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A synopsis of the Afro-Malagasy species previously included in *Schefflera* (Araliaceae): resurrection of the genera *Astropanax* and *Neocussonia*

Porter P. Lowry II, Gregory M. Plunkett, Morgan R. Gostel & David G. Frodin

Abstract

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Phylogenetic studies have shown that *Schefflera* J.R. Forst. & G. Forst., the largest genus of *Araliaceae*, is grossly polyphyletic, representing five distinct clades within the family, and that one of these clades, comprising species from continental Africa, Madagascar, the Comoro Islands and the Seychelles, contains two morphologically distinct subclades. In an effort to establish monophyletic genera among the elements that have been treated in *Schefflera* over the last several decades, we resurrect the genera *Astropanax* Seem. (15 species) and *Neocussonia* (Harms) Hutch. (16 species) to encompass the members of the two “Afro-Malagasy” subclades. In this synoptical revision, we provide updated generic descriptions along with a key to the genera, and make 26 new combinations. A lectotype is designated for each genus, a neotype is provided for one accepted species name, and lectotypes are designated for 16 accepted species names and 12 heterotypic synonyms. For each accepted species, full synonymy is provided along with complete citation of type specimens and an indication of habitat and geographic range.

Keywords

ARALIACEAE – *Astropanax* – *Neocussonia* – *Schefflera* – Taxonomy – Nomenclature

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Introduction

The species of *Schefflera* J.R. Forst. & G. Forst. are most commonly small trees or arborescent hemi-epiphytes, typically contributing to the understory vegetation of humid forests throughout the tropics of both the Old and New Worlds. Within Araliaceae, they have a coherent morphology combining the presence of palmately compound leaves with the absence of prickles, but the simplicity of this generic definition belies a very complex taxonomic history (reviewed in PLUNKETT et al., 2005) in which no fewer than 14 other generic names were subsumed under *Schefflera*, largely through the studies of FRODIN (e.g., 1975, 1986, 1989, 1993, 1995), as well as PHILIPSON (1979, 1995) and LOWRY (1989). More recently, the advent of phylogenetic analyses using molecular characters revealed that *Schefflera*, as broadly circumscribed, was polyphyletic, representing five major clades in Araliaceae (PLUNKETT et al., 2005), most only distantly related to one another. These five clades did not correspond to groups recognized in any of the various taxonomic systems published over the decades for the family, but they did align well with the system of subgeneric groupings proposed by Frodin (see PLUNKETT et al., 2005; later updated by FRODIN et al., 2010), which were largely based on a combination of geography and a suite of morphological characters. The importance of geography was also reflected in the informal names for four of the five major clades: Neotropical *Schefflera*, Asian *Schefflera*, Melanesian *Schefflera*, and Afro-Malagasy *Schefflera*, and even the fifth, *Schefflera* sensu stricto (which includes the generic-type), is geographically coherent, although it overlaps in part with Melanesian *Schefflera* in the Pacific islands. PLUNKETT et al. (2005) recommended that the three clades with the smallest number of species, the Melanesian and Afro-Malagasy groups along with *Schefflera* sensu stricto, be treated as immediate priorities for taxonomic recircumscription. Towards this end, the phylogeny of Melanesian *Schefflera* was evaluated using a nearly comprehensive sample of taxa (47/49 spp.; PLUNKETT & LOWRY, 2012), and a subsequent synoptic revision treated these species in six subgenera of a newly reinstated and expanded genus *Plerandra* A. Gray (LOWRY et al., 2013). In parallel, GOSTEL et al. (2017) completed a phylogenetic reconstruction of the Afro-Malagasy clade, paving the way for the present study, in which we present a synopsis of the taxonomic implications resulting from our recent findings.

Afro-Malagasy *Schefflera* is one of several clades forming a large polytomy at the base of the phylogenetic tree of Araliaceae (PLUNKETT et al., 2005). It currently comprises 31 accepted species (GOSTEL et al., 2017) and, as the name implies, these taxa are all distributed in (sub-Saharan) continental Africa and Madagascar, as well as the nearby Comoro and Seychelles archipelagos. SEEMANN (1865) was the first to describe African species from this clade, placing them in two genera, *Astropanax* Seem. and *Sciodaphyllum* Seem. HARMS

(1894-1897), however, subsequently assigned all palmately-leaved *Araliaceae* from Africa to *Schefflera*. From this time until the third quarter of the 20th Century, the diversity and taxonomic status of species in *Schefflera* recognized from continental Africa and Madagascar remained poorly understood, until the efforts of BERNARDI (1969, 1973) and BAMPS (1974), who provided major contributions to our understanding of the genus from these two regions, respectively. Despite the non-monophyly of the infrageneric groups recognized by BERNARDI (1969; see GOSTEL et al., 2017), his work remains an important source for species delimitations, particularly for Malagasy species. In total, BERNARDI (1966, 1969, 1973) described six new species and three new varieties of *Schefflera* from Madagascar and the Comoro islands, and transferred six additional species and one variety from *Cussonia* Thunb. to *Schefflera*. BAMPS (1974) described two additional species from continental Africa, bringing the total number currently recognized from the Afro-Malagasy region to the present 31 species. Subsequent field and herbarium studies have revealed 19 additional species that are currently being described (LOWRY et al., unpubl. data).

The recent molecular phylogenetic studies of GOSTEL et al. (2017) have confirmed the monophyly of Afro-Malagasy *Schefflera* and provide evidence for two well supported clades, one of which corresponds closely to Frodin's infrageneric group "Meiopanax" and the other to part of his broad 'Sciodaphyllum' group, as circumscribed in PLUNKETT et al. (2005) and FRODIN et al., (2010). Because the type of *Schefflera* (*S. digitata* J.R. Forst. & G. Forst.) belongs to another clade, all species of Afro-Malagasy *Schefflera* must be transferred to one or more other genus. Our phylogenetic findings lend themselves to one of two obvious alternatives, treating the entire clade as a single genus or recognizing each of its two major subclades as distinct genera. In considering the overall task of recircumscribing the > 600 currently accepted species of *Schefflera* that fall outside the small type clade (*Schefflera* s.s.), LOWRY et al. (2013) suggested that decisions should be based on three criteria: monophyly, morphological diagnosability, and geographic coherence. This approach was applied to the synoptical revision of Melanesian *Schefflera*, now treated as *Plerandra*. That clade comprises six subclades, each morphologically distinct (satisfying two of the three criteria for recognition as genera), but they overlapped considerably in their geographies, which led to the decision to treat them as subgenera. A similar approach was used for the second largest genus of Araliaceae, *Polyscias* J.R. Forst. & G. Forst. (LOWRY & PLUNKETT, 2010). Applying these same criteria to Afro-Malagasy *Schefflera*, the "Sciodaphyllum" and "Meiopanax" subclades seem better treated as distinct genera. Not only are these groups reciprocally monophyletic, but they are also easily distinguished based on flower and leaf characters (see below). Moreover, with only a few exceptions, these clades

are geographically coherent. Only three of the 13 species of the continental-African “*Sciodaphyllum*” subclade [*S. humblotiana* Drake, *S. monophylla* (Baker) Bernardi, and *S. myriantha* (Baker) Drake] occur in Madagascar, and one [*S. procumbens* (Hemsl.) F. Friedmann] is restricted to the Seychelles, while only two of the 17 species from the Malagasy “*Meioplanax*” subclade [*S. lukwangulensis* (Tennant) Bernardi and *S. umbellifera* (Sond.) Baill.] are present in continental Africa. Unfortunately, neither of the two informal names applied by Frodin to these groups is allowable under the Code of Nomenclature (McNEILL et al., 2012). In the case of ‘*Meioplanax*’, an older available name, *Neocussonia* (Harms) Hutch., has priority at the generic level. For ‘*Sciodaphyllum*’, the problem is more complex. Frodin envisioned “*Sciodaphyllum*” as an unspecialized group (perhaps approaching the ancestral condition of *Schefflera* s.l.) that is broadly distributed across Asia, the Neotropics, and Africa. This group, however, proved to be polyphyletic in light of phylogenetic studies (PLUNKETT et al., 2005). Moreover, the type of the genus *Sciodaphyllum* (*S. brownei* Spreng., from Jamaica) belongs to the Neotropical *Schefflera* clade (FIASCHI & PLUNKETT, 2011; PLUNKETT et al., unpubl. data). Therefore, among the Afro-Malagasy elements of “*Sciodaphyllum*”, the oldest available generic name is *Astropanax* Seem.

The synopsis presented here thus reinstates the generic names *Astropanax* and *Neocussonia*. Of the 31 currently accepted species of Afro-Malagasy *Schefflera*, 15 are placed in *Astropanax* and 16 in *Neocussonia*, necessitating 12 and 14 new combinations, respectively. Information on the species from Madagascar and continental African is available on-line in the “Catalogue of the Vascular Plants of Madagascar” (MADAGASCAR CATALOGUE, 2017) and “African Plant Database” (APD, 2017), respectively. An identification key is provided below to distinguish *Astropanax* and *Neocussonia*.

Systematics

Key to the genera *Astropanax* and *Neocussonia*

1. Ovary 2–5-carpellate, styles 2–5; leaves palmately compound or unifoliate, apex of leaflets generally truncate to emarginate, sometimes acute (*N. bojeri* and *N. staufferiana*) or rounded (*N. halleana*), generally with an evident retuse notch and almost always with a small mucro or boss formed by an extension of the midvein; terrestrial trees; Madagascar, except *N. lukwangulensis* and *N. umbellifera* in continental Africa **B. *Neocussonia***
- 1a. Ovary 5–9-carpellate, styles 5–9; leaves palmately compound (generally unifoliate in *A. monophyllus*), apex of leaflets acute to acuminate or caudate (rounded in *A. volkensii* and sometimes in *A. monophyllus*), rarely if ever

with a retuse notch, lacking a small mucro or boss; terrestrial or hemi-epiphytic trees, or lianas; continental Africa, except *A. humblotianus*, *A. monophyllus* and *A. myrianthus* in Madagascar, and *A. procumbens* in the Seychelles

..... **A. *Astropanax***

A. *Astropanax* Seem. in J. Bot. 3: 174, 176. 1865 (Fig. 1).

Lectotypus (designated here): *Astropanax barteri* Seem.

= *Geoplanax* Hemsl. in Hooker’s Icon. Pl. 29: tab. 2821. 1909. **Typus**: *Geoplanax procumbens* Hemsl. (= *Astropanax procumbens* (Hemsl.) Lowry, G.M. Plunkett, Gostel & Frodin).

Hermaphroditic, unarmed, glabrous (occasionally with indument on twigs and young inflorescence branches), terrestrial, hemi-epiphytic, evergreen *trees* or rarely *lianas*. *Stems* sparsely to well branched or plants monocaulous. *Leaves* alternate, palmately compound or rarely unifoliate (*A. monophyllus*); petioles clasping at the base with short to long ligulate stipules; leaflets lanceolate, ovate, elliptical, oblanceolate, or obovate, coriaceous or subcoriaceous to membranaceous, margins entire, crenate, toothed or incised, apex acute to acuminate or caudate (rounded in *A. volkensii* and sometimes in *A. monophyllus*). *Inflorescences* terminal, erect, paniculate or compound-umbellate, the ultimate units racemose, spicate, umbellate or capitate; inflorescence axes and peduncles subtended by thin bracts (bracts rarely lacking); *flowers* subtended by bracteoles (or lacking); pedicels slender to stout, unarticulated (flowers sessile in spicate and capitate ultimate units). *Ovary* inferior, 5–9-carpellate, carpels unilocular, placentation apical; styles 5–9, free or partially or mostly united basally to form a stylopodium or a distinct column. *Fruits* drupaceous, the disc depressed-concave to flat or short-conical; mesocarp fleshy, endocarp sclerified around each locule, forming a pyrene.

Diversity and distribution. – *Astropanax* comprises 15 currently recognized species, 11 of which occur in tropical and subtropical Africa, three in Madagascar and one in the Seychelles, along with three as yet undescribed species in Madagascar and possibly one more from Africa. In Africa, the genus extends from Guinea Conakry, Liberia and Sierra Leone in the west, through the Gulf of Guinea Islands and across Central Africa to East Africa, northward to Ethiopia, Somalia and Sudan, and southward to Southern Africa (Mozambique, South Africa and Swaziland and Zimbabwe). The three Malagasy species of *Astropanax* occur in humid forests, extending from the far north to the extreme southeastern part of the island, and the single member of the group in the Seychelles is restricted to highly degraded humid forest on the islands of Silhouette and Mahé. Some members of the genus are fairly widespread,

such as *A. abyssinicus* and *A. barteri* in Africa (BAMPS 1974b; APD, 2017) and *A. myrianthus* in Madagascar (MADAGASCAR CATALOGUE, 2017), whereas several others have much more restricted geographic ranges, including *A. evrardii*, *A. kivuensis*, *A. stolzii* and *A. tessmannii* in Africa, *A. humblotianus* in Madagascar, and *A. procumbens* in the Seychelles.

Notes. – SEEMANN (1865) included five species in his new genus (*A. abyssinicus*, *A. baikiei*, *A. barteri*, *A. elatus*, and *A. mannii*), the second and fourth of which have been placed in synonymy by most recent authors (cf. BAMPS 1974a, 1974b; FRODIN & GOVAERTS, 2004). Our recent molecular phylogenetic studies (GOSTEL et al., 2017) include samples of *S. barteri* and *S. mannii* and place both within a clade that corresponds to *Astropanax*.

We have selected as the lectotype of the genus *Astropanax* *barteri* [Barter s.n., K!] because it is the best known and most widely distributed of the three accepted species originally assigned to the genus by SEEMANN (1865).

A1. *Astropanax abyssinicus* (Hochst. ex A. Rich.) Seem. in J. Bot. 3: 177. 1865.

- = *Aralia abyssinica* Hochst. ex A. Rich., Tent. Fl. Abyss. 1: 336. 1848. = *Schefflera abyssinica* (Hochst. ex A. Rich.) Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 38. 1894. = *Sciodaphyllum abyssinicum* (Hochst. ex A. Rich.) Miq. in Ann. Mus. Bot. Lugduno-Batavi 1: 26. 1863. = *Heptapleurum abyssinicum* (Hochst. ex A. Rich.) Benth. & Hook. f. ex Vatke in Linnaea 40: 191. 1876.

Lectotypus (designated here): **ETHIOPIA. Prov. Tigray:** Mt. Scholoda, 11.VI.1837, fr., Schimper 283 (P [P00466317]!; isolecto-: BM [BM000902775, BM000902776]!, BR [BR08860958]!, FI!, HAL [HAL0117394] image seen, HOH [HOH-009899, HOH-009890] images seen, JE [JE00000511] image seen, K [K000350399]!, L [L0008492, L0008493, L0008494, L0008495]!, M [M00095801, M00104947, M00104948] images seen, MPU [MPU023965, MPU023966] images seen, NY [NY00274565]!, OXF!, P [P00466316, P00466318]!, TUB [TUB003050, TUB003051, TUB003052, TUB003053] images seen, WAG [WAG00000241] image seen).

- = *Paratropia elata* Hook. f. in J. Linn. Soc., Bot. 7: 196. 1864. = *Astropanax elatus* (Hook. f.) Seem. in J. Bot. 3: 177. 1865. = *Sciodaphyllum elatum* (Hook. f.) Seem. in J. Bot. 3: 267. 1865. = *Heptapleurum elatum* (Hook. f.) Hiern in Fl. Trop. Afr. 3: 30. 1877. = *Schefflera hookeriana* Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 38. 1894 [non *S. elata* (Buch.-Ham.) Harms]. **Lectotypus** (designated here): **CAMEROON. Southwest**

Region: Mt. Cameroon, II.1862, bud, Mann 1181 (K [K00350377]!; isolecto-: K [K00350376, K00350378]!).

- = *Schefflera acutifoliolata* De Wild. in Rev. Zool. Bot. Africaines 8: 14. 1920. **Lectotypus** (designated here): **DEMOCRATIC REPUBLIC OF THE CONGO. Prov. Nord-Kivu:** Ruwenzori, Lamia, ± 2000 m, s.d., fl., Bequaert 4310 (BR [BR00886094]!; isolecto-: BR [BR00886078]!).

Diversity and distribution. – *Astropanax abyssinicus* occurs in mid- to high-altitude humid forest, gallery forest, and forest-grassland transition areas, from 1,450 to 2,800 m elevation, and ranges from Ethiopia south to Zambia and Malawi in eastern Africa, as well as in disjunct populations well to the west in Cameroon (BAMPS, 1974b; APD, 2017).

Notes. – *Aralia abyssinica* was based on three specimens at P, one of which has an original label in Richard's handwriting and has therefore been chosen as the lectotype.

Among the three specimens at Kew on which Hooker based *Paratropia elata*, two bear original labels, one of which has a leaf and the other a full inflorescence in bud. We have selected the second of these as the lectotype.

Schefflera acutifoliolata was based on two specimens at BR, one of which is more complete, comprising an inflorescence and leaf, and has therefore been selected as the lectotype.

A2. *Astropanax barteri* Seem. in J. Bot. 3: 177. 1865 (Fig. 1C).

- = *Sciodaphyllum barteri* (Seem.) Seem. in J. Bot. 3: 267. 1865. = *Heptapleurum barteri* (Seem.) Hiern in Fl. Trop. Afr. 3: 20. 1877. = *Schefflera barteri* (Seem.) Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 38. 1894.

Typus: **SIERRA LEONE. Western Prov.:** Sugar Loaf Mountains, fr., Barter s.n. (holo-: K [K00350373]!).

- = *Astropanax baikiei* Seem. in J. Bot. 3: 177. 1865. = *Sciodaphyllum baikiei* (Seem.) Seem. in J. Bot. 3: 267. 1865. = *Heptapleurum baikiei* (Seem.) Hiern in Fl. Trop. Afr. 3: 30. 1877. = *Schefflera baikiei* (Seem.) Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 38. 1894. **Typus:** **NIGERIA:** *sine loc.*, fr., Barter 1851 (holo-: K [K00350375]!).

- = *Schefflera hierniana* Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 38. 1894. = *Heptapleurum scandens* Hiern in Fl. Trop. Afr. 3: 30. 1877 [nom. illeg.] [non *H. scandens* (Blume) Seem.]. **Lectotypus** (designated here): **CAMEROON. Southwest Region:** Mt. Cameroon, bud & fr., Mann 1180 (K [K00350379]!; isolecto-: K [00350380]!).

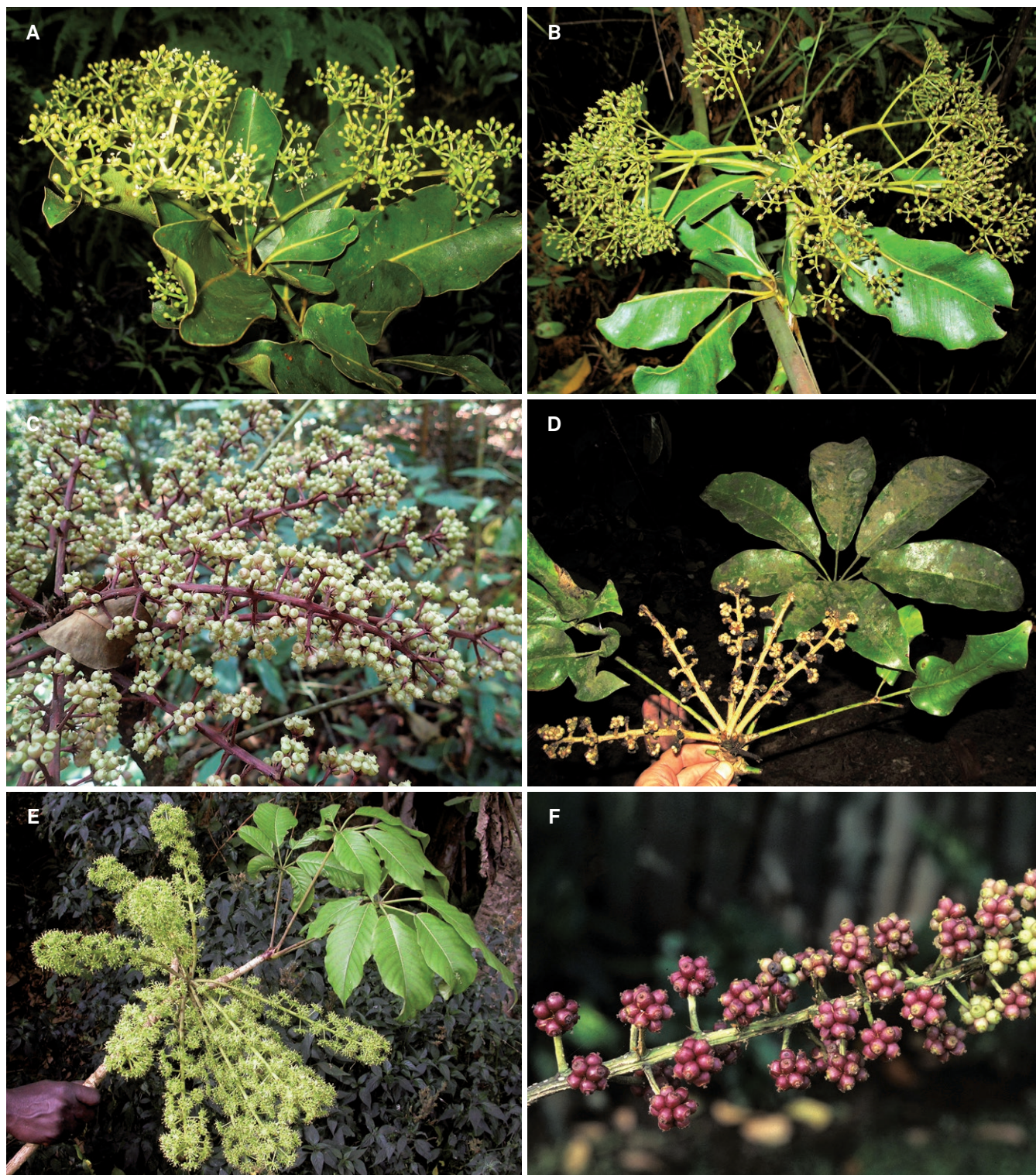


Fig. 1. – Photographs of *Astropanax* Seem. **A.** *Astropanax monophyllum* (Baker) Lowry, G.M. Plunkett, Gostel & Frodin; **B.** *Astropanax myrianthus* (Baker) Lowry, G.M. Plunkett, Gostel & Frodin; **C.** *Astropanax barteri* Seem.; **D.** *Astropanax mannii* (Hook.f.) Seem.; **E.** *Astropanax stolzii* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin; **F.** *Astropanax volkensii* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin.
[A: Ravelonarivo 4270; B: Antilahimena 4680; C: Texier 608; D: Droissart 1207; E: Unvouchered photo, N end of Lake Nyasa, Tanzania; F: Lowry 4987]
[Photos: A: D. Ravelonarivo; B: P. Antilahimena; C: N. Texier; D: V. Droissart; E: Paul Latham; F: P. Lowry]

- = *Heptapleurum dananense* A. Chev. in Bull. Soc. Bot. France 58 (Mém. 8d): 178. 1912. = *Schefflera dananensis* (A. Chev.) Harms ex Engl. in Engl. & Drude, Veg. Erde 9: 778. 1921. **Typus: IVORY COAST. Prov. Danane:** Pays des Dyolas, au bord de la Rivière Boan, près de Danané (Fort Hittos), 16.IV.1895, fr., *Chevalier* 21275 (holo-: P [P00697823]!; iso-: BR [BR08860934]!, K [K000350374]!, MO!, NY!, P [P00697824, P00697825]!).
- = *Schefflera ledermannii* Harms in Bot. Jahrb. Syst. 53: 359. 1915. **Lectotypus** (designated here): **EQUATORIAL GUINEA. Bioko [Fernando Po]:** Moka, 1200-1800 m, VIII.1911, fl., *Mildbraed* 7107 (HBG [HBG-502745]!).
- = *Schefflera henriquesiana* Harms ex Henriq. in Bol. Soc. Brot. 27: 192. 1917. **Lectotypus** (designated here): **SÃO TOMÉ & PRÍNCIPE. São Tomé:** Baté Pa, Vermelho, 670 m, VII.1885, bud & fl., *Moller* 490 (COI [COI00075041] image seen). **Syntypi: SÃO TOMÉ & PRÍNCIPE. São Tomé:** *sine loc.*, VIII. 1903, fl., *Henriques* 18 (COI [COI00075042] image seen); Baté Pa, 600 m, VII. 1885, y. fr., *Moller* 569 (COI [COI00075040] image seen); Baté Pa, 500 m, VIII.1885, fl. & fr., *Moller* 701 (COI [COI00075039] image seen).

Habitat and distribution. – *Astropanax barteri* ranges from Guinea Conakry, Liberia and Sierra Leone in the west of Africa to the Gulf of Guinea Islands and Central Africa as far east as central Democratic Republic of the Congo and south to NE Angola (BAMPS, 1974b; APD, 2017). It occurs in lowland to montane humid, gallery and swampy forest, from elevations as low as 100 m and as high as 2,200 m.

Notes. – In the protologue for *Astropanax barteri*, SEEMANN (1865) provided a description based on fruiting material along with the following citation: “Sugar Loaf Mountains, Niger (Barter! n. 2027)”. However, this collection, deposited at K, comprises a sterile specimen from “Prince’s Island” (Príncipe). In all likelihood, *A. barteri* was also based on *Barter s.n.* (also at K), a fruiting collection from the Sugar Loaf Mountains (“Niger” was at that time more broadly circumscribed to include present day Sierra Leone). Given Seemann’s clear indication that the type of his new species came from this locality and the fact that he obviously saw fruiting material, we have chosen to interpret the single sheet of *Barter s.n.* as the holotype, following BAMPS (1974).

Schefflera hierniana was a replacement name for the illegitimate *Heptapleurum scandens*, a later homonym of *H. scandens* (Blume) Seem. (SEEMANN, 1865). It was based on two sheets of *Mann* 1180 from Cameroon, both at K, from which we have selected the specimen in young fruit bearing the original label

as the lectotype. While FRODIN & GOVAERTS (2004) regarded *Schefflera hierniana* as distinct from *S. barteri* (= *Astropanax barteri*), we have chosen to follow BAMPS (1974a, 1974b) in treating it as a synonym, at least until more detailed morphometric and/or phylogenetic analyses can be undertaken.

Schefflera ledermannii was based on two collections at B (*Milbraed* 7107 from Bioko and *Ledermann* 1554 from Cameroon), both of which appear to have been destroyed. A duplicate of *Milbraed* 7107 is deposited in HBG and has been selected as the lectotype.

Schefflera henriquesiana was based on four collections at COI, one of which (*Moller* 490) has been selected as the lectotype because it is more complete than the other syntypes (*Henriques* 18, *Moller* 569 and 701).

A3. *Astropanax evrardii* (Bamps) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

- = *Schefflera evrardii* Bamps in Bull. Jard. Bot. Belg. 43: 425. 1973.

Typus: DEMOCRATIC REPUBLIC OF THE CONGO. Prov. Equateur: Djoa (Terrotoire Bolomba), 17.V.1958, y. fr., *Evrard* 4071 (holo-: BR [BR00886167]!; iso-: K [K00350381]!).

Habitat and distribution. – *Astropanax evrardii* is known from only a few localities in central Democratic Republic of the Congo, where it grows in low-altitude humid and swampy forest between 300 m and 450 m elevation (BAMPS, 1974b; APD, 2017)

Notes. – This species closely resembles *A. goetzenii* but differs by several morphological features (see BAMPS, 1971, 1974a, 1974b), which appear to justify its recognition as a distinct species.

A4. *Astropanax goetzenii* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

- = *Schefflera goetzenii* Harms in Goetzen, Durch Afr., Repr. 7: 376. 1895.

Neotypus (designated here): **DEMOCRATIC REPUBLIC OF THE CONGO. Prov. Kivu-Nord:** E slope of Niragongo Volcano [= Mt. Nyiragongo], 2440 m, 6.I.1931, *Burt* 3224 (K [K001208218]!).

- = *Schefflera stuhlmannii* Harms in Bot. Jahrb. Syst. 26: 243. 1899. **Neotypus** (designated here): **TANZANIA. Morogoro Region:** Morningside, Uluguru Mountains, XI.1934, bud, *Bruce* 240 (K!; isoneo-: BM [BM00129656]!, BR [BR14695070]!).

- = *Schefflera adolfi-fridericii* Harms in Wiss. Ergebn. Deut. Zentr.-Afr. Exped., Bot. 2: 590. 1913. **Typus: RWANDA:** Bugoie, *Milbraed* 1478 (B†).

- = *Schefflera mildbraedii* Harms in Wiss. Ergebn. Deut. Zentr.-Afr. Exped., Bot. 2: 591. 1913. **Typus: RWANDA. Prov. Ouest:** Rukarara [= Lukarara], *Milbraed 1010* (B†).
- = *Schefflera sycidiifolia* Lebrun in Bull. Jard. Bot. Etat Bruxelles 13: 19. 1934. **Lectotypus** (designated here): **DEMOCRATIC REPUBLIC OF THE CONGO. Prov. Nord-Kivu:** entre Kasindi et Lubango, chaîne W du lac Edouard, 2320 m, I.1932, bud, *Lebrun 4755* (BR [BR00886166]!; isolecto-: BR [BR00886165]!, K [K00350386]!).

Habitat and distribution. – *Astropanax goetzenii* occurs in eastern Africa, from eastern Democratic Republic of the Congo, Burundi and Rwanda through southern Tanzania to Mozambique and Zimbabwe. It grows in humid to seasonally dry forest, and also in secondary forest, from 800 to 2,500 m elevation (BAMPS, 1974b; APD, 2017).

Notes. – The holotype of *Schefflera goetzenii* Harms (*Götzen s.n.*), from what is now known as Mt. Nyiragongo in the Democratic Republic of the Congo, was deposited at B and is presumably destroyed. We have not been able to locate any isotypes, so we have designated as the neotype the only other known collection from the same mountain, *Burt 8155*, which is deposited at K.

Schefflera stuhlmannii Harms was based on two collections made by Franz Ludwig Stuhlmann, (1863–1928) in Tanzania (*Stuhlmann 8849* and *9277*), both of which were deposited at B and are therefore presumably destroyed, and neither of which appears to have duplicates in other herbaria. While FRODIN & GOVAERTS (2004) regarded *S. stuhlmannii* as distinct from *S. goetzenii* (= *Astropanax goetzenii*), we have chosen to follow BAMPS (1974a, 1974b) in treating it as a synonym, at least until more detailed morphometric and/or phylogenetic analyses can be undertaken. We have therefore designated as a neotype the specimen of *Bruce 240* deposited at K, which corresponds well to the protologue and is represented by two duplicates at BM and BR. By contrast, we have refrained from designating a neotype for *S. adolfi-fridericii* Harms and *S. mildbraedii* Harms, whose types was also deposited at B and for which no isotypes are known, because we have not been able to find any material that appears to correspond well to the protologues.

The type collection of *Schefflera sycidiifolia* Lebrun at BR is represented by two sheets. We have selected the specimen bearing the original label as the lectotype.

A5. *Astropanax humblotianus* (Drake) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

- = *Schefflera humblotiana* Drake in Grandidier, Hist. Phys. Madagascar 35: tab. 404. 1896.

Lectotypus (designated here): **MADAGASCAR:** *sine loc.*, y. fr., *Humblot 640* (P [P00466310]!; isolecto-: K!, LD [LD1215974, LD1216274]!, P [P00466308, P00466309]!, W!).

Habitat and distribution. – *Astropanax humblotianus* has been collected at a limited number of sites in eastern Madagascar, from Ankirindro near Maroantsetra in the northeast to Ambalabe in the center-east of the island. It occurs in mid-altitude humid forest, from c. 400 to 1,150 m elevation (MADAGASCAR CATALOGUE, 2017).

Notes. – From among the three specimens of *Drake 640* at P, we have selected the most complete one, with an entire adult leaf and a portion of an inflorescence with a nearly complete ultimate unit, as the lectotype.

A6. *Astropanax kivuensis* (Bamps) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

- = *Schefflera kivuensis* Bamps in Bull. Jard. Bot. Belg. 41: 251. 1971.

Typus: DEMOCRATIC REPUBLIC OF THE CONGO. Prov. Nord-Kivu: Kikoma, terr. Masisi, 1077 m, 17.II.1959, bud & fl., *A. Léonard 3082* (holo-: BR [BR00886171]!; iso-: BR [BR00886169, BR00886170]!).

Habitat and distribution. – *Astropanax kivuensis* is only known from eastern Democratic Republic of the Congo (BAMPS, 1974b; APD, 2017), where it has been collected in humid forest at 1,000–1,700 m elevation.

Notes. – Among the members of the genus with ultimate inflorescence units arranged racemosely, *Astropanax kivuensis* is distinctive in having 3 orders of inflorescence branching (i.e., panicles of umbellules, with a distinct primary axis), vs. just 2 orders of branching, thus forming racemes of umbellules arising from nothing more than a short primary axis (BAMPS, 1974a, 1974b).

A7. *Astropanax mannii* (Hook.f.) Seem. in J. Bot. 3: 177. 1865 (Fig. 1D).

- = *Paratropia mannii* Hook. f. in J. Linn. Soc., Bot. 6: 10. 1862. = *Schefflera mannii* (Hook. f.) Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 38. 1894. = *Heptapleurum mannii* (Hook. f.) Benth. in Benth. & Hook. f., Gen. Pl. 1: 942. 1876. = *Brassaia mannii* (Hook. f.) Hutch., Gen. Fl. Pl. 2: 623. 1967.

Lectotypus (first step designated by BAMPS, 1974b: 133; second step designated here): **EQUATORIAL GUINEA. Bioko** [Fernando Po]: *sine loc.*, 1860, y. fr., *Mann 289* (K [K00350392]!; isolecto-: K [K00350393, K00350394, K00350395]!; P [P00466313, P00466314, P00466315]!, S [S11-26125] image seen).

- = *Schefflera mannii* var. *lancifolia* Harms in Bot. Jahrb. Syst. 53: 358. 1915. **Lectotypus** (designated here): **EQUATORIAL GUINEA. Bioko**: *sine loc.*, bud & fl., *Mildbraed 6410* (HBG!).

Habitat and distribution. – *Astropanax mannii* is restricted to the mountains of western Cameroon and adjacent Nigeria, as well as the Gulf of Guinea Islands of Annobón, Bioko and São Tomé (BAMPS, 1974b; APD, 2017), where it occurs in humid forest between 300 and 2,300 m elevation.

Notes. – BAMPS (1974b) indicated *Mann 289* at K as the lectotype, citing two additional collections from Cameroon (*Mann 1182* and *2168*) as “syntypes”. However, the protologue only mentions “In Ins. Fernando Po, alt. 5000 ped.” and as a consequence the specimens from Cameroon do not represent original material. A total of four sheets of *Mann 289* are deposited at K; we have further lectotypified by selecting the specimen bearing Mann’s original label.

The holotype of *Schefflera mannii* var. *lancifolia* at B was presumably destroyed, so we have designated the only known duplicate, deposited at HBG, as the lectotype.

A8. *Astropanax monophyllus* (Baker) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 1A).

- = *Cussonia monophylla* Baker in J. Linn. Soc., Bot. 20: 155. 1883. = *Neocussonia monophylla* (Baker) Hutch., Gen. Fl. Pl. 2: 79. 1967. = *Schefflera monophylla* (Baker) Bernardi in Candollea 24: 97. 1969.

Typus: **MADAGASCAR**: *sine loc.*, y. fr., *Baron 1279* (holo-: K [K00350555]!; iso-: BM!, P [P00466311, P00466312]!).

Habitat and distribution. – *Astropanax monophyllus* is endemic to Madagascar, where it is widely distributed in humid forest from c. 800 to 2,500 m elevation, extending from Montagne d’Ambre National Park in the far north to Andohahela National Park and Tsitongambarika Reserve in the southeastern part of the island (MADAGASCAR CATALOGUE, 2017).

Notes. – Notwithstanding the species epithet, the leaves of *Astropanax monophyllus* often have 2 or 3 leaflets, one of which is almost always considerably larger.

A9. *Astropanax myrianthus* (Baker) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 1B).

- = *Cussonia myriantha* Baker in J. Linn. Soc., Bot. 20: 157. 1883. = *Schefflera myriantha* (Baker) Drake in Grandidier, Hist. Phys. Madagascar 35: t. 403. 1896. = *Neocussonia myriantha* (Baker) Hutch., Gen. Fl. Pl. 2: 79. 1967.

Typus: **MADAGASCAR**: *sine loc.*, bud, *Baron 2017* (holo-: K [K00350556]!; iso-: G [G00015604]!, P [P00466304]!).

- = *Schefflera myriantha* var. *attenuata* Bernardi in Candollea 24: 101. 1969. **Lectotypus** (designated here): **MADAGASCAR. Prov. Toliara**: massif de l’Andohahela, haute vallée de la Sakamalio, [24°32’S 46°41’E], 1600–1900 m, I.1934, fl., *Humbert 13575* (P [P00466305]!; isolecto-: G [G00015603] image seen; P [P00466306, P00466307]!).

Habitat and distribution. – *Astropanax myrianthus*, as circumscribed here, is restricted to Madagascar, where it occurs in humid forest at scattered sites from the far north (Montagne d’Ambre National Park) to the extreme south (Andohahela National Park), at 950 to 2,350 m elevation (MADAGASCAR CATALOGUE, 2017).

Notes. – Based on the results of our recent molecular phylogenetic work (GOSTEL et al., 2017), *Astropanax myrianthus* is circumscribed here to comprise only the populations from Madagascar previously included in *Schefflera myriantha* by various authors (e.g., BAMPS, 1974a, 1974b; BERNARDI, 1969; FRODIN & GOVAERTS, 2004). While material from continental Africa long assigned to *S. myriantha* is essentially indistinguishable morphologically, molecular analyses show that if a broad circumscription of this taxon is applied, it is paraphyletic with respect to two clearly distinct and well delimited species in Madagascar (*Astropanax humblotianus* and two as yet undescribed taxa). Moreover, the African and Malagasy material assigned to *S. myriantha*, as historically circumscribed, belongs to two distinct, well-supported clades in all molecular analyses, prompting GOSTEL et al. (2017) to conclude that two separate species must be recognized, which, despite their morphological similarity, can be distinguished unambiguously on the basis of geography. Specimens from Africa are therefore referred to *Astropanax polysciadus* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin (see below). Material from the Comoro Islands was not available for the molecular study, so the placement of these populations must await additional analyses that include samples from this archipelago.

The type collection of *Schefflera myriantha* var. *attenuata* comprises three sheets at P, the most complete of which has been selected as the lectotype.

A10. *Astropanax polysciadus* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

- = *Schefflera polysciada* Harms in Engl., Pflanzenw. Ost-Afrikas C: 297. 1895.

Lectotypus (designated here): **TANZANIA. Tanga Region**: über Kilema, 2000 m, II.1894, fl., *Volkens 1877* (K [K00350400]!; isolecto-: BM [BM001209174] image seen, G [G00341679] image seen).

- = *Schefflera bequaertii* De Wild. in Rev. Zool. Bot. Africaines 8: 11. 1920. **Typus**: DEMOCRATIC REPUBLIC OF THE CONGO. **Prov. Nord-Kivu**: Ruwenzori, Lanuri, 25.V.1914, bud & fl., *Bequaert 4405* (BR [BR00886258]!).
- = *Schefflera congesta* De Wild. in Rev. Zool. Bot. Africaines 8: 12. 1920. **Lectotypus** (designated here): DEMOCRATIC REPUBLIC OF THE CONGO. **Prov. Nord-Kivu**: Ruwenzori, Butagu, 2200–2600 m, 15.IV.1914, y. fr., *Bequaert 3721* (BR [BR00886263]!; isolecto-: BR [BR00886259]!).
- *Schefflera angiensis* De Wild. in Rev. Zool. Bot. Africaines 9: 35. 1921 [nom. illeg.].
- = *Schefflera nyasensis* De Wild. in Pl. Bequaert. 4: 348. 1928. **Typus**: TANZANIA. **Morogoro Region**: Rungwe Mt., Mbaka River, y. fr., *Stolz 1602* (holo-: BR [BR00886260]!; iso-: BM [BM00902771, BM00902772] images seen; CAS!, K [K00350401, K00350402, K00350403, K00350404, K00350405]!, P [P00834314]!, UPS!, Z!).

Habitat and distribution. – *Astropanax polysciadus* is circumscribed here to include the continental African populations previously placed in *Schefflera myriantha* by recent authors (BAMPS, 1974a, 1974b; BERNARDI, 1969; FRODIN & GOVAERTS, 2004), but which must be excluded from that species (GOSTEL et al., 2017). Its range extends from Ethiopia south to Malawi (BAMPS, 1974b; APD, 2017), where it occurs in a range of habitats including humid forest, bamboo thickets, woody ericoid formations and riverine or swampy forest at elevations between 1,600 and 3,400 m.

Notes. – The recognition of *Astropanax polysciadus*, like that of *A. myrianthus*, is based on a careful interpretation of total evidence from geographic and molecular data, which support their being treated as distinct taxa despite a lack of morphological diagnostic characteristics (GOSTEL et al., 2017).

The original material on which Harms based his description of *Schefflera polysciada* was presumably deposited at Berlin and thus must have been destroyed, so we have selected the duplicate at K as the lectotype because it represents the most complete specimens among the known isotypes.

The type material of *Schefflera congesta* at BR comprises two specimens, one of which is fertile and bears the original label, and has therefore been selected as the lectotype.

A11. *Astropanax procumbens* (Hemsl.) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

- = *Geopanax procumbens* Hemsl. in Hooker's Icon. Pl.: tab. 2821. 1909. = *Schefflera procumbens* (Hemsl.) F. Friedmann in Bull. Mus. Natl. Hist. Nat., sect. B, Adansonia 8: 254. 1986.

Lectotypus (designated here): SEYCHELLES. **Mahé**: Cascade Estate, 450 m, II.1905, bud & fl., *Thomasset 192* (K [K000350560]!; isolecto-: K [K000350561]!).

Habitat and distribution. – *Astropanax procumbens* is known only from two islands in the Seychelles, Mahé and Silhouette. It has become extremely rare and on Mahé it is known only from highly secondarized mid-altitude forest dominated by introduced cinnamon (*Cinnamomum verum* J. Presl).

Notes. – Among the two specimens of *Thomasset 192* deposited at K, we have selected as the lectotype the one that is fertile and bears the collector's original, hand-written label.

A12. *Astropanax stolzii* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 1E).

- = *Schefflera stolzii* Harms in Bot. Jahrb. Syst. 53: 358. 1915.

Lectotypus (first step designated by BAMPS, 1974b: 135; second step designated here): TANZANIA. **Mbeya Region**: Rungwe Mts., [Nyassa Hochland], Kyimbila, 1600–1800 m, VII.1913, fl. & y.fr., *Stolz 2044* ([K00350552]!; isolecto-: BM [BM00645576] image seen, BR [BR00886173]!, C [C10000295] image seen, G [G00341680] image seen, JE [JE00000305] image seen, K [K00350553]!, L [L0008579] image seen, M [M0104942] image seen, MO [MO-1608570]!, P [P00697822]!, S [S-G-5496, S08-3328] images seen, STU [STU000492] image seen, W!, WAG [WAG0000242] image seen, Z [Z-000001556, Z-000001557] images seen).

Habitat and distribution. – *Astropanax stolzii* is restricted to southeastern Tanzania and extreme northern Malawi (BAMPS, 1974b; APD, 2017; TROPICOS, 2017), where it grows in humid forest at 1,600 to 2,360 m elevation.

Notes. – The holotype of *Schefflera stolzii* Harms was presumably at B and would thus have been destroyed. BAMPS (1974b) designated the material at K as the lectotype, an unfortunate choice because the two specimens deposited there are rather fragmentary and are not accompanied by original labels, unlike several isotypes deposited in other herbaria in Europe that have original labels with the name of the new species written in Harms' hand.

We have further lectotypified by selecting the specimen from Kew with young, detached fruits in a fragment packet as the lectotype (the other specimen is sterile, bearing only two leaves).

A13. *Astropanax tessmannii* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Schefflera tessmannii* Harms in Bot. Jahrb. Syst. 53: 360. 1915.

Lectotypus (designated by BAMPs, 1974a: 28): **EQUATORIAL GUINEA. Río Muni:** Wele Nzaz Prov., Nkolentangan, bud & fl., *Tessmann 344* (K [K000350396]!).

Habitat and distribution. – *Astropanax tessmannii* is known from a few localities in Equatorial Guinea (Río Muni), northern Gabon, southern Cameroon, northern Republic of Congo and north-central Democratic Republic of the Congo (BAMPs, 1974b; APD, 2017). It occurs in humid and swampy forest from sea level to c. 750 m elevation.

Notes. – The holotype of *Schefflera tessmannii* was presumably at B and would thus have been destroyed, prompting BAMPs (1974a) to designate the only known duplicate at K as the lectotype.

A14. *Astropanax urostachya* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Schefflera urostachya* Harms in Wiss. Ergebn. Deut. Zentr.-Afr. Exped., Bot. 2: 591, tab. 78. 1913. = *Schefflera barteri* var. *urostachya* (Harms) Tennant in Kew Bull. 15: 333. 1961.

Lectotypus (designated here): Tab. 78 from the protologue, based on the type collection, Democratic Republic of the Congo: Muera, I.1908, *Mildbraed 2185* (holotype: B†).

= *Schefflera tridentata* De Wild. in Rev. Zool. Bot. Africaines 8: 13. 1920. **Lectotypus** (designated here): **DEMOCRATIC REPUBLIC OF THE CONGO. Prov. Kivu-Nord:** Angi, Territoire Rutshuru, 20.IX.1914, bud, *Bequaert 5790* (BR [BR00582516]!; isolecto-: BR [BR00582381, BR00582414]!).

Habitat and distribution. – *Astropanax urostachya* is restricted to eastern Democratic Republic of the Congo, western Uganda and northwestern Tanzania (BAMPs, 1974b; APD, 2017; TROPICOS, 2017), where it occurs in humid and gallery forests from 700 to 1,700 m elevation.

Notes. – The holotype of *Schefflera urostachya* Harms was presumably at B and thus would have been destroyed. No isotypes or any other original material is known, so we have

chosen to designate as the lectotype the excellent plate that accompanies the description, which surely must have been based on the holotype.

The type material of *Schefflera tridentata* De Wild. comprises three specimens at BR, one of which bears Bequaert's original label and has thus been selected as the lectotype.

A15. *Astropanax volkensii* (Harms) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 1F).

= *Heptapleurum volkensii* Harms in Bot. Jahrb. Syst. 19(47): 41. 1894. = *Schefflera volkensii* (Harms) Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 36. 1894. = *Brassaia volkensii* (Harms) Hutch. in Gen. Fl. Pl. 2: 623. 1967.

Lectotypus (designated here): **TANZANIA. Kilimanjaro Region:** Kilimanjaro, Marangu, 2200 m, X.1893, bud, *Volgens 1297* (K [K00350551]!; isolecto-: BM [BM00902770]!). **Syntypus:** **TANZANIA. Kilimanjaro Region:** Marangu, 2700 m, IX. 1893, fl., *Volgens 986* (BR [BR08862693]!).

Habitat and distribution. – *Astropanax volkensii* occurs in eastern Africa, from Ethiopia through Uganda and Kenya to northeastern Tanzania (BAMPs, 1974b; APD, 2017; TROPICOS, 2017), where it grows in humid forest from 1,600 to 3,250 m elevation.

Notes. – The material at B of the two collections cited in the protologue of *Heptapleurum volkensii* (*Volgens 986* and *1297*) was presumably destroyed. A single duplicate of *Volgens 986* is deposited at BR, and while it is the most complete specimen available, we have selected the sheet of *Volgens 1297* at K as the lectotype because a duplicate (albeit somewhat less complete) is available at BM.

Unplaced name

Schefflera humblotii Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 38 (1894).

Lectotypus (designated here): **UNION OF THE COMOROS. Grand Comore:** *sine loc.*, 20.XI.1855, fl., *Humblot 1469* (P [P00209106]!; isolecto-: BM!, P [P00209107, P00209108]!, W!).

Notes. – This name, based on material from the Comoro Islands, has been treated by most recent authors (e.g., BERNARDI, 1969; BAMPs, 1974b; FRODIN & GOVAERTS, 2004) as a synonym of *Schefflera myriantha* s.l., i.e., as broadly circumscribed by them to include populations from Madagascar, continental Africa and the Comoros. However, with the separation of populations from Madagascar and continental

Africa into two morphologically similar but genetically distinct species (*Astropanax myrianthus* and *A. polysciadus*, respectively) based on evidence from recent molecular phylogenetic work (GOSTEL et al., 2017), the assignment of populations from the Comoros remains uncertain. Until material from this archipelago can be added to the molecular phylogeny of *Astropanax* in order to assess whether it belongs to the Malagasy or African clade, we are not able to determine if the name *Schefflera humblotii* should be placed in synonymy under *Astropanax myrianthus* or *A. polysciadus*.

It is not clear whether *Schefflera humblotii* Harms was based on material available to the author at Berlin or whether he may have examined specimens in Paris or possibly even at BM, although none of this material was annotated by Harms. In any case, if material had been available at B it can be presumed to have been destroyed, so we have selected as the lectotype the specimen at P bearing two inflorescence branches mounted together (the other sheets have a leaf and a single inflorescence branch, respectively)

B. *Neocussonia* (Harms) Hutch., Gen. Fl. Pl., Dicot. 2: 79. 1967.

= *Cussonia* sect. *Neocussonia* Harms in Engl. & Prantl, Nat. Pflanzenfam. III(8): 54. 1894.

Lectotypus (designated by HUTCHINSON, 1967: 79): *N. umbellifera* (Sond.) Hutch.

= *Schefflera* sect. *Meioplanax* Baill. in Hist. Pl. 7: 162. 1879. **Typus**: *S. umbellifera* (Sond.) Baill. [= *Neocussonia umbellifera* (Sond.) Hutch.].

Hermaphroditic, unarmed, glabrous, terrestrial, ever-green trees. Stems sparsely to moderately branched or plants monocaules. Leaves alternate, palmately compound or unifoliate; petioles clasping at the base with ligulate stipules; leaflets lanceolate, ovate, elliptical, oblanceolate, obovate, obcordate, obrhombic, obdeltoid, or obhastate, coriaceous or subcoriaceous to membranaceous, margins entire, crenate, or serrate-crenate, apex very broadly acute to truncate, sometimes rounded (*N. halleana*) or acute (*N. bojeri* and *N. staufferiana*) to acuminate (*N. lukwangulensis*), generally retuse with an evident notch, and almost always with a small mucro or minute boss in the sinus formed by an extension of the midvein. Inflorescences terminal, erect, paniculate or paniculate-umbellate (compound-umbellate in *N. bojeri*), the ultimate units racemose, umbellate or racemose-umbellate, with most flowers borne in a terminal umbel and 1-several inserted along the peduncle; inflorescence axes usually with persistent, stiff, triangular bracts; flowers each subtended by a bracteole (or bracteole lacking); pedicels slender to stout, unarticulated, or flowers sessile. Ovary inferior, 2–5-carpellate, carpels unilocular, placentation apical; styles 2–5, free, borne on a short, flat

to conical stylopodium. Fruits drupaceous, the disc concave to flat, stylopodium short-conical to conical; mesocarp fleshy, endocarp sclerified around each locule, forming a pyrene.

Diversity and distribution. – *Neocussonia* includes 16 currently recognized species, two in eastern and southern Africa and 14 in Madagascar, one of which is elevated here from the rank of variety. All of the c. 15 additional species that remain to be described in the genus likewise occur in Madagascar. In Africa, one species (*N. lukwangulensis*) is restricted to Tanzania while the other (*N. umbellifera*) ranges from southern Tanzania to South Africa (APD, 2017). The Malagasy species occur primarily in various types of humid forest, with the notable exception of *N. bojeri*, which grows in much drier Tapia forest and wooded grassland-bushland mosaic vegetation. Several species in Madagascar have extensive distributions (e.g., *N. bojeri*, *N. longipedicellata* and *N. vantsilana*) while many others have very restricted ranges (in particular *N. capuroniana*, *N. fosbergiana*, *N. frodiniana*, *N. halleana*, *N. rainaliana* and *N. weibeliana*) (MADAGASCAR CATALOGUE, 2017).

Notes. – This group was originally described by HARMS (1894–97) as a section of *Cussonia*, which he circumscribed to include five species currently recognized as *Schefflera bojeri*, *S. monophylla*, *S. myriantha*, *S. umbellifera* and *Seemannaralia gerrardii* (Seem.) R. Vig., based primarily on the presence of flowers borne in umbellules. HUTCHINSON (1967), in keeping with his mechanical delimitation of genera within *Araliaceae* based largely on inflorescence features, raised Harms's section to the rank of genus, designating *Neocussonia umbellifera* as the lectotype, while also including *Neocussonia buchananii* (a synonym of *Schefflera umbellifera*) but excluded *Seemannaralia gerrardii*.

B1. *Neocussonia bojeri* (Seem.) Hutch., Gen. Fl. Pl. 2: 79. 1967.

= *Cussonia bojeri* Seem. in J. Bot. 4: 298. 1866. = *Schefflera bojeri* (Seem.) R. Vig. in Ann. Sci. Nat., Bot., sér 9, 4: 116. 1906.

Lectotypus (designated by BERNARDI, 1969): **MADAGASCAR**: sine loc., *Bojer s.n.* (G [G00015611]!; isolecto-: K!, P [P02503035]!).

Habitat and distribution. – *Neocussonia bojeri* is widely distributed in drier areas of central and southern Madagascar, where it occurs in Tapia forest and wooded grassland-bushland mosaic vegetation at elevations between 500 m and 2,300 m (MADAGASCAR CATALOGUE, 2017).

Notes. – *Neocussonia bojeri* is the only member of the genus that is adapted to areas with prolonged dry periods, and its fire-resistant habit enables it to survive even in areas that are subjected to frequent burning.

B2. *Neocussonia bracteolifera* (Frodin) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Cussonia capuroniana* var. *bracteolata* Bernardi in Ber. Schweiz. Bot. Ges. 76: 362. 1966. = *Schefflera capuroniana* var. *bracteolata* (Bernardi) Bernardi in Candollea 24: 108. 1969. = *Schefflera bracteolifera* Frodin in Frodin & Govaerts, World Checklist Bibliog. Araliaceae: 328. 2004.

Typus: MADAGASCAR. **Prov. Antsiranana:** Tsaratanana, 2500–2700 m, X.1912, bud, *Perrier de la Bâthie 6881* (holo-: P [P00442775]!).

Habitat and distribution. – *Neocussonia bracteolifera* is known from humid forest at only two sites, the Tsaratanana massif in northern Madagascar, where it occurs between c. 2,300 and 2,600 m elevation, and Anjialavahely, some 50 km to the ESE, where it was collected at about 1,550 m (MADAGASCAR CATALOGUE, 2017).

Notes. – FRODIN & GOVAERTS (2004) opted to publish *Schefflera bracteolifera* as a new name at the rank of species for the taxon originally described as *Cussonia capuroniana* var. *bracteolata* rather than making a new combination by elevating the varietal name to the rank of species.

B3. *Neocussonia capuroniana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 2F).

= *Cussonia capuroniana* Bernardi in Ber. Schweiz. Bot. Ges. 76: 360. 1966. = *Schefflera capuroniana* (Bernardi) Bernardi in Candollea 24: 108. 1969.

Typus: MADAGASCAR. **Prov. Antananarivo:** Forêt d'Ambohitantely, sur le Tampoketsa d'Ankazobe, 25.III.1963, bud & fl., *Service Forestier 22650* (holo-: P [P00442774]!; iso-: P [P00298719]!).

Habitat and distribution. – *Neocussonia capuroniana* is known only from humid forest at the Ambohitantely Reserve and the nearby Manankazo–Ankazobe forestry station, to the NW of the town of Ankazobe (MADAGASCAR CATALOGUE, 2017).

Notes. – The holotype of *Cussonia capuroniana* at P bears a type label clearly affixed by Bernardi in Geneva. The annotation made by Frodin in 2001 designating this specimen as a lectotype was thus superfluous and in any case this choice was never published.

B4. *Neocussonia favargeri* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 2C).

= *Schefflera favargeri* Bernardi in Ber. Schweiz. Bot. Ges. 76: 369. 1966.

Typus: MADAGASCAR. **Prov. Antsiranana:** Tsaratanana, XII.1912, bud & y. fr., *Perrier de la Bâthie 3576* (holo-: P [P00442784]!; iso-: G [G00015609]!).

Habitat and distribution. – *Neocussonia favargeri* occurs in several mountain massifs in northern Madagascar, from Manongarivo in the west through Tsaratanana and several nearby ranges (including Ambohimirahavavy and Mt. Ampomotra) to Anjanaharibe–Sud Reserve and Marojejy National Park in the east (MADAGASCAR CATALOGUE, 2017). It is found in humid forest between c. 1,200 and 2,400 m elevation.

Notes. – The holotype of *Schefflera favargeri* bears a type label affixed by Bernardi in Geneva. The annotation made by Frodin in 2001 designating this specimen as a lectotype was thus superfluous and in any case this choice was never published.

B5. *Neocussonia fosbergiana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Cussonia fosbergiana* Bernardi in Ber. Schweiz. Bot. Ges. 76: 363. 1966. = *Schefflera fosbergiana* (Bernardi) Bernardi in Candollea 24: 117. 1969.

Typus: MADAGASCAR. **Prov. Antsiranana:** vallée de la Lokoho, Mt. Beondroka au N de Maroambihy, 100–1450 m, 17–22.III.1949, bud, fl. & y. fr., *Humbert 23439* (holo-: P [P00442788]!; iso-: G [G00015607]!, P [P00442787, P00498704]!).

Habitat and distribution. – *Neocussonia fosbergiana* is known only from Marojejy National Park and the Betsomanga massif c. 25 km to the NNE (MADAGASCAR CATALOGUE, 2017), where it grows in humid forest and ericoid thickets between 1,200 and 1,700 m elevation.

Notes. – The holotype of *Cussonia fosbergiana* at P bears a type label clearly affixed by Bernardi in Geneva, rendering the annotation made by Frodin in 2001 designating this specimen as a lectotype superfluous, and in any case this choice was never published.

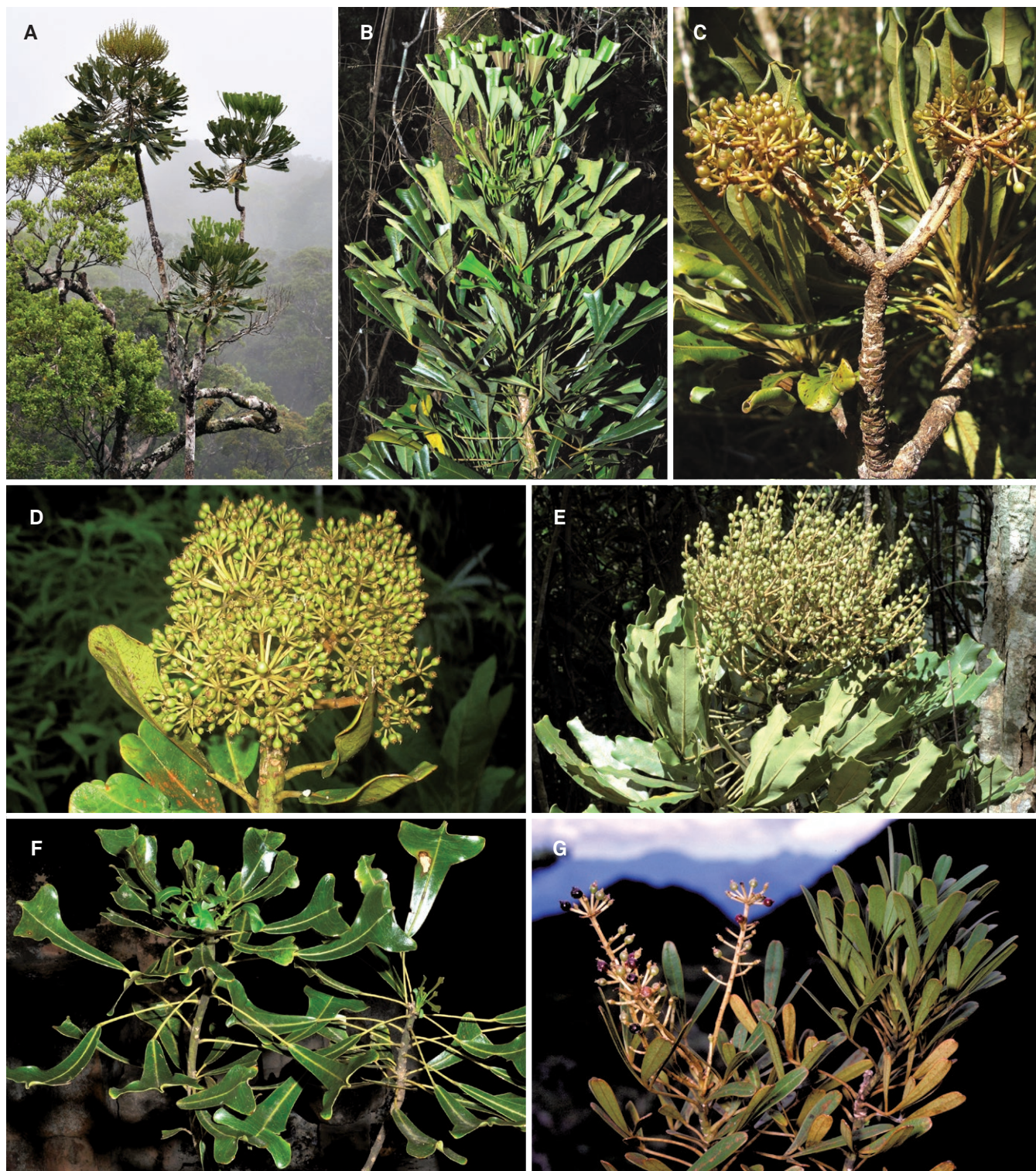


Fig. 2. – Photographs of *Neocussonia* (Harms) Hutch. (including both published and new, as yet unpublished species). **A.** *Neocussonia* sp.; **B.** *Neocussonia vantsilana* (Baker) Lowry, G.M. Plunkett, Gostel & Frodin; **C.** *Neocussonia favargeri* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin; **D.** *Neocussonia halleana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin; **E.** *Neocussonia* sp. nov.; **F.** *Neocussonia capuroniana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin; **G.** *Neocussonia frodiniana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin.
[A: Lowry 7157; B: Lowry 7100; C: Callmander 384; D: Ravelonarivo 3340; E: Lowry 6705; F: Plunkett 2328; G: Lowry 4504]
[Photos: A-B, E-G: P. Lowry; C: M. Callmander; D: D. Ravelonarivo]

B6. *Neocussonia frodiniana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 2G).

= *Schefflera frodiniana* Bernardi in Candollea 24: 103. 1969.

Typus: MADAGASCAR. **Prov. Toliara**: massif de l'Andohahela, 1700–1950 m, I.1934, bud, *Humbert 13591* (holo-: P [P00442783]!; iso-: G [G00015608]!, P [P00442781, P00442782]!).

Habitat and distribution. – *Neocussonia frodiniana* is known only from the upper slopes of Mt. Trafanaomby, the highest peak in Andohahela National Park (MADAGASCAR CATALOGUE, 2017), where it occurs in humid forest at an elevation of c. 1,700–1,950 m.

Notes. – This species was originally known only from the type material, but additional specimens were recently collected from the same locality (MADAGASCAR CATALOGUE, 2017).

B7. *Neocussonia halleana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 2D).

= *Schefflera halleana* Bernardi in Ber. Schweiz. Bot. Ges. 76: 371. 1966.

Lectotypus (designated here): MADAGASCAR. **Prov. Antsiranana**: Vallée de la Lokoho, Mont Beondroka au N de Maroambihy, 1000–1450 m, 17–22.II.1949, bud & fl., *Humbert 23495* (P [P00442780]!; isolecto-: G [G00015605, G00015606]!, P [P00442779]!).

Habitat and distribution. – *Neocussonia halleana* is known only from Marojejy National Park in northeastern Madagascar, where it is restricted to ericoid thicket and high altitude humid forest on and just below the summits of Marojejy and Beondroka (MADAGASCAR CATALOGUE, 2017) between c. 1,700 and 2,100 m elevation.

Notes. – The label data accompanying *Cours 4388* (G, P) indicate that it was collected on the summit of Marojejy on 28 March 1949, but give the altitude as 1000 m, which is far below the top of the mountain. Cours and Humbert both participated in the March 1949 expedition to Marojejy during which this material was gathered, and collections of many species clearly taken from the same individuals were distributed under both of their numbers. It may be that *Cours 4388* is identical to *Humbert 23495*, and indeed this interpretation was used at G, where their sheet [G00015606] is recorded as an isotype. However, given the different collection date, we have chosen not to regard this collection as comprising type material.

There are two specimens of *Humbert 23495* at P, one of which bears an annotation by Frodin made in 2001 indicating it as the lectotype, but this designation was never published. We have selected this specimen as the lectotype as it is the more complete of the two sheets.

B8. *Neocussonia litoralis* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. et stat. nov.**

= *Schefflera vantsilana* var. *litoralis* Bernardi in Candollea 24: 119. 1969.

Typus: MADAGASCAR. **Prov. Toamasina**: Tampolo, Ampasina, Fénériver, 2.VII.1957, fl., *Service Forestier 17701* (holo-: P [P00442793]!; iso-: P [P00442792]!, TEF [TEF000006, TEF000007]!).

Habitat and distribution. – *Neocussonia litoralis* is restricted to fewer than ten isolated areas of low elevation littoral forest along the east coast of Madagascar, a fragmented and highly threatened ecosystem (CONSIGLIO et al., 2006). It ranges from Ambatobiriry near Sambava in the north (where all remaining forest was removed during the last few years) to Ste. Luce in the south (MADAGASCAR CATALOGUE, 2017).

Notes. – BERNARDI (1969) described this taxon as a variety of *Schefflera vantsilana* (= *Neocussonia vantsilana*), which occurs in humid forest at mid- to high elevations, but it is more than sufficiently distinct morphologically to warrant recognition at the species level.

From among the two sheets of *Service Forestier 17701* deposited in the Paris herbarium, we have selected the one comprising the most complete material and bearing an original label as the lectotype. This specimen also has an annotation by Frodin indicating that he intended to designate it as the lectotype, although his choice was never published.

B9. *Neocussonia longipedicellata* (R. Vig. & Danguy ex Lecomte) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Cussonia longipedicellata* R. Vig. & Danguy ex Lecomte, Madag., Bois Analamaz. 117. 1922. = *Schefflera longipedicellata* (R. Vig. & Danguy ex Lecomte) Bernardi in Candollea 24: 114. 1969.

Lectotypus (designated here): MADAGASCAR. **Prov. Antananarivo**: Forêt d'Analamazaotra, fl., *Service Colonial 56* (P [P00442778]!; isolecto-: [P00442776, P00442777]!).

= *Cussonia racemosa* Baker in J. Linn. Soc., Bot. 20: 156. 1883. = *Schefflera macerosa* Bernardi in Candollea 24: 113. 1969 [non *S. racemosa* (Wight) Harms]. **Typus**: **Madagascar**: *sine loc.*, bud, *Baron 2015* (holo-: K [K000350557]!; iso-: P [P00442785, P00442786]!).

Habitat and distribution. – *Neocussonia longipedicellata* is the most widespread and morphologically variable member of the genus in Madagascar. It occurs in mid-elevation humid forest (c. 800–1,700 m) from Montagne d'Ambre National Park in the far north to Kalambatritra Reserve in the south, with outlying populations at several sites in the west (e.g., Bongolava, Ambohijanahary Reserve, and in low elevation gallery forest along the middle Mangoky River) (MADAGASCAR CATALOGUE, 2017).

Note. – From among the three syntypes of *Cussonia longipedicellata* deposited at P, we have selected the most complete as the lectotype.

B10. *Neocussonia lukwangulensis* (Tennant) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Cussonia lukwangulensis* Tennant in Kew Bull. 14: 221. 1960. = *Schefflera lukwangulensis* (Tennant) Bernardi in Candollea 24: 94. 1969.

Typus : TANZANIA. Morogoro Region : Uluguru [Mountains], Tanana, 4.II.1935, bud, *Bruce* 769 (holo- : K [K00350588]! ; iso- : BM [BM000902773]!, BR [BR08861689]!, P [P01816987]!).

Habitat and distribution. – *Neocussonia lukwangulensis* is endemic to Tanzania, where it occurs in many of the Eastern Arc mountains, from the Chome Forest Reserve in the South Pare Mountains south to the Kipengere Game Reserve and the Rungwe Forest Reserve near Mbeya in the southwestern part of the country (BAMPS, 1974b, APD, 2017 ; TROPICOS, 2017). It grows in humid forest from c. 1,350 to 2,136 m elevation.

Notes. – HARMS (1899) listed *Stuhlmann* 9112 among the syntypes of his *Cussonia buchananii* (a synonym of *Neocussonia umbellifera*; see below), but this specimen is clearly referable to *N. lukwangulensis*.

B11. *Neocussonia moratii* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Schefflera moratii* Bernardi in Candollea 28: 7. 1973.

Typus : MADAGASCAR. Prov. Toamasina : Zahamena, Canton Manaka-Est, Dist. Ambatondrazaka, 17.I.1959, fl., *Réserves Naturelles* 10980 (holo : P [P00442773]!).

Habitat and distribution. – *Neocussonia moratii* occurs in mid-altitude humid forest at several sites along the central part of Madagascar's eastern escarpment, from Zahamena reserve in the north to Lakato in the south, at elevations between c. 1,050 and 1,400 m (MADAGASCAR CATALOGUE, 2017).

Notes. – This species was described based on a single flowering specimen, but has since been collected at various stages of development on at least 10 more occasions (MADAGASCAR CATALOGUE, 2017).

B12. *Neocussonia rainaliana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Schefflera rainaliana* Bernardi in Candollea 35: 112. 1980.

Typus : MADAGASCAR. Prov. Toliara : Fort-Dauphin, Station Forestière de Mandena, 17.II.1972, bud, fl., *Debray* 1730 (holo : P [P00442772]!).

Habitat and distribution. – *Neocussonia rainaliana* is restricted to low elevation littoral forest on sand at three sites to the N of Tolagnaro in southeastern Madagascar (Antsofso, Mandena and Ste Luce) (MADAGASCAR CATALOGUE, 2017). Commercial exploitation of ilmenite (titanium oxide) by Rio Tinto QMM has impacted the local populations at the latter two sites, although substantial portions of the remaining forest (c. 660 ha at Mandena and c. 780 ha at Ste Luce) have been formally designated as protected areas that are being managed with support from the mining company.

Notes. – This species was described on the basis of a single, rather fragmentary unicate specimen, but intensive botanical inventory work in the Tolagnaro region (see LOWRY et al., 2008 ; MADAGASCAR CATALOGUE, 2017) has generated nearly 30 additional collection, confirming the distinctiveness of this taxon.

B13. *Neocussonia staufferiana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

= *Schefflera staufferiana* Bernardi in Candollea 24: 110. 1969.

Typus : MADAGASCAR. Prov. Fianarantsoa : Bassin de l'Itomampy, Mt. Papanga, près de Befotaka, [23°51'S 46°57'E], 2.XII.1928, fl., *Humbert* 6922 (holo : P [P00442796]! ; iso- : P [P00442794, P00442795]!).

Habitat and distribution. – *Neocussonia staufferiana* is fairly widespread in Madagascar, occurring in mid-elevation humid forest from Zahamena reserve south to Mt. Papanga and the Ivakoany massif, with an outlying population near Andapa in the NE (MADAGASCAR CATALOGUE, 2017).

Notes. – The holotype of *Schefflera staufferiana* bears a type label clearly affixed by Bernardi in Geneva, making the annotation made by Frodin in 2001 designating this specimen as a lectotype superfluous, and in any case this choice was never published.

B14. *Neocussonia umbellifera* (Sond.) Hutch., Gen. Fl. Pl. 2: 79. 1967.

- = *Cussonia umbellifera* Sond. in Linnaea 23: 49. 1850.
- = *Schefflera umbellifera* (Sond.) Baill., Hist. Pl. 7: 162. 1879.

Lectotypus (designated here): **SOUTH AFRICA. Prov. KwaZulu-Natal:** Port Natal [= Durban], bud, *Gueinzus s.n.* (S [S14-41368] image seen; isolecto-: CGE!, G [G00341683]!, LE!, P [P04352720, P04352724, P04352725]!, PRE!, S [S14-41367] image seen, SAM!, W!). **Syntypi:** **SOUTH AFRICA. Prov. KwaZulu-Natal:** between Omsamculo (Umzimkulu) and Omcomas (Umkomaas), *Drège s.n.* (S [S14-41370] image seen).

- = *Cussonia chartacea* Schinz in Bull. Herb. Boissier 2: 211. 1894. **Typus:** **SOUTH AFRICA. Prov. KwaZulu-Natal:** Umbilo, *Rehmann 8096* (not found).
- = *Cussonia buchananii* Harms in Bot. Jahrb. Syst. 26: 251. 1899. = *Schefflera umbellifera* var. *buchananii* (Harms) Tennant in Kew Bull. 14: 220. 1960. = *Neocussonia buchananii* (Harms) Hutch., Gen. Fl. Pl. 2: 79 (1967). **Lectotypus** (designated here): **MALAWI:** Nyasaland, *sine loc.*, 1895, bud & fl., *Buchanan 295* (BM [BM00645597]!; isolecto-: BR [BR00886172]!, E [E00217670] image seen, K [K000350554]!, SRGH [SRGH0106562-0] image seen).

Habitat and distribution. – *Neocussonia umbellifera* occurs in East and Southern Africa, where it is widespread in humid forest at altitudes of 200 to 2,200 m, from Zimbabwe and Malawi in the north to Swaziland and South Africa in the south (BAMPS, 1974b; APD, 2017).

Notes. – *Cussonia umbellifera* Sond. was based on two collections from South Africa, *Gueinzus s.n.* from Port Natal (Durban), and *Drège s.n.* from between Omsamculo (Umzimkulu) and Omcomas (Umkomaas). A large number of specimens of this taxon made by *Drège* are widely deposited in many herbaria, but they appear to represent several separate gatherings and it is not clear which of these gatherings might have been used by Sonder nor which specimens actually represent each individual gathering. We have chosen to lectotypify this name using the fertile specimen of *Gueinzus s.n.* at S, which was unquestionably seen by Sonder and thus used for his description.

Cussonia chartacea was based on *Rehmann 8096*. We have not been able to locate any material of this collection.

Cussonia buchananii was based on two collections, *Buchanan 295*, which is referable to *Neocussonia umbellifera*, and *Stuhlmann 9112*, which represents material of *N. lukwangulensis* (see above). FRODIN & GOVAERTS

(2004) placed *C. buchananii* in synonymy under *Schefflera umbellifera* (= *Neocussonia umbellifera*), suggesting that a lectotypification might have been made, but we cannot find any evidence that it actually was. In order to maintain that placement in synonymy, we have lectotypified *Cussonia buchananii* using *Buchanan 295*. The original material on which Harms based his description was presumably deposited at Berlin and thus must have been destroyed, so we have selected the duplicate at BM as the lectotype because it represents the best specimen, which reflects the fact that material of this collection was originally distributed from there.

B15. *Neocussonia vantsilana* (Baker) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.** (Fig. 2B).

- = *Cussonia vantsilana* Baker in J. Linn. Soc., Bot. 20: 156. 1883. = *Schefflera vantsilana* (Baker) Bernardi in Candollea 24: 117. 1969.

Lectotypus (first step designated by BERNARDI, 1969: 133; second step designated here): **MADAGASCAR:** *sine loc.*, *Baron 1016* (K [K00350559]!; isolecto-: P [P00442789, P00442790]!). **Syntypi:** **MADAGASCAR:** *sine loc.*, *Bojer s.n.* (K!); *sine loc.*, *Parker s.n.* (K!).

Habitat and distribution. – *Neocussonia vantsilana* is fairly widespread in Madagascar, where it occurs in mid-elevation humid forests (c. 1,000–1,700 m) from Anjialavabe near Andapa in the north to Sahalava forest near Kalambatritra reserve in the south (MADAGASCAR CATALOGUE, 2017).

Notes. – In the protologue, BAKER (1883) cited three collections (*Baron 1016*, *Bojer s.n.*, and *Parker s.n.*), the first of which was designated as the lectotype by BERNARDI (1969), without, however, indicating an herbarium. We have selected the specimen at K, which was available to Baker, as the lectotype.

B16. *Neocussonia weibelliana* (Bernardi) Lowry, G.M. Plunkett, Gostel & Frodin, **comb. nov.**

- = *Schefflera weibelliana* Bernardi in Candollea 24: 111. 1969.

Lectotypus (designated here): **Madagascar. Prov. Antsiranana:** vallée de la Lokoho, Mt. Beondroka, au N de Marombihy, 1000–1450 m, 17–22.III.1949, y. fr., *Humbert 23433* (P [P00498716]!; isolecto-: G [G00015601]!).

Habitat and distribution. – *Neocussonia weibelliana* is known only from the type collection made in humid forest at 1,000–1,450 m elevation on Mt. Beondroka in Marojejy National Park (MADAGASCAR CATALOGUE, 2017).

Notes. – Bernardi based his description of *Schefflera weibeliana* on two duplicates of the same collection, both of which were deposited at P at the time, one of which was subsequently sent to G. We have chosen the specimen at P as the lectotype as it is the more complete of the two original syntypes.

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