 species in Cameroon to Democratic Republic of the Congo and one species in Uganda and adjacent Democratic Republic of the Congo.

Key to species of *Brazzeia*

1. Pedicels 40 mm long; calyx 6 – 10 mm diam.; pseudocorolla white. **2. *B. longipedicellata***
Pedicels 6 – 15 mm long; calyx 12 mm diam.; pseudocorolla rose to purple. 2
2. Young branches glabrous; lamina coriaceous, apex broadly acuminate; primary leaf veins 3 – 4; style 2 – 3 times longer than ovary; fruit pedicel 7 – 15 mm long. **1. *B. congoensis***
Young branches puberulous; lamina chartaceous, apex narrowly acuminate; primary leaf veins 5 – 6; style equalling ovary in length; fruit pedicel 7 – 15 mm long. **3. *B. soyauxii***

1. *Brazzeia congoensis* Baill. (Baillon 1886: 609); Engler (1908: 218); Chevalier (1917: 83); Engler (1921: 473); Letouzey (1961: 130); Germain (1963: 322); Letouzey (1978a, b: 143). Type: Congo-Brazzaville, Brazzaville: *Thollon* 604 (holotype P, flowers only, not leaves). *Rhaptopetalum eetveldeanum* De Wild. & T. Durand (De Wildeman & Durand 1899: 121; 1900: 8); De Wildeman (1907: 42; 1908: 309); Durand (1909: 67). Type: Democratic Republic of the Congo,

Benakamba, Nov. 1896, *Dewèvre* s.n. (holotype BR, photo, K; isotype P). *Erythropyxis eetveldeana* (De Wild. & T. Durand) Engl. (Engler 1902: 103). *Brazzeia eetveldeana* (De Wild. & T. Durand) Tiegh. (Van Tieghem 1905: 357). *Brazzeia thollonii* Baill. (Baillon 1890: 868). Type: Central African Republic, Oubangui, May 1889, *Thollon* 97 (holotype P).



Map 15. Distribution of *Scytopetalum klaineianum* ▲; *S. pierranum* ★; *S. tieghemii* ●.

Rhaptopetalum thollonii (Baill.) Tiegh. (Van Tieghem 1905: 372); Gürke (1913: 556).

Pseudobrazzeia thollonii (Baill.) Engl. (Engler 1921: 473).
Rhaptopetalum brachyantherum Tiegh. (Van Tieghem 1905: 373). Type: Congo-Brazzaville, *Thollon* s.n. (holotype P)

ILLUSTRATIONS. Letouzey (1961: 129, Fig. 5; 1978a, b: 145, Fig. 42).

Shrub or small *tree* to 15 m tall, young branches glabrous, angled. *Leaves* shortly thick-petiolate; lamina oval-elliptic to lanceolate, coriaceous, 5–9 × 2.5–4.5 cm, glabrous, finely acuminate at apex, the acumen 7–10 mm long, cuneate at base, asymmetric, margins entire or slightly undulate; midrib plane to slightly impressed above, prominent and glabrous beneath; primary veins 5–6 pairs, plane above, prominent beneath, brochidodromous. *Inflorescence* of cauline few to many-flowered fascicles. *Flower* buds globose, pointed at apex; pedicel 7–14 mm long, glabrous; *calyx* patelliform, entire or slightly lobed; pseudocorolla splitting into 3–5 lobes, 14 mm long, reflexed at anthesis; stamens numerous, inserted in 4 whorls, anthers oblong, 2 mm long; ovary globose, 4–7 locular; style 2–3 times longer than ovary; stigma 5-lobed, capitate. *Fruit* comprised of capsules borne on pedicel 7–15 mm long, globose, 1.5–2.5 cm diam., red when mature opening by 5–6 valves. *Seeds* 10–20, ovoid 15 mm long, 12 mm broad.

DISTRIBUTION. Cameroon to Democratic Republic of the Congo. Map 16D.

SELECTED SPECIMENS EXAMINED. CAMEROON. R. Sanaga, Ebaka, 60 km NW of Bertoua, 600 m, 24 May 1961, *Breteler* 1425 (K, P, WAG); R. Kadéi, 5 km W of Batouri, 18 June 1965, *Leeuwenberg* 5953 (K). **GABON.** Woleu-Ntem, Mbe Nat. Park, Monts de Cristal, 200 m, 0.47°N, 10.28°E, *SIMAB* 41614 (MO). **CENTRAL AFRICAN REPUBLIC.** Ndakan Gorilla study area, 350 m, 1 June 1988, *Harris & Fay* 823 (K, MO). **CONGO-BRAZZAVILLE.** Impfondo, 1°38'N, 18°04'E, 20 Feb. 1988, *Foresta* 1576 (P); Mbandza, Lekoli, 16 Jan. 1995, *Champluvier* 5275 (P, WAG).

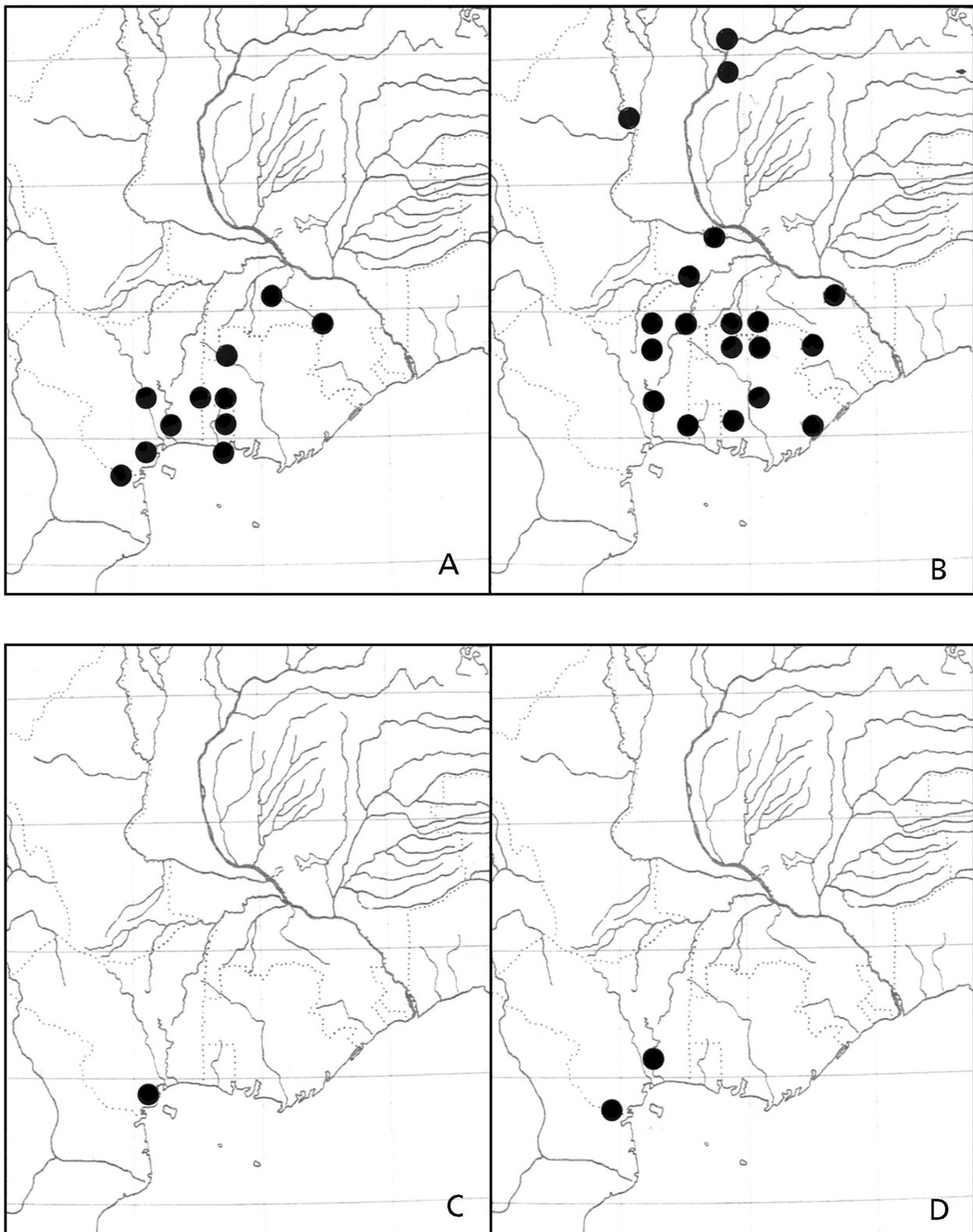
DEMOCRATIC REPUBLIC OF THE CONGO. Orientale: near Kisangani, 0.41°N, 25.12°E, 9 Oct. 1971, *de Wit* 3318 (WAG); Yangambi, 470 m, 22 April 1939, *J. Louis* 14625 (BR, FHO); Prov. Léopoldville, Thysville Terr., Gombe Matadi, 18 March 1960, *Compère* 1751 (BR, K).

HABITAT. Riverine gallery forest, common.

CONSERVATION STATUS. Least concern (LC), widespread and common.

PHENOLOGY. Flowering March and April, fruiting March to July.

VERNACULAR NAMES. Democratic Republic of the Congo: *Bosengomandoro* (Zande); *Eludjemba* (Babua); *Etutu*, *Inaolo a etutu* (Turumbu); *Ndenge* (Ngwaka).



Map 16. Distribution of A *Rhapsopetalum geophylax*; B *R. pachyphyllum*; C *R. sessilifolium*; D *Brazzaea congoensis*.

2. *Brazzaea longipedicellata* Verdc. (Verdcourt 1950: 344); Letouzey (1961: 132); Germain (1963: 323). Type:

Uganda, Kigezi Distr., Kayonza, Ishasha Gorge, 1200 m, March 1946, *Purseglove* 2002 (holotype K!).

ILLUSTRATION. Verdcourt (1950: 345, fig. 2).

Small *tree* to 12 m tall, young branches glabrous. *Leaves* with petiole 3 mm long, thick; lamina elliptic, coriaceous, 4 – 12 × 2 – 5 cm, glabrous, acuminate at apex, the acumen 6 – 10 mm long, cuneate at base, unequal, margins entire; midrib plane above, prominent and glabrous beneath; primary veins 4 – 5 pairs, plane above, prominent beneath, brochidodromous. *Inflorescence* cauline, many-flowered fascicles. *Flower* buds globose to slightly conical, pointed at apex; pedicel 16 – 40 mm long, glabrous; *calyx* cupuliform, slightly irregularly 3 – 4 lobed in bud, deeply 5 – 7 lobed in open flower; pseudocorolla splitting into 3 – 4 lobes, 15 mm long, reflexed at anthesis; anthers oblong, 3.5 mm long; ovary globose, 6-locular; style 2 – 3 times longer than ovary; stigma 5-lobed. *Fruit* comprised of capsules borne on pedicels 16 – 40 mm long, globose, orange-coloured, over 3 cm diam., unilocular, opening by 6 valves. *Seeds* 8, ovoid 15 mm long, 12 mm broad. Fig. 21.

DISTRIBUTION. Uganda and Democratic Republic of the Congo. Map 14C.

SPECIMENS EXAMINED. DEMOCRATIC REPUBLIC OF THE CONGO. Kivu Prov., Kaleke Terr. Bukondo, 1000 m, 24 Sept. 1957, *Gutzwiller* 2074 (BR, K); Masisi-Walikale, March 1832, *Lebrun* 5193 (BR, P); Ituri Dist., Lodjo Camp, 1115 m, 2.0507°N, 30.0002°E, *Luke* 14695 (K). **UGANDA.** Ishasha Gorge, 1500 m, 10 Feb. 1945, *Greenway & Eggeling* 7105 (K); Rukungiri Distr., Kayonza, Bwindi Forest, Ishasha Gorge, 0°53' – 1°08'S, 30°25' – 35°E, 1350 m, April 1998, *Hafashimana* 549 (K).

HABITAT. Evergreen or semi-deciduous dense upland forest at 800 to 1500 m.

CONSERVATION STATUS. Vulnerable (VU B1a), a local species in a disturbed area.

PHENOLOGY. Collected in flower February to August and in fruit in October.

VERNACULAR NAMES. Democratic Republic of Congo: *bosangango*, *buunga*, *kamatundu* (Kirega); *kakaki*, *shekakoro* (Kinyanga).

3. *Brazzeia soyauxii* (Oliv.) Tiegh. (Van Tieghem 1905: 356); Engler (1908: 218); Chevalier (1917: 83); Engler (1921: 473); Keay (1958: 300); Letouzey (1961: 133); Germain (1963: 321); Letouzey (1978a, b: 146).

Rhaptopetalum soyauxii Oliv. in Hooker (1883, t. 1405).

Type: Gabon, Munda, Sibange Farm, 29 Sept. 1880, *Soyaux* 130 (lectotype K, selected here; isolectotype P).

Erythropyxis soyauxii (Oliv.) Engl. (Engler 1902: 103).

Erythropyxis scandens Pierre (1896: 1266). Type: Gabon, Libreville, 1894, *Jolly* 59 (holotype P).

Brazzeia scandens (Pierre) Tiegh. (Van Tieghem 1905: 356).

Rhaptopetalum scandens (Pierre) ms. in sched. ex Letouzey (1978a: 146).

Brazzeia biseriata Tiegh. (Van Tieghem 1905: 358).

Type: Gabon, *Klaine* 1340 (holotype P; isotype K!).

Brazzeia pellucida Tiegh. (Van Tieghem 1905: 359).

Type: Gabon, Minu, *Leroy* 14 (holotype P).

Brazzeia rosea Tiegh. (Van Tieghem 1905: 358). Type: Gabon, *Klaine* 2329 (holotype P).

Brazzeia trillesiana Pierre ex Tiegh. (Van Tieghem 1905: 356). Type: Gabon, *Trilles* 10 (holotype P).

Brazzeia klainei auct. non Pierre ex Tiegh., Pellegrin (1924: 61), Gabon, Nov 1900, *Klaine* 2024.

ILLUSTRATIONS. Letouzey (1978a, b: 149: fig. 42).

Shrub or small *tree* to 12 m tall, rarely to 20 m, young branches glabrous. *Leaves* shortly thick-petiolate, petioles 1 – 3 mm long; lamina, confluent, oval-elliptic, chartaceous, 6 – 12 × 3 – 5 cm, glabrous, acuminate at apex, the acumen 10 – 15 mm long, cuneate at base, margins conspicuously denticulate; midrib impressed above, prominent and glabrous beneath; primary veins 5 – 6 pairs, plane above, prominent beneath, brochidodromous. *Inflorescence* cauline few-flowered fascicles (3 – 5), borne on trunk and branches. *Flower* buds ovoid-globose, round or pointed at apex; pedicel 4 – 7 mm long, glabrous; calyx patelliform, entire or slightly lobed; pseudocorolla splitting into 3 – 5 lobes; anthers oblong; ovary flattened-globose, 5 – 7-locular; style equalling ovary in length; stigma slightly capitate entire or lightly lobed. *Fruit* comprised of capsules borne on pedicels 6 – 7 mm long, subglobose, apiculate, 3 – 3.5 cm diam., unilocular, red when mature. *Seeds* 10 – 12, ovoid, 15 mm long, 12 mm broad.

DISTRIBUTION. Cameroon, Gabon, Congo-Brazzaville. Map 13D.

SELECTED SPECIMENS EXAMINED. CAMEROON. SW Prov., Ndian, Ekombe-Mofako, Mokoko FR, 3 June 1994, *Pouakouyou* 48 (K); Banga, S. Bakundu F.R., 18 March 1948, *Brenan & Onochie* 9479 (BM, FHO, K, P); Kumba Div., Bitsil, Abong-Mbang, 20 April 1961, *Letouzey* 3881 (FHO, K, P). **GABON.** Ngounie, 600 m, 1°37'50"S, 11°45'03"E, 7 Oct. 2007, *Leal et al.* 1929 (LBV, MO, WAG); Monts de Cristal, Route de Kinguélé, 18 Jan. 1968, *Hallé & Villiers* 4553 (FHO, P). **CONGO-BRAZZAVILLE.** Forêt Bouénza, near Massia 3°38'S, 13°53'E, 17 Nov. 1964, *Bouquet* 784 (BR, FHO, P); Kakamoeka, 21 March 1969, *Attins* 85 (P).

HABITAT. Rainforest and semi-deciduous forest, also in disturbed secondary forest.

CONSERVATION STATUS. Least concern (LC). Several recent collections and occurs in forest reserves.

PHENOLOGY. Flowering March to June, collected in fruit in May.

VERNACULAR NAMES. Cameroon & Gabon: *torhal* (Bassa); *obang mat*, *obiang mat* (Fang); *tchebete* (Mitsoghe); *abianguar*, *acolla*, *obanggnare*, *obiang ú an* (Pahouin); Congo Dem. Republic: *Mvono mvono* (Kiyumbe).



Fig. 21. *Brazzeia longipedicellata*, fruit. PHOTO: QUENTIN LUKE.

NOTE. The synonymy of this species was greatly increased by the activities of Pierre and van Tieghem who seemed almost to regard every collection as a new species.

3b. *Brazzeia soyauxii* (Oliv.) Tiegh., var. *acuminata* (Tiegh.) Letouzey (1978: 150).

Brazzeia acuminata Tiegh. (Van Tieghem 1905: 359).

Type: Gabon, Pimbi, *Lecomte* E 114 (holotype P).

Brazzeia klainei Pierre ex Tiegh. (Van Tieghem 1905: 359). Type: Gabon, Libreville, *Klaine* 1319 (lectotype P, selected here).

DISTRIBUTION. Gabon.

SPECIMENS EXAMINED. GABON. R. Bicoudou, near Lébamba, and Ndendé, vallée Ngounyé, 13 May 1963, *Hallé* 2046 (P); Waka R. 14 Dec. 1983, *A. M. Louis et al.* 1369 (P).

CONSERVATION STATUS. Data deficient (DD).

VERNACULAR NAMES. *kwésida*, *sèka* (Apindji); *potè* (Balèlè); *gisývèvana ndjai* (Balumbu, Bavungu); *isyèva na ndjadji* (Bapunu); *munyènyègi* (Bavarama); *munyènyègè* (Bavili); *bondala* (Benga); *diputó* (Béséki); *munyènyègi*, *mususuri*, *musyèvila* (Éshira); *anyangbi*, *obikwa* (Fang); *ombumbwè* (Galoa); *mokèngè kèngè* (Ivéa); *lisèi* (Loango); *monyègèdi*, *monyègènyègè* (Mitsogo); *nitséndé*, *ovósó* (Mpongwè, Nkomi); *ovósó* (Orungu).

NOTE. Differs from the typical variety in the acuminate capsule.

8. *Pierrina*

8. *Pierrina* Engl. (Engler 1909: 374; 1921: 473); Letouzey (1961: 138); Hutchinson (1967: 470); Letouzey (1978a, b: 161); Appel (2004: 429). Type species: *Pierrina zenkeri* Engl.

Shrubs. Leaf shortly petiolate, margins entire or slightly serrate. *Inflorescence* cauliflorous or ramiflorous, not in dense clusters; *Flower* with pseudocorolla separating into 4 lobes; stamens numerous, inserted in 3 – 4 whorls, anthers opening by apical pores, filaments longer than anthers; carpels (3 –) 4 (– 5), superior; ovary 4-locular with numerous ovules per locule. *Fruits* fusiform, usually 1-locular, rarely 2-locular, acute at apex, many-seeded. Seeds pubescent along pseudoaril.

NOTE. This monospecific genus differs from others in the Scytopetaloideae by the fusiform fruit. Without the fruit this species is easily confused with *Brazzeia* to which it is closely related.

1. *Pierrina zenkeri* Engl. (Engler 1909: 376; 1921: 473); Letouzey (1961: 138; 1978a, b: 162). Type: Cameroon, Nkuamba near Bipindi, Oct. 1908, *Zenker* 3737 (B lost; lectotype K!, selected here; isolectotypes BM!, P).

Pierrina longifolia Engl. (Engler 1909: 376); Letouzey (1961: 138). Type: Cameroon, Bipindi, Feb. 1908, *Zenker* 3671 (B lost; lectotype K!, selected here; isolectotype BM!).

ILLUSTRATIONS. Engler (1909: 375, fig. 1; 1910: 703 fig. 602; 1921, fig. 219); Letouzey (1978a, b, Fig. 45).

Shrub or treelet to 4 m tall, young branches glabrous. *Leaves* with short petioles 3 – 5 mm long, lamina chartaceous, oblong to elliptic, 8 – 20 × 4 – 7 cm, finely caudate-acuminate at apex, the acumen 10 – 25 mm long, cuneate at base and slightly asymmetric; margins denticulate; midrib impressed above, prominent and glabrous beneath; primary veins 7 – 9 pairs, arcuate and anastomosing 3 – 5 mm from margins, plane above, prominent beneath, brochidodromous. *Inflorescence* of small fascicles or solitary flowers, cauliflorous or ramiflorous. *Flowers* with pedicels 3 – 5 mm long, orange, glabrous, with two bracteoles at base; *calyx* 4 mm diam., orange; pseudocorolla splitting into 4 lobes 10 mm long, curved outwards, purple with yellow dots and orange near margins on exterior, purple with white dots on inside; *stamens* 4 mm long, anthers equalling filaments in length; ovary subglobose, 2 mm tall; style 4 mm long. *Fruit* a capsule on a pedicel 5 – 10 mm long, usually constricted in the middle, 1.5 × 5 – 7 mm, finely pointed at apex; seeds 4 × 12 × 20 mm, red to dark brown-maroon.

DISTRIBUTION. Cameroon, Gabon and Equatorial Guinea. Map 17D.

SELECTED SPECIMENS EXAMINED. CAMEROON. Bipindi, Oct. 1896, *Zenker* 1119 (syntype, not seen). Central Prov., 7 km SSE of Makak, 600 m, 3°32'00"N, 11°06'00"E, 10 June 1987, *Manning* 2033 (K, MO, WAG); Mbondjo. 3 May 1976, *Letouzey* 14803 (FHO, P); 15 km N of Kribi, 3°01'N, 9°58'E, 4 Feb. 1969, *Bos* 3856 (K, WAG). **GABON.** 7 km E of M'Voun, 24 km NE of Nrtoun, 60 m, 0°33'N, 9°52'E, 31 Oct. 1983, *A. M. Louis* 217 (K, WAG). **EQUATORIAL GUINEA.** Bata-Nasanga, km 36 – 37 near Nasanga, 17 Oct. 1991, *Carvalho* 4894 (WAG).

HABITAT. Nonflooded or riverine rainforest.

CONSERVATION STATUS. Near threatened (NT).

PHENOLOGY. Flowering September and October, collected in fruit February and June.

9. *Rhaptopetalum*

9. *Rhaptopetalum* Oliv. (Oliver 1865: 159); Benth. & Hook. f. (Bentham & Hooker 1865: 995); Van Tieghem (1905: 370); Engler (1897: 244; 1921: 473); Letouzey (1961: 123); Germain (1963: 323); Hutchinson (1967: 470); Letouzey (1978a, b: 165); Appel (2004: 428).

Type species: *Rhaptopetalum coriaceum* Oliv.

Small trees or shrubs. Leaves shortly petiolate, usually punctate, margins entire and sometimes revolute. Inflorescence cauliflorous or ramiflorous fascicles, not in dense clusters. Flower with calyx cupuliform or patelliform; stamens attached to base of

pseudocorolla, anthers opening by apical pores, filaments shorter than anthers; carpels 3 – 5; superior or semi-inferior, numerous ovules per locule. Fruits many-seeded, seeds pubescent.

DISTRIBUTION. Ivory Coast, Ghana, Nigeria to Democratic Republic of the Congo.

Key to species of *Rhaptopetalum*

1. Ovary superior, flattened dome or conical. 2
Ovary semi-inferior; calyx not contracted at base; lamina oblong to oboval. 11
2. Ovary conical, with 2 or 3 ovules per locule; capsule subglobose, crustaceous, slightly angled 3
Ovary in a raised dome or hemispheric; few to many ovules per locule; capsule smooth or ridged 4
3. Calyx papillose, base contracted; pedicel 8 – 10 mm; pseudocorolla in flower bud 4 – 6 mm; leaf lamina obovate or obovate-oblong; placentation axile 12. **R. sindarense**
Calyx glandular, shortly contracted at base; pedicels robust, 8 – 9 mm long; pseudocorolla in flower bud 9 mm; leaf lamina oblong; placentation at apex of locule 7. **R. evrardii**
4. Ovary flattened, flowering calyx contracted 1 mm at base; calyx margin crenulated; leaf lamina elliptic. 1. **R. beguei**
Ovary in a raised dome or hemispheric. 5
5. Margin of calyx deeply lobed to mid-depth; lamina oblong to obovate; capsule crustaceous 9. **R. pachyphyllum**
Flowering calyx entire, slightly crenulate, or radially striate 6
6. Calyx not contracted at base; capsule usually crustaceous. 7
Calyx contracted 1 – 2 mm at base; fruit drupaceous, coriaceous 9
7. Leaf base cordate amplexicaul; lamina elongated obovate; placentation axile, calyx margin crenulate 11. **R. sessilifolium**
Leaf base rounded, lamina elliptic or obovate-oblong; placentation at apex of locule 8
8. Leaf lamina 15 – 18 × 8 – 10 cm; calyx margin entire 2. **R. belingense**
Leaf lamina 21 – 28 × 11 – 15 cm; calyx margin irregularly crenulate. 8. **R. geophylax**
9. Leaf apex finely acuminate, primary veins 8 – 12 pairs. 4. **R. cheekii**
Leaf apex acute to bluntly acuminate, primary veins 5 – 8 pairs. 10
10. Flowering calyx 4 – 6 mm tall, 8 – 10 mm diam.; lamina elliptic 3. **R. breterleri**
Flowering calyx 3 – 4 mm tall, 4 – 6 mm diam.; lamina obovate to lanceolate 5. **R. coriaceum**
11. Margin of calyx crenulated, with radial lines; primary leaf veins 8 – 12. 6. **R. depressum**
Margin of calyx deeply lobed; primary leaf veins 6 – 7. 10. **R. roseum**

1. *Rhaptopetalum beguei* Mangenot (1957: 362); Letouzey (1961: 123). Type: Ivory Coast, Attenou-Gueba, 1 Feb. 1902, *Chevalier* 17029 (lectotype P, selected here).

Small tree to 10 m tall. Leaves with petiole 2 – 3 mm long; lamina subcoriaceous, confluent, sparsely to densely punctate, 12 – 22 × 5 – 9.5 cm, apex acute to bluntly acuminate, the acumen 5 – 8 mm long; rounded to slightly subcordate at base; midrib plane above, prominent and glabrous beneath; primary veins 7 – 8, plane above, prominent beneath, brochidodromous. Inflorescence ramiflorous or cauliflorous. Flowers to 10 mm tall, calyx cupuliform, the margin irregularly crenulate, glabrous; ovary 4 – 5-locular; pseudocorolla pink; anthers yellow. Fruit a capsule, subglobose, with small needle-like beak at apex, 15 – 20 mm diam., red when mature, opening by 4 – 5 valves; seeds 8 – 9 mm long, flattened-triangular in cross section. Fig. 22F.

DISTRIBUTION. Ivory Coast and Ghana. Map 18.

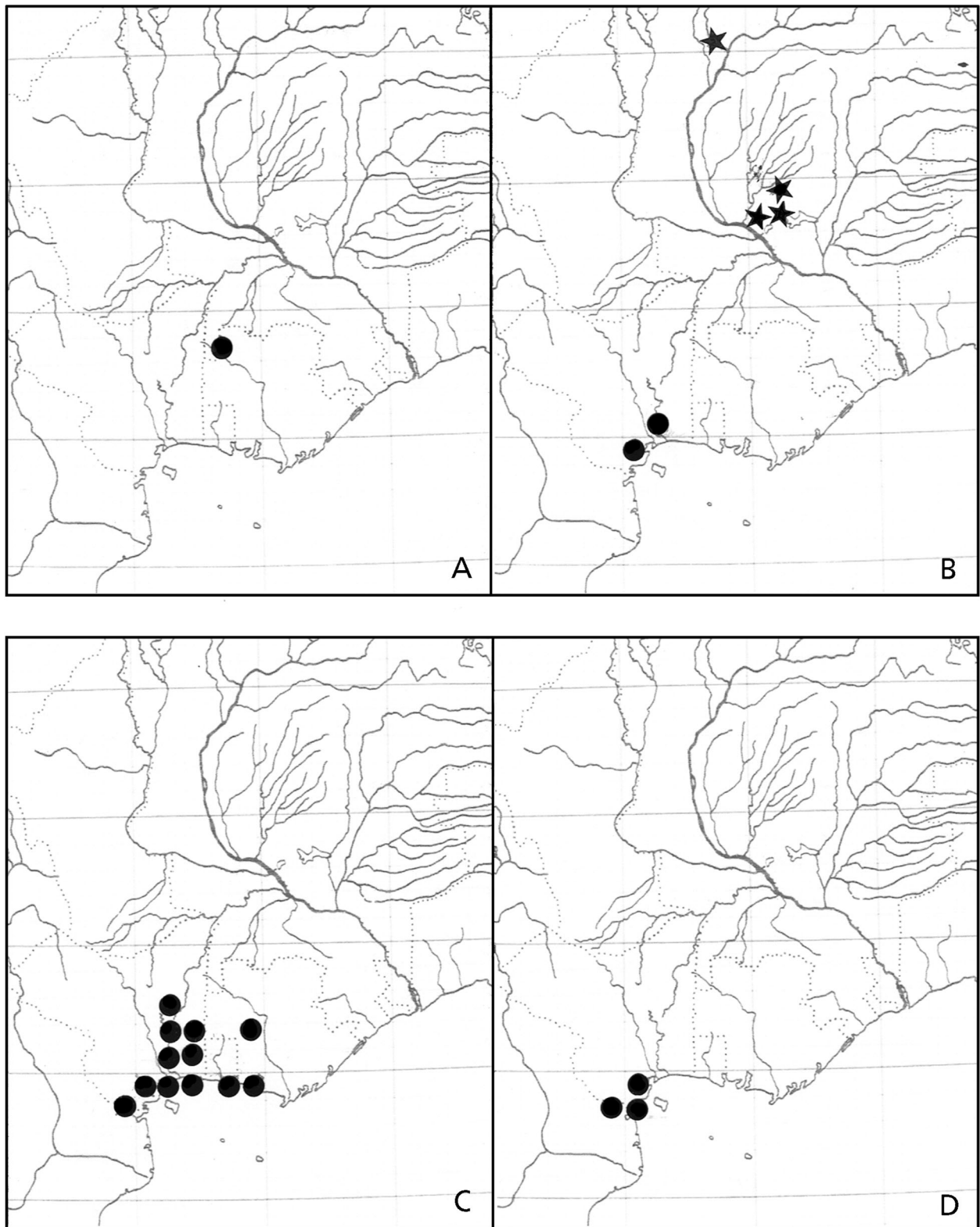
SELECTED SPECIMENS EXAMINED. IVORY COAST. Forêt d'Anguedédou, 20 km W of Abidjan, 31 Oct. 1980, *Oldeman* 461 (K, P, WAG); Vallé de l'Agniéby, Attéou, 31 Jan. 1907, *Chevalier* 17095 (P). **GHANA.** W Prov., Bia NP, S of Sefusi-Adjoafua, 6°23'24"N, 3°0'17"W, 150 – 200 m, 24 Nov. 1996, *Schmidt et al.* 2228 (K, WAG); W of Nzima, Aiyinasi, 11 Nov. 1982, *Hepper et al.* 7460 (K).

HABITAT. Rainforest, deciduous and semi-deciduous forest, lowland to 200 m.

CONSERVATION STATUS. Vulnerable (VU A1c), but occurs in at least two conserved areas.

PHENOLOGY. Flowering October and November, fruiting January to May.

2. *Rhaptopetalum belingense* Letouzey (1977: 132; 1978 a, b: 167). Type: Gabon, Bélinga, 28 June 1966, *Hallé* 4125 (holotype P; isotypes P).



Map 17. Distribution of A *Rhapsopetalum belingense*; B *R. depressum* •; *R. evardii* ★; C *R. cheekii*; D *Pierrina zenkeri*.

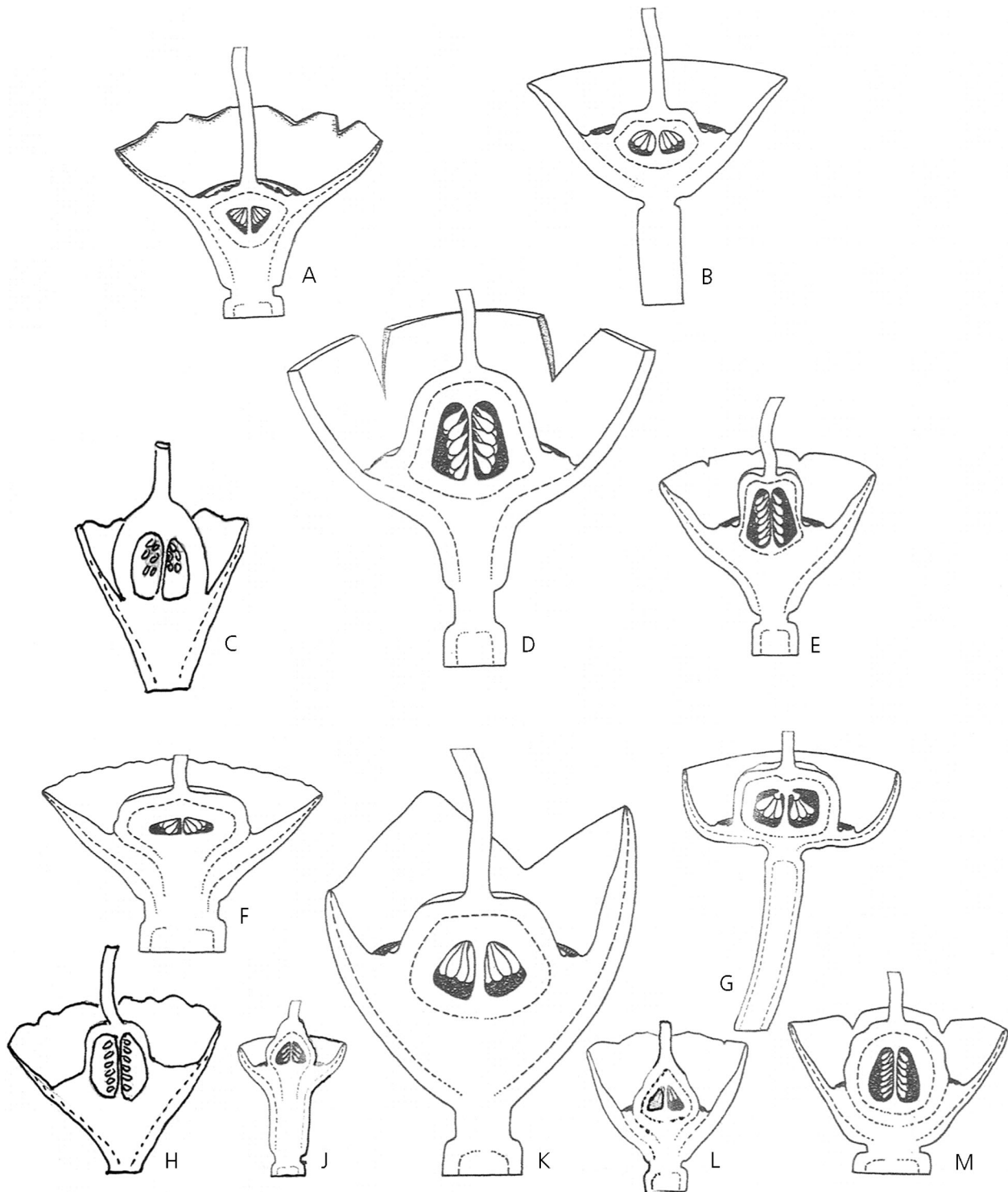
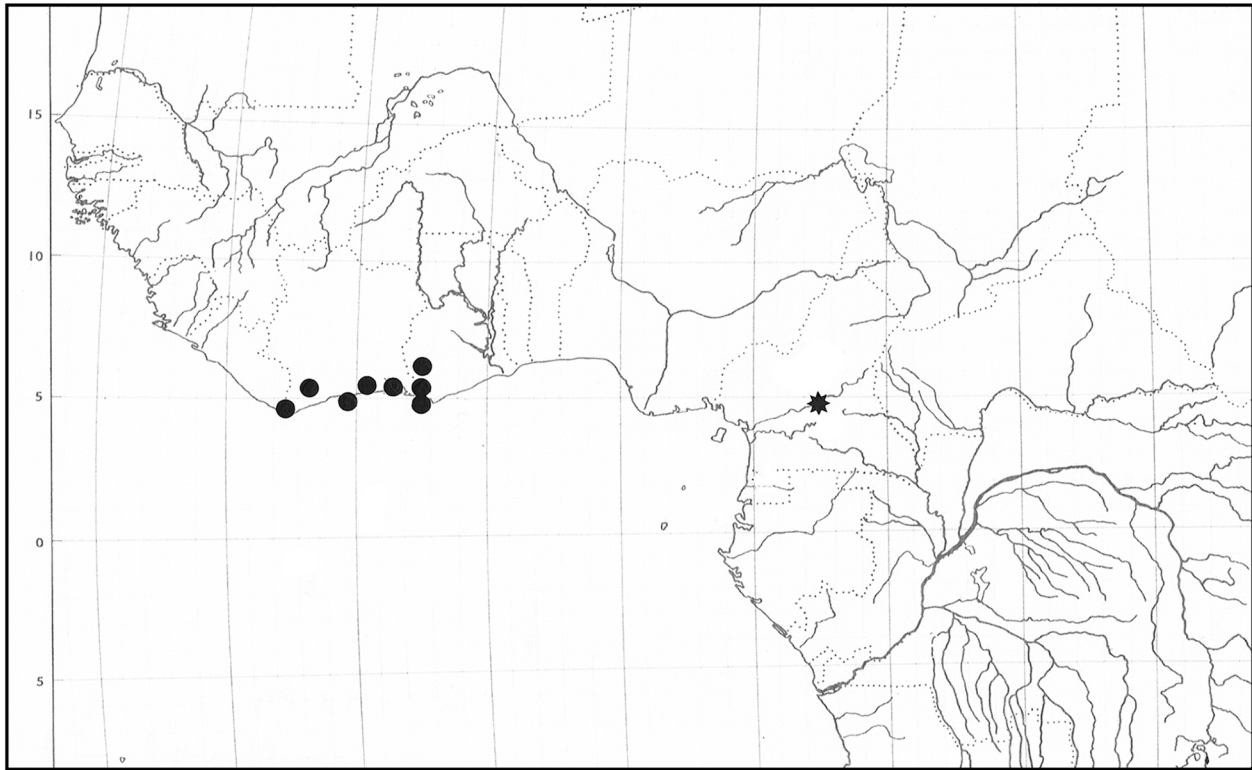


Fig. 22. *Rhapsopetalum*. Longitudinal sections of ovary: A–B Inferior: A *R. roseum* (Troupin 4442); B *R. depressum* (Letouzey 12743). C–M Superior: C *R. geophylax* (McKinder 139); D *R. breteleri* (Breteler 2754); E *R. coriaceum* (Letouzey 15015); F *R. beguei* (Adiopodoumé 4040); G *R. belingense* (Hallé 4125); H *R. cheekii* (Thomas 4426); J *R. sindarense* (Le Testu 2294); K *R. pachyphyllum* (Le Testu 8979); L *R. evrardii* (Evrard 3251); M *R. sessilifolium* (Zenker 3933). Adapted from Letouzey (1977). DRAWN BY D. MOLEZ.



Map 18. Distribution of *Rhapsopetalum beguei* ●; *R. bretelei* ★.

ILLUSTRATIONS. Letouzey (1977, Fig. 2; 1978a, b: 168, fig. 46).

Shrub 4 – 6 m with drooping branches, young branches with dense covering of lenticels, glabrous. *Leaves* with petioles 5 – 7 mm long, flattened on upper surface; lamina elliptic or slightly obovate, coriaceous, glandular punctate, 15 – 18 × 8 – 10 cm, bluntly acuminate at apex, rounded at base, margins entire, slightly curved beneath; primary veins 10 – 12 pairs. *Inflorescence* of supra-axillary racemes and below leaves, very contracted with up to 5 flowers. *Flowers* with pedicels 3 mm, articulate directly beneath calyx; *calyx* cupuliform 5 mm diam., margin entire; pseudocorolla splitting into 3 – 4 lobes, 8 mm long; *stamens* 6 – 7 mm long; ovary dome-like, flattened at base, 2 mm high, (3 –) 4 (– 5)-locular with many ovules per locule, placentation at apex of locule; *style* 8 – 10 mm long. *Fruit* a capsule, globose, crustaceous, 15 mm diam., exterior covered by small scales, opening by 3 – 5 valves. Fig. 22G.

DISTRIBUTION. Gabon. Map 17A.

CONSERVATION STATUS. Data deficient (DD).

NOTE. Known only from the type collection, but distinct by the flattened patelliform calyx with entire margin and pedicel that is articulate directly below calyx.

3. *Rhapsopetalum bretelei* Letouzey (1977: 134; 1978a, b: 168). Type: Cameroon, Zilly, near Nguélémendouka,

50 km NW of Abong Mbang, 10 April 1962, *Bretelei* 2754 (holotype WAG!; isotypes BR, K!, P).

ILLUSTRATIONS. Letouzey (1977: 134 fig. 3; 1978a, b: 171, fig. 47).

Shrub to 6 m tall, young branches glabrous. *Leaf* with petiole 6 – 8 mm long, flattened on upper surface; lamina elliptic, thickly coriaceous, glandular punctations slightly distinct, scattered, 15 – 22 × 7 – 10 cm, apex with blunt acumen to 1 cm long, subcuneate at base; margins entire; midrib plane above, prominent and glabrous beneath; primary veins 6 – 8 pairs, plane above, prominent beneath, brochidodromous. *Inflorescence* of supra-axillary racemes and fascicles on young branches to 4 cm diam., rachis to 5 mm and bearing up to 10 flowers. *Flowers* with pedicels 2 – 4 mm long; *calyx* cupuliform, finely glandular, 4 – 6 mm tall, 8 – 10 mm diam., contracted, 1.2 – 2.5 mm at base, the margin initially entire, then divided into 4 – 6 deeply divided sections; pseudocorolla ellipsoid in bud, 10 mm tall, constricted at base, pointed at apex; *stamens* 6 – 7 mm long; ovary hemispheric, 3 mm tall, 4 – 5 locular with many ovules per locule, placentation axile; *style* 10 mm long. *Young fruit* subglobose-obovoid, with 4 – 5 meridian grooves, covered by minute scales; pericarp coriaceous, mesocarp fleshy. Fig. 22D.

DISTRIBUTION. Cameroon. Map 18.

HABITAT. Old secondary forest on a marshy site.

CONSERVATION STATUS. Data deficient (DD).

PHENOLOGY. Collected in flower in April.

NOTE. Known only from the type collection.

4. *Rhaptopetalum cheekii* Prance, sp. nov. Species *R. coriaceum* affinis, foliis subcoriaceis, 11 – 22 cm, subtiliter acuminatis, nerviis secundariis 8 – 12 differt. Typus: Cameroon, Southwest Province, Mt Cameroon, 40 minute walk N then E from Njonji, 4°08'N 9°01'E, 300 m, 18 Nov. 1993, *Cheek* 5473 (holotypus K!; isotypi BR, K!, WAG!).

<http://www.ipni.org/urn:lsid:ipni.org:names:77143532-1>

Small understory *tree*, young branches glabrous, rugose. *Leaves* with petioles 2 – 4 mm long, lamina oblong-elliptic, subcoriaceous, 12 – 22 × 5 – 7.5 cm, finely acuminate at apex, the acumen 6 – 21 mm long, cuneate at base, slightly decurrent onto petiole; midrib plane above, prominent and very sparsely puberulous beneath; primary veins 8 – 12 pairs, plane above, prominent beneath. *Inflorescence* of ramiflorous fascicles with many flowers. *Flowers* with pedicels 2 – 8 mm long, articulate immediately below calyx; *calyx* cupuliform, contracted at base, glabrous, c. 3.5 mm tall, margin wavy and slightly crenulated; pseudocorolla 8 – 10 mm tall, splitting into 2 – 3 deep lobes almost to base; staminal tube c. 2 mm tall, *stamens* c. 6 mm long; ovary dome-like, rising 1.5 mm, 4-locular, ovules numerous, placentation axile; *style* 4 mm long. *Fruit* subglobose 15 – 20 × 14 – 16 mm, exterior smooth, opening by 2 – 4 lines of dehiscence, grooved or ridged along lines of dehiscence; seeds 2, hairy. Figs 22H, 23.

RECOGNITION. This species is close to *Rhaptopetalum coriaceum*, but differs in the larger, less coriaceous leaves with a finely pointed rather than blunt acumen and more primary veins (8 – 12).

DISTRIBUTION. Southwest Province of Cameroon. Map 17C.

ADDITIONAL SPECIMENS EXAMINED. CAMEROON. SW Province: Mt Cameroon above Koto Village, 4°18'N, 9°06'E, 600 m, 6 March 1985, *Thomas* 4426 (K, MO); Fako Div. Bueu, Mt Cameroon, 4°07.49'N, 9°01'E, 600 m, 17 Oct. 1992, *Watts* 526 (SCA, K); Fako Div. Mt Cameroon, Bakingili-Nja Keta path, 570 m, 23 Sept. 1992, *Wheatley* 539 (K, SCA); Enyenge Onge, 4°17'N, 8°58'E, 50 m, 26 Oct. 1993, *Cheek* 5109 (K); Korup NP, 5°01'N, 8°48'E, 100 m, *Van der Burgt* 636 (K, WAG); Bomana, Onge, 400 m, 16 Oct. 1993, *Ndam* 627 (K); Fako Div. Buea Distr, Njonji, 110 m, 14 Feb. 1992, *Nkeng* 26 (K); Fako Div. Buea, P3 Negotiation, Bakingili, 100 m, 21 April 1992, *Tekwe* 65 (K, SCA); Bomano, Onge, 4°18'N, 9°03'E, 500 m, 16 Oct. 1993, *Tchouto* 792 (K); Etinde, upper Boando, 4°03'N,

9°09'E, 900 m, 9 Dec. 1993, *Faucher* 35 (K, SCA); Idenao Onge, 4°18'N, 8°58'E, 20 m, 7 Nov. 1993, *Watts* 918 (K); Bomana, Onge, 400 m, 21 Oct. 1993, *Ndam* 768 (K, SCA); SW Prov., Kupe-Muanenguba Div., Kupe village below Kupe rock, 1000 m, 22 May 1996, *Ryan* 237 (K); Kupe, Muanenzun trail toward Daniel Ajang's area, 900 m, 18 July 1996, *Etuge* 2919 (K); Trail Kupe to Mt Kupe, 800 m, 16 July 1996, *Etuge* 2822 (K); Trail to Kupe Rock, 900 m, 8 July 1996, *Cable* 3717 (K).

HABITAT. Upland rainforest and secondary forest also on high river banks.

CONSERVATION STATUS. Near threatened (NT) of local distribution but common.

PHENOLOGY. Collected in flower in December and in fruit May to October.

ETYMOLOGY. It is a pleasure to name this species for Martin Cheek who has done much to explore Cameroon botanically in recent years.

5. *Rhaptopetalum coriaceum* Oliv. (Oliver 1865, t. 12; 1868: 351); Engler (1897: 244); Van Tieghem (1905: 370); Engler (1908: 218; 1921: 473); Keay (1958: 300); Letouzey (1961: 123; 1978a, b: 170). Type: Macias Nguema (Fernando Po), 1862, *Mann* 1443 (lectotype K!, selected here; isolectotype P).

ILLUSTRATIONS. Letouzey (1978a, b: 173, fig. 48).

Shrub or small *tree* to 10 m tall; young branches slightly angular. *Leaves* with petioles 2 – 6 mm long; lamina obovate to oblanceolate, rarely oblong-elliptic, coriaceous, 6 – 15 × 3 – 6.5 cm, conspicuously glandular punctate, shortly and bluntly acuminate at apex, cuneate at base, slightly decurrent onto petiole; midrib plane above, prominent, puberulous, papillate beneath; primary veins 5 – 7 pairs, plane above, prominulous beneath, brochidodromous. *Inflorescence* of short clustered racemes, with up to 8 flowers axillary or inserted below leaves on young branches. *Flowers* with pedicels 2 – 6 mm long; *calyx* cupuliform, glandular 4 – 6 mm diam., 3 – 4 mm tall, the margin entire or crenulated; pseudocorolla 8 – 10 mm tall, splitting into lobes to 12 mm long; stamens 5 – 6 mm long; ovary dome-like, 4 – 5 (– 6) locular, ovules numerous, placentation axile; *style* 6 – 10 mm long. *Fruit* ellipsoid, 20 – 25 mm diam., grooved; pericarp coriaceous, usually 1-seeded. Fig. 22E.

DISTRIBUTION. S Nigeria, Cameroon, Gabon and Fernando Po. Map 19A.

SELECTED SPECIMENS EXAMINED. NIGERIA. Calabar Prov.: Eket Distr., Uquoto Ntete Beach, Stubbs Creek FR, 16 May 1953, *Onochie* FHI 33194 (K); Delta Prov., W Urhobo, Ukpe-sobo, 14 March 1968, *Emwieoghon* FHI 60866 (K); Old Calabar, *W. C. Thomas* 40 (K, syntype);

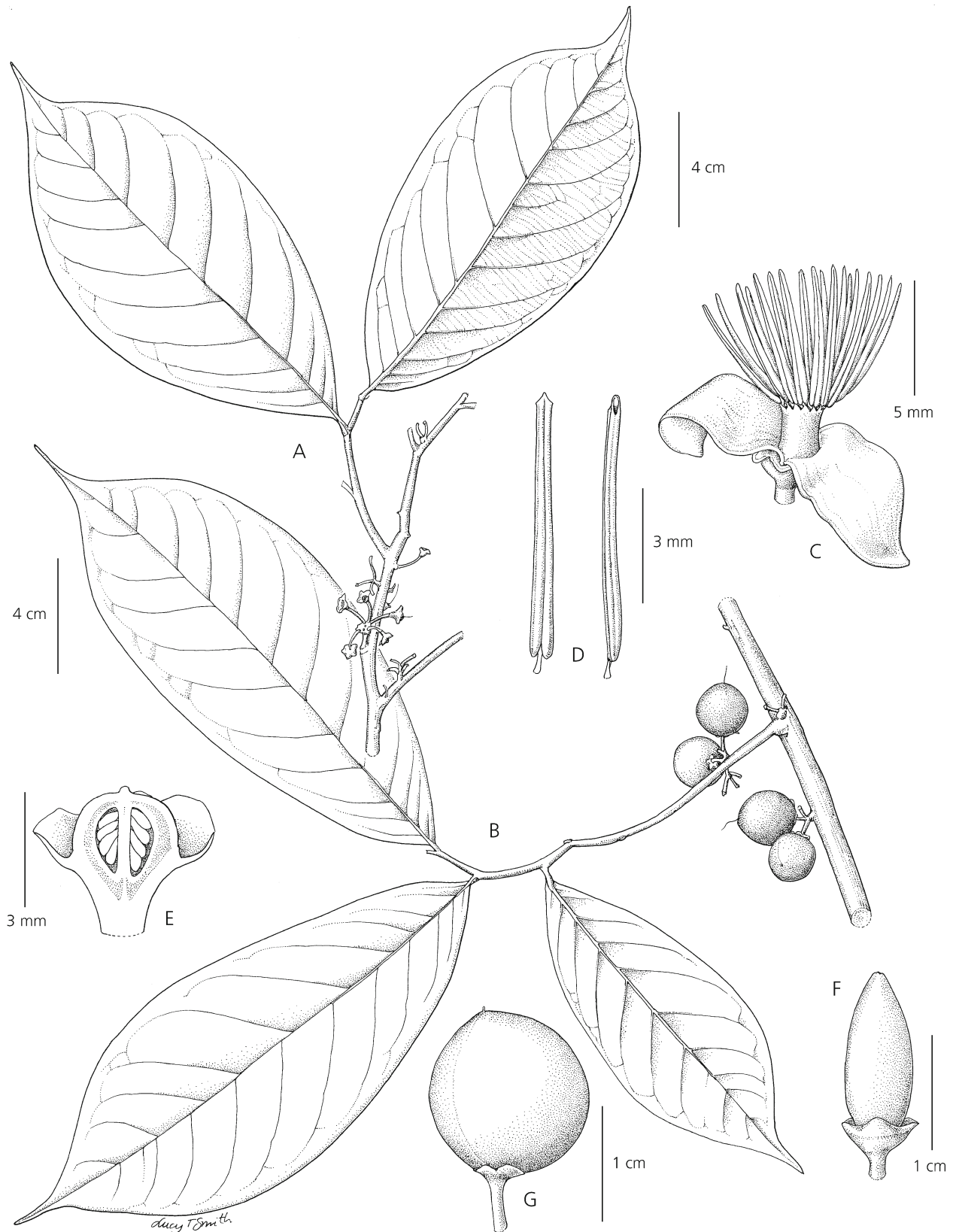
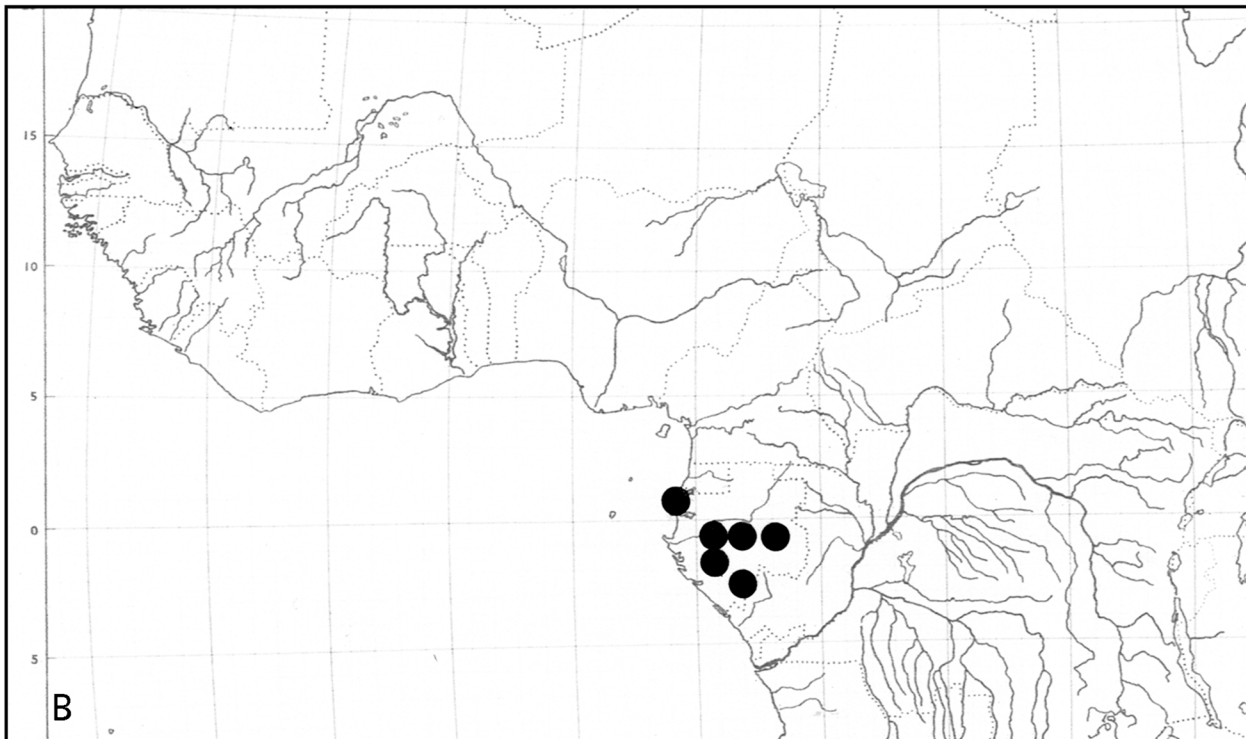
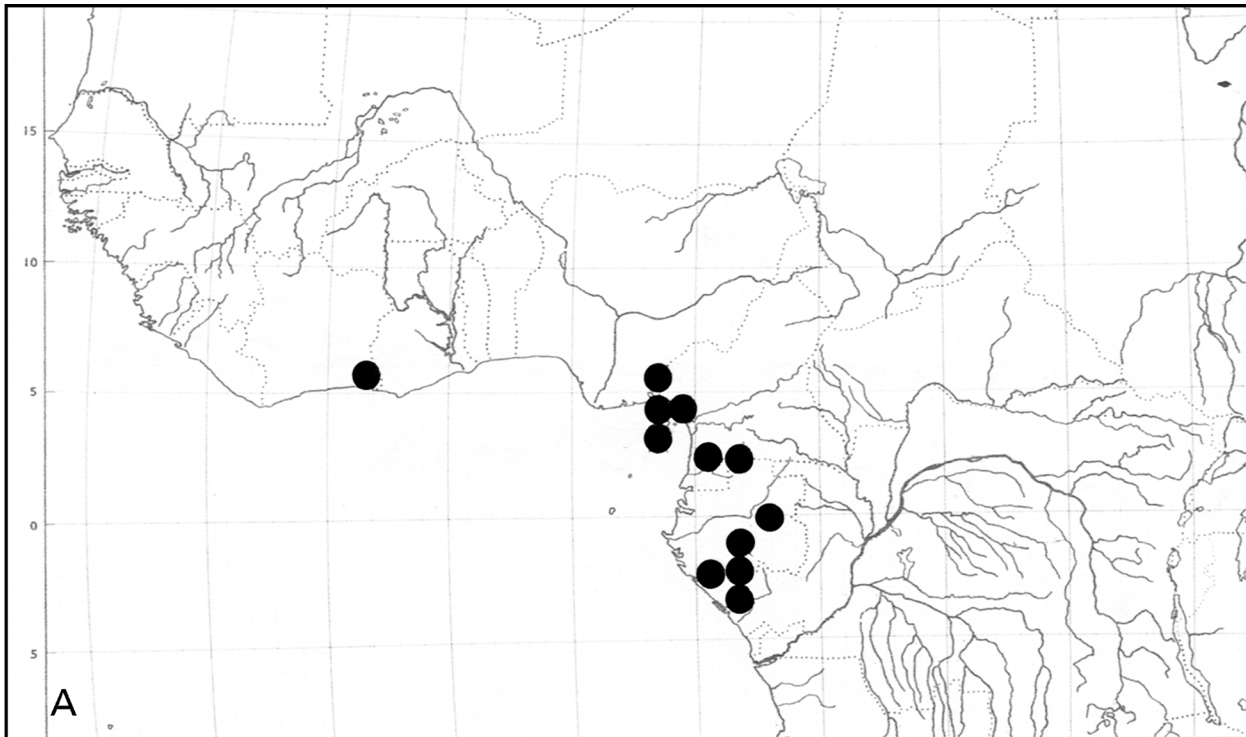


Fig. 23. *Rhapsopetalum cheekii*. A flowering habit; B fruiting habit; C male flower; D stamen, two views; E flower section, corolla removed; F immature fruit; G fruit. A from *Thomas 4426*; B, G from *Cheek 5473*; C, D, F from *Tekwe 24*; E from *Akogo 20*. DRAWN BY LUCY SMITH.



Map 19. A *Rhapsopetalum coriaceum*; B *R. sindarense*.

Benin Prov., Iyekuselu, Gwatto R, Ughotor Creek, 28 Jan. 1969, *Emwiogbon* FHI 61197 (K); Ogoja Prov., Obudu, Babiri village, R Ndo, 1 May 1952, *Latilo* FHI

30920 (K). **CAMEROON.** Southwest, 500 m, 4°05'00"N, 9°06'00"E, 29 Dec. 1983, *Thomas* 2851 (K, MO, P); N'Kolandou, 12 Dec. 1974, *De Wilde* 7830 (K, P, WAG).

GABON. Mt Iboundji, 90 km NNW of Mbigou, 1929 – 1931, *Le Testu* 8621 (BM, BR, FHO, K, P, WAG).

EQUATORIAL GUINEA. Bioko, Bebebu to Ureka, 750 m, 3.3250°N, 8.5887°E, 16 Jan. 2009, *Luke* 13032 (K); Moaba-Moka trail, Biadyi R. camp, 3.28511°N, 8.63828°E, 16 March 2007, *Luke* 11963 (K).

HABITAT. Rainforest and riverside forest.

CONSERVATION STATUS. Least concern (LC).

PHENOLOGY. Collected in flower January, February, May, December, October and in fruit January to March and October.

6. *Rhaptopetalum depressum* *Letouzey* (1977: 136, pro parte, 1978a, b: 174). Type: Cameroon, near Mebande, 20 km SE of Lolodorf, 23 Jan. 1974, *Letouzey* 12743 (holotype P; isotypes BR, K!).

ILLUSTRATIONS. *Letouzey* (1978a, b: 175, fig. 49).

Shrub, branches wrinkled, young branches slightly angled and grooved. *Leaves* with petioles 2 – 5 mm long; lamina oblong to oblong-elliptic, coriaceous, 20 – 28 × 8 – 11 cm, inconspicuously punctate, bluntly acuminate at apex, the acumen c. 5 mm, subcuneate to slightly rounded at base, margins entire; midrib plane above, prominent and glabrous beneath; primary veins 9 – 12 pairs, plane above, prominulous beneath, brochidodromous. *Inflorescence* of very contracted racemes or pseudofascicles, with up to 8 flowers. *Flowers* with pedicels 2 – 5 mm long, articulate directly beneath calyx; *calyx* obconical, 3 – 4 mm tall, 6 – 8 mm diam., the margin gradually becoming crenulate and divided to base of calyx; pseudocorolla bud 6 mm tall, obtuse at apex, breaking into lobes c. 8 mm long; stamens 5 – 6 mm long; ovary semi-inferior, flattened-projection, 5-locular with numerous ovules per locule, with placenta at apex of locules; style 8 mm long. *Fruit* a capsule, ovoid, coriaceous, 1 – 2.5 × 1.5 – 3 cm, exterior wrinkled by a network of furrows, opening from apex by 4 – 5 valves, Fig. 22B.

DISTRIBUTION. Cameroon. Map 17B.

SELECTED SPECIMENS EXAMINED. CAMEROON. W Mt Koupé, near Mbulé, 30 km WSW of Nkongsamba, 1200 m, 26 Jan. 1972, *Leeuwenberg* 9298 (WAG); SW Prov., Kupe-Muanenguba Div., Kupe, path to Kupe rock, 21 May 1996, 940 m, *Cable* 2479 (K).

HABITAT. Submontane forest.

CONSERVATION STATUS. Endangered (EN A1(a)).

PHENOLOGY. Collected in flower in January and fruit in May.

7. *Rhaptopetalum evrardii* *R. Germ.* (Germain 1962: 490; 1963: 324). Type: Democratic Republic of the Congo, Bongoy, Boende, R. Lofoy, Jan. 1958, *Evrard* 3251 (holotype BR; isotype YBI).

ILLUSTRATION. Germain (1963: 325, fig. 29).

Shrub or small *tree* 4 – 6 m tall, young branches angled, puberulous. *Leaves* with petioles 3 – 10 mm long; lamina oblong, coriaceous, abundantly punctate, 18 – 28 × 8 – 12 cm, gradually tapering to short acumen, 4 – 5 mm long or bluntly acute at apex, rounded at base; midrib plane and flattened above, prominent and minutely puberulous beneath; primary veins 10 – 12 pairs, plane above, prominent beneath, brochidodromous; *Inflorescence* axillary and supra-axillary racemes, ramiflorous. *Flowers* with pedicels 4 – 5 mm long; flower buds oblong, rounded at apex, 5 – 8 mm long; *calyx* cupuliform, margins crenulate into 6 – 10 lobes; pseudocorolla 7 – 8 mm long, splitting into oblong lobes; *stamens* numerous, 5 mm long; ovary superior, 3 – 4-locular, placentation at apex of locule; style 8 mm long. *Fruit* a capsule globose, slightly angled, 10 – 12 mm diam., opening by 3 valves. *Seeds* 1 – 3, 12 mm diam. Fig. 22L.

DISTRIBUTION. Democratic Republic of the Congo. Map 17B.

SPECIMENS EXAMINED. DEMOCRATIC REPUBLIC OF THE CONGO. Bokondji, Ulindi R., Sept. 1959, *De Wanckel* 146 (BR); Ikaka sur Busira, 0°04'S, 19°44'E, June 1936, *Ghesquière* 2781 (BR, K).

HABITAT. Inundated forests.

CONSERVATION STATUS. Endangered (EN A1c). Few collections from a disturbed area.

VERNACULAR NAME. Democratic Republic of the Congo: *botumbakamba* (Lomongo).

8. *Rhaptopetalum geophylax* *Cheek & Gosline* in *Cheek et al.* (2002: 662). Type: Cameroon, SW Prov., Bakossi Mts, Kodmin to Edip, c. 1200 m, 12 Feb. 1998, *Cheek* 9175 (holotype K!; isotypes BR, EA, ETH, K!, MO!, P, WAG!, YA).

ILLUSTRATION. *Cheek et al.* (2002: 664)

Tree 6 – 20 m tall, trunk slightly fluted at base; young branches glabrous. *Leaves* with petioles initially 2 – 8 × 3 mm, becoming stout and swollen forming a sub-ellipsoid structure with base of midrib, 7 – 12 × 4 – 5 mm; lamina obovate-oblong, thick-coriaceous, conspicuously punctate, (14 –) 21 – 28 (– 30) × (6 –) 11 – 15 (– 16.5) cm, shortly and abruptly acuminate at apex, rounded or obtuse and unequal at base, slightly decurrent onto petiole, margins entire; midrib plane and flattened above, prominent and minutely puberulous beneath; primary veins 7 – 11 pairs, plane above, prominent and minutely puberulous beneath, brochidodromous. *Inflorescence* ramiflorous, subfasciculate 2 – 3 × 3 – 5 cm, bearing 3 – 9 flowers. *Flowers* with pedicels terete, 3 – 6 × 1 – 1.5 mm; articulated at junction with pseudopedicel. Receptacle subcylindrical, 3 – 4 mm long, 5 – 8 mm diam.; calyx

saucer-shaped, margin irregularly crenulate or shallowly 4-lobed; pseudocorolla bud ovoid, 9 – 15 × 7 – 11 mm, splitting into 3 (– 4) ovate-oblong lobes 15 – 20 × 7 – 13 mm, pink, deep pink at base; stamens c. 50, 4 – 8 mm long; ovary superior, globose, 4 – 4.5 × 5 mm, 4 – 5 locular, 7 – 9 axile pendulous ovules per locule; style 12 mm long. *Fruit* a capsule, ovoid, pericarp yellow-orange, crustaceous, longitudinally ridged when dry, 27 – 38 × 20 – 24 mm, apiculate or rounded at apex, 4 – 5-locular, opening by 4 – 5 valves, borne on pedicel 5 – 8 mm long. *Seeds* 1 – 2 per locule, ellipsoid-angular 16 – 18 × 7 – 9 mm. Fig. 22C.

DISTRIBUTION. Cameroon. Map 16A.

SELECTED SPECIMENS EXAMINED. CAMEROON. W slope of Mt Koupé, near Mbulé, 30 km WSW of Nkongsamba, 1200 m, *Leeuwenberg* 9298 (WAG), cited under *R. depressum* in Letouzey (1977); Kupe village, main trail to mountain, 1200 m, 13 Nov. 1995, *Etuge* 1453 (BR, K, MO, P, SCA, WAG, YA); Kupe village, 1300 m, 21 May 1996, *Cheek* 8378 (K); near Ngombombeng, N of Nyassosso, 4°54'N, 9°42'E, 760 m, 31 April 1986, *Etuge & Thomas* 35 (K, MO).

HABITAT. Submontane forests, 900 – 1500 m.

CONSERVATION STATUS. Near threatened (NT), local but common.

PHENOLOGY. Flowering January, February, June, fruiting January to April.

9. *Rhaptopetalum pachyphyllum* (Gürke) Engl. (Engler 1921: 475); Letouzey (1961: 125; 1978a, b: 176).

Diospyros pachyphyllum Gürke (1911: 152). Type: Equatorial Guinea, 16 Dec. 1908, *Tessmann* 720 (holotype B lost; lectotype K!, selected here).

ILLUSTRATIONS. Letouzey (1961: 124, fig. 3; 1978a, b: 177, figs. 50, 51).

Shrub or small *tree* 5 – 10 m tall, young branches slightly angular, papillose. *Leaves* with petioles 3 – 15 mm long, channelled or flat beneath, lamina oblong to oboval, coriaceous to chartaceous, with large punctate glands, 14 – 28 (– 33) × 6 – 13 (– 15) cm, bluntly acuminate at apex, the acumen to 1.5 cm long, base obtuse to rounded, margins entire, revolute; midrib plane above, prominent and minutely puberulous beneath; primary veins 5 – 12 pairs, plane above, prominent and papillose beneath; brochidodromous. *Inflorescence* of fascicles, axillary or on young branches, with 10 – 20 flowers. *Flowers* with pedicels 3 – 5 mm long, papillose; articulate directly beneath calyx, with bracts and bracteoles at base or bracteoles at mid length; *calyx* cupuliform, 8 mm tall, 12 mm diam., 3 – 5 lobed to mid-length, covered by minute glandular scales; pseudocorolla bud ellipsoid, 10 – 15 mm tall, obtuse at apex, breaking into 3 – 4 lobes 15 mm long; *stamens* 7 – 8 mm long; ovary sunk into receptacle, above, a flattened cone, radially striate. 1.5 mm tall, 4-locular with numerous

ovules per locule; placentas at apex of locules; *style* 10 – 12 mm long. *Fruit* a capsule, globose, 25 mm diam., crustaceous, with prominent network of veins on surface when dry. Fig. 22K.

DISTRIBUTION. Cameroon, Gabon and Equatorial Guinea. Map 16B.

SELECTED SPECIMENS EXAMINED. CAMEROON. between Bopo & Pete, Bakundu FR, 15 km S of Kumba, *Binuyo & Daramola* FHI 35577 (FHO, K, WAG); SW Prov., Ndiang Div. Korup NP, 5°01'N, 8°48'E, 24 Feb. 2008, *Van der Burgt* 1130 (K, P, WAG). **GABON.** Bindjima, 30 km S of Oyem, *Le Testu* 8979 (BM, BR, FHO, P, WAG).

HABITAT. Terra firme and inundated forest.

CONSERVATION STATUS. Vulnerable (VU A1(b)), few collections.

PHENOLOGY. Collected in fruit February and September.

10. *Rhaptopetalum roseum* (Gürke) Engl. (Engler 1921: 475); Germain (1963: 324); Letouzey (1961: 125; 1978a, b: 178).

Diospyros rosea Gürke (1913: 525). Type: Democratic Republic of the Congo, *Mildbraed* 2812 (holotype B, lost). Neotype of Germain (1963): Democratic Republic of the Congo, A. Léonard 4941 (neotype BR; isoneotype YBI).

ILLUSTRATIONS. Letouzey (1978 a, b: 181, fig. 52).

Shrub or small *tree* to 13 m tall, young branches angular, finely puberulent. *Leaves* with petiole 5 – 10 mm long; lamina oblong to elliptic, coriaceous, densely punctate, 10 – 25 × 5 – 9 cm, short-acuminate at apex, subcuneate at base; midrib plane and flattened above, prominent beneath; primary veins 6 – 7 pairs, plane above, prominulous beneath, brochidodromous. *Inflorescence* fasciculate ramiflorous racemes, axillary or on young branches below leaves, bearing 3 – 10 flowers. *Flowers* with pedicels 3 – 4 mm, articulate immediately beneath calyx; *calyx* cupuliform-campanulate, 4 mm tall, 7 mm diam., with 4 – 5 short rounded lobes; pseudocorolla with lobes 6 × 10 mm; *stamens* 7 mm long; *ovary* semi-inferior, 3 – 5-locular, with numerous ovules per locule, with placenta at apex of locule; *style* 8 mm long. *Fruit* a capsule, borne on a stout pedicel 4 – 6 mm long, ellipsoid to ovoid, 23 mm long, 20 mm broad, opening by 3 – 5 valves. Fig. 22A.

DISTRIBUTION. Democratic Republic of the Congo. Map 14A.

SELECTED SPECIMENS EXAMINED. DEMOCRATIC REPUBLIC OF THE CONGO. Kivu Prov.: Kalehe Territ., Irangi, IRSAC Res., Km 110 Kavumu-Walikuk, 800 – 900 m, 23 Sept. 1957, *Troupin* 4442 (K, WAG); Ulindi R., Mwenga, Kivu, 11 July 1959, A. Léonard 4941 (BR, K).

HABITAT. Submontane forests.

CONSERVATION STATUS. Endangered (EN A1(c)). Known only from Kivu Province.

PHENOLOGY. Collected in flower in September and in fruit May to September.

11. *Rhaptopetalum sessilifolium* Engl. (Engler 1902: 101); Van Tieghem (1905: 373); Engler (1921: 473); Letouzey (1961: 126; 1978a, b: 473). Type: Cameroon, Bipindi, 1899 – 1901, Zenker 2051 (holotype B; lectotype P, selected here; isolectotypes BM!, BR, K!, P, WAG!).

ILLUSTRATIONS. Letouzey (1978a, b: 183, fig. 53).

Shrub or small *tree* 2 – 6 m tall, young branches angular, finely papillose soon glabrous. *Leaves* subsessile or with petioles to 2 mm long; lamina narrowly oboval, coriaceous, without punctuations, 14 – 32 × 6 – 10 cm, acuminate at apex, the acumen to 10 mm long, deeply cordate-amplexicaul at base, margins entire; midrib plane and flattened above, prominent beneath, short-puberulous; primary veins 9 – 13 pairs, plane above, prominent beneath, brochidodromous. *Inflorescence* fasciculate racemes 1 – 2 cm diam., with up to 25 flowers. *Flowers* with pedicels 2 – 5 mm long, articulate directly beneath calyx; calyx cupuliform, pustular glandular on exterior, 3 – 4 mm tall, 5 – 6 mm diam., margins crenulate with 6 – 10 rounded sections; pseudocorolla bud ovoid, pointed, 6 – 8 mm tall; stamens 5 – 7 mm long; ovary hemispheric, 1.5 mm tall, (3 –) 4 (–5)-locular, placentation axile; style 8 mm long. *Fruit* a capsule, crustaceous, subglobose, 20 mm diam., pericarp opening by 3 – 5 valves; *seeds* 1 to several. Fig. 22M.

DISTRIBUTION. Cameroon. Map 16C.

SELECTED SPECIMENS EXAMINED. CAMEROON. Bipindi, 1901, Zenker 2389 (BM, BR, K, P, WAG, syntypes), Zenker 2391 (BR, K, P, WAG, syntypes) (Ebo, Yabassi, Bekob to Longdeng, 800 m, 4°22'30"N, 10.24°30"E, 19 Feb. 2006, Cheek 13074 (K)).

HABITAT. Unknown.

CONSERVATION STATUS. Endangered (EN B1a).

PHENOLOGY. No data.

12. *Rhaptopetalum sindarense* Pellegr. (Pellegrin 1922: 92; 1924: 62); Letouzey (1961: 127; 1978a, b: 184). Type: Gabon, Ngounié, Oct. 1918, *Le Testu* 2294 (holotype P; isotypes FHO!, K!).

ILLUSTRATIONS. Letouzey (1961: 128, fig. 4; 1978: 185, fig. 54).

Shrub or small *tree* to 15 m tall, young branches slightly angled, papillose. *Leaves* with petioles 3 – 5 (–10) mm long; lamina oboval, coriaceous, distinctly glandular punctate, 14 – 24 × 6 – 11 cm or sometimes oboval-oblong 18 – 40 × 7 – 12 cm, shortly blunt-acuminate or acute at apex, the acumen 0 – 5 mm long, rounded or subcordate at base, margins

entire, revolute; midrib papillose, puberulous beneath; primary veins 10 – 12 pairs. *Inflorescence* of fasciculate ramiflorous racemes, with 5 – 30 flowers. *Flowers* with pedicel 8 – 10 mm long, slender, puberulous; calyx finely papillose, with a little-raised cupule 1 mm high, 3 mm diam., the margin entire or rarely slightly radially divided, borne on a false pedicel of 2 mm above articulation; pseudocorolla bud ellipsoid, rounded or obtuse at apex, 4 – 6 mm high, slightly constricted at base; *stamens* 3 – 4 mm long; ovary superior, conical, 1 mm tall, radially striate, 3 – 4-locular with 2 ovules per locule, placentation axile; *style* 3 – 4 mm long. *Fruit* a capsule, crustaceous, subglobose, 12 – 15 mm diam., pericarp opening by 3 – 5 valves. *Seeds* 2. Fig. 22J

DISTRIBUTION. Gabon. Map 19B.

SPECIMENS EXAMINED. GABON. Haut Ramboué, SE of Libreville, 100 m, *Chevalier* 33714 (BR, P); Lope Reserve, 0°30'S, 11°33'E, 28 Nov. 1986, *Reitsma* 2620 (NY, WAG).

HABITAT. Unknown.

CONSERVATION STATUS. Endangered (EN B1a). Known almost only from Zenker collections with no field notes.

PHENOLOGY. Collected in flower in October.

VERNACULAR NAME. *etou* (Pahouin).

NOTE. This species is very close to *Rhaptopetalum evardii* from the Congo.

4. Subfamily **Foetidioideae** *Nied.* (Niedenzu 1892: 29); Morton *et al.* (1997: 537); Mabberley (2008: 473). Barringtoniaceae tribus *Foetideae* Knuth (1939a :62). Foetidiaceae (Nied.) Airy Shaw (1965: 258). Type genus: *Foetidia* Comm. ex Lam.

Trees or shrubs. *Leaves* simple, entire. *Flowers* actinomorphic. Petals absent; corona and staminodes absent, base of stamens weakly fused but not forming a staminal ring; intrastaminal disc present; pollen tricolpate; ovary 4-locular, placenta peltate. *Fruit* indehiscent. *Secondary xylem* with cortical bundles reversely oriented.

10. Foetidia

10. *Foetidia* Comm. ex Lam. (Lamarck 1788, 2 : 457); Bentham & Hooker (1865: 724); Niedenzu (1892: 29); Knuth (1939a: 62); Perrier de la Bâthie (1954: 5); Bosser 1988: 105); Schatz (2001: 230); Prance (2008: 336). Type species: *Foetidia mauritiana* Lam. *Faetidia* Jussieu (1789: 325), orth. var.

Trees or *shrubs*. *Leaves* alternate but grouped towards end of branches, usually glabrous, often asymmetric, stipules absent. *Flowers* usually solitary in axils or rarely in axillary or terminal few-flowered fascicles; pedicels bearing two opposite bracteoles; hypanthium obpyramidal to conical; perianth of 4 persistent tepals, free or slightly fused at base; *stamens* many, multiseriate; *anthers* oblong with longitudi-

nal slits, basifixed, introrse; *ovary* inferior, 2 or 4-locular, with many ovules in each locule (5 – 30), placentation axile, *ovules* anatropous but some curved and somewhat campylotropous; *style* filiform 2 – 5 short-branched; disc epigynous, bearing style at centre. *Fruit* turbinate with persistent tepals, indehiscent, 1 – 4-locular, with one or rarely two exarillate seeds developing in each locule.

DISTRIBUTION. Seventeen species mainly in Madagascar and the Mascarenes but also one species reaching East Africa and one the Comores Islands.

NOTE. A revision of this genus was published in Prance (2008) and only the African continental and Comores species are treated here.

Key to African species of *Foetidia*

1. Flowers in axillary and terminal clusters; leaf base slightly unequal. **3. *F. obliqua***
Flowers solitary; leaf base equal. 2
2. Sepals in fruit 2 – 2.5 × 1 – 1.9 cm; disc 9 mm diam.; midrib impressed above. **2. *F. comorensis***
Sepals in fruit 1.7 – 2 × 0.8 – 0.9 cm; disc 4 mm diam.; midrib plane above. **1. *F. africana***

1. *Foetidia africana* Verdc. (Verdcourt 1985: 635); Prance (2008: 337). Type: Tanzania, Uzaramo distr., 80 km W of Dar es Salaam, Dar-Morogoro road, Vigwasa, 80 m, 5 Dec. 1978, *Mwasumbi* 11607 (holotype K!; isotypes DSM, K!).

ILLUSTRATION. Verdcourt (1985: 636, fig. 1).

Small tree to 8 m tall. *Leaves* subsessile, oblong-elliptic to obovate, 4.5 – 9.2 × 2.3 – 4.5 cm; apex rounded or slightly retuse in some leaves, base cuneate, equal; midrib plane to prominulous above, slightly excentric. *Flowers* not seen. *Fruit* solitary, axillary; pedicels to 3.5 cm long, with two small bracteoles at junction with receptacle, the bracteoles 1.5 – 3 mm long, lanceolate; receptacle turbinate, 3.75 mm in young fruit; tepals 1.7 – 2 × 0.8 – 0.9 cm, narrowly oblong-lanceolate, chartaceous, bluntly acute at apex; style 1 – 1.3 cm long, disc subquadrangular, 4 mm broad.

DISTRIBUTION. Tanzania, known only from the type specimen.

HABITAT. Riverine forest in lowlands.

CONSERVATION STATUS. Critically endangered (CRB1a). Known only from the type collected in 1978 and not seen since.

PHENOLOGY. Flowering in December.

2. *Foetidia comorensis* Labat, Bidault & Viscardi (2011: 264). Type: Comores, Mayotte, Grande Terre, Bandrélè, Mtsamoudou, 9 Dec. 2009, *G. Viscardi* & *V. Guiot* 219 (holotype P; isotypes G, K, MAO, MO, P).

ILLUSTRATION. Labat *et al.* (2011: 265).

Small tree 7 – 8 m tall. *Leaves* sessile; lamina oboval, chartaceous, 6.5 – 7.5 × 3 – 4 cm, rounded or emarginate at apex, cuneate at base, midrib slightly asymmetric, impressed above, prominent beneath; primary veins inconspicuous on both surfaces. *Flowers* axillary, solitary; pedicels 3 – 4 cm long bearing 2 persistent bracteoles at base of receptacle; receptacle obpyramidal, attenuate

into pedicel, c. 5 mm long; tepals 3 – 4, fused at base when young, elliptic, chartaceous, 1.5 – 1.7 × 0.8 – 1 cm; *stamens* numerous, c. 175, in many rings; *style* 1 – 1.5 cm long, white; disc 9 mm diam. *Fruit* brown, obpyramidal, 1 cm tall and c. 1.2 cm diam. at apex with large persistent tepals at apex, 2 – 2.5 × 1 – 1.5 cm.

DISTRIBUTION. Known only from one locality in Mayotte, Comores.

SPECIMENS EXAMINED. COMORES. Mayotte: Grande Terre, Bandrélè, Mtsamoudou, 15 Nov. 2006, *Barthelat* & *Viscardi* 1708 (MAO, MO, P), 18 Nov. 2006, *Barthelat* & *Viscardi* 1710 (MAO, MO, P), 14 Dec. 2006, *Barthelat* & *Mchangama* 1732 (BR, G, K, MAO, MO, P), 6 March 2009, *Viscardi et al.* 101 (G, K, MAO, MO, P). All these collections are paratypes.

CONSERVATION STATUS. This species seems to consist of a population of less than fifty individuals distributed over less than 500 m² and so the authors classify it in the IUCN category of critically endangered (CR), B (ii,iii, iv,v) +D.

PHENOLOGY. Flowering in October.

VERNACULAR NAMES. *Namoulohna*, *Malouhna* (Shibushi).

NOTE. I have included this interesting, recently described species as it was not seen for my revision of the genus (Prance 2008) and it is closely related to the African species *F. africana*.

3. *Foetidia obliqua* Blume (1850: 145); Knuth (1939a: 63); Sangai (1971: 6). Type: Madagascar, *without collector* s.n. (holotype P).

ILLUSTRATION. Sangai (1971: 5, fig. 2).

Shrub or small tree. *Leaves* sessile or subsessile; lamina elliptic to oblong-elliptic, coriaceous, 3.5 – 11.5 × 1.2 – 5 cm, rounded, acute or slightly acuminate at apex, base cuneate, slightly unequal; midrib asymmetric, plane above. *Flowers* axillary and terminal in clusters of 5 – 25, condensed at tip of branch; pedicels 0.3 – 1.2 cm long; bracts linear-lanceolate, 0.3 – 1.3 cm long; receptacle turbinate, 0.7 – 1.5 cm long, striate; tepals rounded

deltoid to lanceolate, 0.5 – 1 cm long; *stamens* numerous, about equalling tepals in length; *style* c. 1.2 cm long, 3-lobed. *Fruit* red, obconic-turbinate, 1.2 – 1.4 cm long, with persistent tepals at apex.

DISTRIBUTION. Madagascar and Pemba Island.

SPECIMEN EXAMINED. TANZANIA. Pemba I.: Chake Chake Creek, 15 Sept. 1929, *Vaughan* 651 (FHO).

HABITAT. Lowland swampy forest behind Mangrove in Pemba.

CONSERVATION STATUS. Data deficient (DD) in Africa, but a common species in Madagascar.

PHENOLOGY. Collected in flower in September in Pemba.

NOTE. This species is common in Madagascar (Prance 2008), but has only been collected once in Pemba. It is uncertain whether it is native there or introduced. This collection was overlooked in Prance (2008).

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