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# THE LOGANIACEAE OF AFRICA XIV <br> A revision of Nuxia Lam. 

A. J. M. LEEUWENBERG<br>Laboratory of Plant Taxonomy and Plant Geography, Agricultural University, Wageningen, The Netherlands

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## Introduction

The present publication is a revision on a monographic basis of the genus Nuxia. The genus is restricted to Africa where the present author had the opportunity to study the most variable species, $N$. congesta, in the field in two different countries, viz. Cameroun and Ivory Coast. Fortunately most herbarium specimens proved to be well preserved and richly flowering or fruiting.

## History of the genus

Lamarck (1791) founded the genus Nuxia on the basis of a single species, N.verticillata. Persoon (1805) placed it in Linnaeus's Tetrandria monogynia, afterwards Rafinesque (1820) near Rondeletia in the Ixorineae of the Rubiacease, then Reichenbach (1828) gave it a place in the Verbenaceae. Meanwhile R. Brown (1814) named the second species N.congesta which was discovered in Ethiopia and was described only in 1838 by Fresenius.

Bentham (1836) moved Nuxia to the tribe Buddlejeae of the Scrophulariaceae and added some more species. Only one of them, however, N. floribunda, is maintained here in this genus. All the others belong to Buddleja according to, egg., Miss I. C. Verdoorn (1958) and the present author. Bentham was followed by Meisner (1840), Endlicher (1841), Reichenbach (1841), and Kunth (1846), placing Nuxia there.

Independently from Bentham, Hochstetter (1843) described the new genus Lachnopylis in the Loganiaceae, based on two species, L.ternifolia and L.oppositifolia. With De Candolle (1845) this genus appeared in the tribe Lachnopylease of the Loganiaceae and was reduced to a synonym of Nuxia by Bentham (1846) in the next volume of De Candolle's Prodromes. There he reduced L.ternifolia to a synonym of N.congesta and transferred L.oppositifolia to Nuxia, but he maintained his opinion that the genus should be placed in the
tribe Buddlejeae of the Scrophulariaceae. Only in 1876 did he transfer this tribe to the Loganiaceae. Baillon (1888) placed all Loganiaceae in the Solanaceae, an opinion not shared by any other author. Solereder (1892) maintained Bentham's last opinion as to the place of the tribe Buddlejeae but raised it to the rank of a subfamily. Leenhouts (1962), however, prefers to reduce again its rank to that of a tribe, an opinion shared by the present author (1967).

Most species were described around 1900, some of them several times.
A further chapter to the history of Nuxia was added by C.A. Smith (1930) who reinstalled Lachnopylis, confining Nuxia to its type species only. In this publication he described a considerable number of new species, only one of which, N.glomerulata, is maintained here.

Another contribution to the genus was given by Jovet (1947) who reduced Lachnopylis again to synonymy and described several new species from Madagascar, some of which are maintained here.

Important reductions in the number of species were published by Bruce \& Lewis (1960) and Verdoorn (1963) for the continental species. Some of them are made to include even more species (names) in the present paper.

## Geographical distribution

The genus Nuxia is restricted to Africa and southern Arabia. 15 species are maintained here. The most widely distributed species, N.congesta, occurs in southern Arabia, almost throughout continental tropical Africa, and on the islands in the Gulf of Guinea, but only in the mountains, and in southern Africa. Therefore its area is discontinuous. Almost as widely distributed is N.oppositifolia, growing especially on riverbanks in southern Arabia, Ethiopia, Central, eastern, and southern Africa, and in Madagascar. The third widely distributed species, $N$. floribunda, is known from Central, eastern and southern Africa; in tropical regions it only occurs in the mountains. Two species, the last of the five represented on the African continent, N.glomerulata and N.gracilis, are restricted to South Africa. Eight species are endemic in Madagascar; one, $N . p$ seudodentata, is only known from the Comoro Islands while $N . v e r t i c i l-$ lata is the only species in the Mascarene Islands.

## Relationship to other genera

Nuxia belongs to the tribe Buddlejeae of the Loganiaceae where it shows most resemblance to Peltanthera, Sanango, and Buddleja section Chilianthus. The Buddleja species in that section were even placed in Nuxia by Bentham (1836). Nuxia differs from the other genera of this tribe as shown in a key by the present author (1967).

Its anatomy places it near Buddleja, as was concluded by Solereder (1892), the cytology also being in favour of this relationship (Gadella, 1961).

The relationship to Loganiaceous genera from other tribes is less clear. Its capsule resembles that of the Antonieae and the same is true for the endosperm and embryo, but these characters it also shares with the Buddlejeae (except for the berry-like fruit in some Buddleja species).

## Cytology

Nuxia floribunda has $2 \mathrm{n}=38$ (Gadella, 1961). The same chromosome number is found in the diploid Buddleja species.

## Genus diagnosis with references cited above

Nuxia Lam., Illustr. 1: 295. 1791; Persoon, Syn. 1: 132. 1805 (as for N. verticillata); Jaume St. Hilaire, Expos. 2: 344. 1805 (excl. syn. Manabea); Hedwig, Gen. Pl. 56. 1806 (excl. syns.); R. Brown, in Salt, Abyss. App. 63. 1814; Rafinesque, Ann. gén. phys. 6: 84. 1820; Sprengel, Syst. 1: 421. 1825; Reichenbach, Consp. 117. 1828; Bentham in Hooker, Comp. Bot. Mag. 2: 59.1836 (excl. syn. Chilianthus); Fresenius, Flora 21: 606. 1838; Spach, Vég. Phan. 9: 270. 1840 (excl. syn. Chilianthus); Meisner, Gen. Pl. 1: 309. 1840 and 2: 220. 1840; Reichenbach, Nom. 119. 1841; Endlicher, Gen. Pl. 687. 1841; Enchiridion 339. 1841; Kunth, Abh. Berl. Ak. 1844: 60. 1846; Walpers, Rep. 3: 331. 1845 (as for N. verticillata and N.floribunda); Bentham in De Candolle, Prod. 10: 434. 1846; in Lindley, Veg. Kingdom 685.1847 (excl. syns.); Bentham in Bentham \& Hooker f., Gen. Pl. 2: 792. 1876; Baillon, Hist. Pl. 9:347. 1888; Solereder in Engler \& Prantl, Nat. Pflanzenf. 4(2): 45. 1892; Baker in Fl. Trop. Afr. 4(1): 511. 1903; Prain \& Cummins in Fl. Cap. 4(1): 1038. 1909; C. A. Smith, Kew Bull. 1930: 12. 1930; P. Jovet, Not. Syst. 13: 97. 1947; Verdoorn, Bothalia 7: 13. 1958; Bruce \& Lewis, Loganiaceae in Fl. Trop. E. Afr. 41. 1960; Gadella, Proc. Kon. Ned. Akad. Wetensch. Ser. C. 66(3): 2. 1961; Leenhouts in Fl. Males. 1. 6: 296. 1962; Verdoorn in Fl. S. Afr. 26: 150. 1963; Onochie \& Leeuwenberg in Fl. W. Trop. Afr. 2nd ed. 2: 46. 1963; Leeuwenberg, Acta Bot. Neerl. 16: 143. 1967; Fl. Cameroun 12 (= Fl. Gabon 19): 37. 1972.

Type species: $N$. verticillata Lam.
Heterotypic synonym: Lachnopylis Hochst., Flora 26: 77. 1843; De Candolle, Prod. 9: 22. 1845; de Jussieu, Orb. Dict. 7: 424. 1849; C.A. Smith, 1.c. p. 15; Hutchinson \& M. B. Moss in Fl. W. Trop. Afr. 2: 20. 1931 ; Phillips, Gen. S. Afr. Flow. Pl. 2nd ed. 575. 1951. Lectotype species: N.congesta R.Br. ex Fresen. (designated by C. A. Smith).

Shrubs or trees. Trunk often fluted. Branches unarmed, with fissured bark, not lenticellate. Leaves opposite, ternate, quaternate, or in some lateral branches occasionally alternate, petiolate or only in N.gracilis often sessile; blade simple, pinnately veined. Inflorescence terminal, thyrsoid, but often dichotomously branched. Ultimate branches topped by solitary flowers or by heads of
three or more flowers which may be globose ( $N$.pachyphylla and $N$.sphaerocephala). Lower bracts mostly leafy, the others small, often scale-like, ovate, triangular, or linear. Flowers 4-merous, actinomorphic except for the more or less irregularly lobed calyx. Calyx campanulate to cylindrical, 4-lobed; lobes much shorter than the tube, triangular, acute or rarely obtuse or rounded, entire or sometimes tridentate (only observed in N.floribunda and N.gracilis), erect or suberect, sometimes two or two pairs coherent or partially united; flowers with almost regularly 4-lobed calyx or the irregularly lobed calyx described above occurring in a single inflorescence; outer side of calyx with minute glandular hairs and often also simple or branched hairs; inner side mostly sericeous to appressed-pubescent (not in $N$. verticillata). Corolla mostly white or creamy, circumscissile, outside with some minute glandular hairs at the base of the lobes and the apex of the tube (rarely entirely glabrous: N.ambrensis and $N$. verticillata), inside with a pilose or villose ring of mostly recurved hairs in the throat and with minute glandular hairs in the tube except for its glabrous base (hairs in corolla throat or in tube may be absent on a few occasions, but in those cases never both kinds simultaneously); tube slightly shorter or less often (especially in $N$.verticillata) longer than the calyx, cylindrical or (in N.verticillata) slightly ventricose in apical portion, often slightly widened around ovary; lobes oblong, recurved from above the base and there convex and often with a minute callosity, concave and rounded to acute at the apex, entire. Stamens alternating with the corolla lobes, well exserted, inserted at the mouth of the corolla tube; filaments only at the very base villose in a line with the group of hairs on the corolla throat or slightly above ( $N$.floribunda) or entirely glabrous, straight or curved, geniculate at the base only in N.floribunda; anthers glabrous, $0.5-2 \mathrm{~mm}$ long; cells 2 , parallel when young, conspicuously divergent after the pollen is shed, confluent at the apex, dehiscent throughout by a longitudinal slit. Pistil straight; ovary superior, obcordoid, ovoid, or ellipsoid, mostly slightly laterally compressed, appressedly pubescent or hirto-pubescent, glabrous (or occasionally subglabrous) only in N.floribunda, at the very base, however, always glabrous, surrounded by a narrow disk-like ring formed by the base of the shed corolla, 2-celled; style well-exserted or only in N.verticillata included, glabrous, like the filaments elongate at anthesis; stigma small, capitate or occasionally slightly bilobed. In each cell one axile peltate placenta with many ovules attached to the middle of the septum. Capsule about as long as and included in the persisting calyx or up to about one-third longer, with about the same indumentum as the ovary, bivalved, septicidal, retuse or rounded at the apex; valves with revolute margins meeting in the middle, these formed by the torn septum, often later longitudinally cleft, the capsule becoming 4 -valved. Seeds small, medium brown, fusiform, longitudinally striate or reticulatestriate. Embryo straight, surrounded by fleshy endosperm.

Distribution: 15 species in southern Arabia, tropical Africa (inclusive of Madagascar, the Comoro Islands, and the Mascarenes), and South Africa.

Nuxia is here subdivided into two sections, Nuxia, with the type species only, and Lachnopylis with all other species. C.A. Smith (1930) proposed a subdivision of the latter section (genus in his paper) based on the ramification of the inflorescences. The present author is of the opinion that this character is much more variable in many species than was supposed by C.A. Smith; e.g., $N$. floribunda is represented in two of his 'series', in the second under the synonym N.polyantha.

## Section Nuxia

Type species: $N$. verticillata Lam.
Flowers in clusters apically and laterally on the branches of the inflorescence which is laxly paniculate and never seemingly umbellate. Calyx glabrous inside or nearly so. Style included.

Section Lachnopylis (Hochst.) P. Jovet ex Phillips, Gen. S. Afr. Flow. Pl. 576. 1951 (P. Jovet, Notul. Syst. 13: 97. 1947; Bull. Hist. Nat. Toulouse, as subgenus).

Basionym: Lachnopylis Hochst., Flora 26: 77. 1843 (as genus).
Lectotype species: N. congesta R. Br. ex Fresen. (designated by C. A. Smith).
Homotypic synonym: Laxiflorae C. A. Smith, Kew Bull. 1930: 17. 1930.
Heterotypic synonyms: Glomerulatae C. A. Smith, l.c. Type species: N.glomerulata (C. A. Smith) Verdoorn.

Sphaerocephalae C. A. Smith, l.c. p. 18. Type species: N.sphaerocephala (Bak.) Bak.

Flowers solitary or in clusters at the apices of the branches of the inflorescence only which is mostly seemingly umbellate. Calyx appressed-pubescent to sericeous inside. Style exserted.

## Key to the species


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3. Calyx tube visible in dried inflorescences; heads several-flowered, notstrictly globose, rather lax; leaves mostly entire, occasionally sinuate-dentate or serrate-dentate12. N. pachyphylla
Calyx tube not visible in dried inflorescences, covered by the neighbouringflowers; heads globose like those of Nauclea spp.; leaves minutely dentateto distinctly serrate-dentate
14. N.sphaerocephala
4. Leaves opposite ..... 5
Leaves ternate or sometimes quaternate ..... 13
5. Flowers solitary or in clusters of 3 ..... 6
Flowers in clusters of 3-30, sessile ..... 7
6. Leaves 2.5-4 (-6) $\times$ as long as wide, acuminate or acute at the apex; pe- tiole mostly over 10 mm long; ovary and capsule glabrous
6. N.floribunda
Leaves (2-) 4-8 $\times$ as long as wide, obtuse or rounded at the apex; petiole$2-10 \mathrm{mmlong}$;ovary and capsule appressed-pubescent II.N. oppositifolia
7. Branchlets, petioles, and leaves at least beneath tomentose. Madagascar8
Branchlets minutely pubescent to glabrous ..... 9
8. Leaves small, $6-30 \times 2-14 \mathrm{~mm}$, entire or with a few obscure teeth near the apex 10. N. isaloensis
Leaves larger, 2.5-5 $\times 1-2 \mathrm{~cm}$, sinuate-dentate 1. N. allorgeorum
9. Clusters never with more than 8 flowers ..... 10
At least some clusters with more than 10 flowers in each inflorescence. Ma- dagascar10. Petiole $10-25 \mathrm{~mm}$ long; blade $2-3(-3.3) \times$ as long as wide, acute, obtuse,or less often acuminate at the apex, crenate-serrate or entire; flowerssessile, in clusters of 3-7. Comoro Islands . . 13. N.pseudodentata
Petiole 2-10 mm long; blade (2-) 4-8 $\times$ as long as wide, obtuse or roundedand often mucronulate at the apex, obtusely serrate to entire; flowers$1-3$, rarely up to 8 together11. Leaves $1.5-2.5 \times$ as long as wide and decurrent into the petiole, $7-16 \times$$3-6 \mathrm{~cm}$2. N. ambrensis
Leaves (2.5-) 4-6 $\times$ as long as wide, if decurrent into the petiole ..... 12
12. Leaves long-petiolate; petiole $6-15 \mathrm{~mm}$ long; blade elliptic or oblong,$2-3 \times$ as long as wide, cuneate at the base; venation reticulate, mostlypaler above and prominent beneath; calyx lobes often slightly wider thanlong, subacute; corolla tube always shorter than the calyx .3.N.capitata
Leaves shortly petiolate; petiole $1-5 \mathrm{~mm}$ long; blade mostly narrowly tovery narrowly oblong or obovate, (2.5-) 4-6 $\times$ as long as wide; mostlydecurrent into the petiole; venation inconspicuous; calyx lobes as longas wide, acute; corolla tube sometimes longer than the calyx
9. N.involucrata
13(4). Flowers solitary or in clusters of 3. African continent, islands in the Gulf of Guinea, southern Arabia ..... 14

Flowers in clusters of 3-20; at least some clusters with 10-15 flowers in each inflorescence15
14. Corolla lobes at or near the apex mostly with recurved pubescence outside; ovary pubescent at the apex; calyx sericeous inside; petiole $3-20 \mathrm{~mm}$ long
4. N.congesta

Corolla with some minute glandular hairs outside; ovary glabrous; calyx inside sparsely and/or minutely appressed-pubescent; petiole (3-)10-55 mm long
6. N.floribunda
15. All flowers pedicellate, therefore the cluster is umbel-like; leaves small and narrow, 4-7 $\times$ as long as wide, sessile or shortly petiolate, at least in upper half distinctly serrate. S. Africa . . . . . . . . 8. N. gracilis
Flowers sessile; leaves entire or not
16
16. Heads subtended by some narrowly oblong bracts which are $2-6 \mathrm{~mm}$ long; leaf-blade (2.5-) 4-6 $\times$ as long as wide. Madagascar .9. N.involucrata Heads with very small bracts, $0.5-2 \mathrm{~mm}$ long; leaf-blade $1.5-3.5 \times$ as long as wide

17
17. Leaves small, $1.5-4.8 \times 0.5-1.8 \mathrm{~cm}$; petiole $1-10 \mathrm{~mm}$ long. S. Africa 7. N. glomerulata

Leaves larger, $3-13 \times 1-6 \mathrm{~cm}$; petiole $10-40 \mathrm{~mm}$ long. Madagascar . 18
18. Leaves entire; margin revolute (see also N.pachyphylla) . .5. N. coriacea

Leaves crenate-serrate; margin not revolute
2. N. ambrensis

1. Nuxia allorgeorum P. Jovet, Not. Syst. 13: 97. 1947; Bull. Hist. Nat. Toulouse 82: 9, pl. 1. 1-2. $1948 . \quad$ Fig. 1, p. 9; Map 1, p. 8

Type: Madagascar: between Maningoza and Ranobe Rs., Perrier de la Bâthie 8619 ( P , holotype; isotype: WAG).

Shrub 5-6 m high. Branches pale grey; branchlets pale grey- or yellowishtomentose. Leaves opposite, petiolate; petiole tomentose, $5-10 \mathrm{~mm}$ long; blade much paler beneath, coriaceous when dry, elliptic or nearly so, $2-3 \times$ as long as wide, $2.5-5 \times 1-2 \mathrm{~cm}$, obtuse or rounded at the apex, cuneate (to nearly rounded) at the base, sinuate-dentate, especially in the upper half, tomentose on both sides, especially beneath; secondary veins rather conspicuous above, inconspicuous beneath. Inflorescence rather congested, 4-5 $\times 4-5 \mathrm{~cm}, 3-4 \times$ dichotomously branched. Peduncle and branches tomentose. Flowers 3-10 together at the end of the last branchings, subtended by some leafy bracts, which are narrowly oblong or nearly linear, $1-2 \mathrm{~mm}$ long, and grey- or yellowishtomentose on both sides. Calyx $4-5 \mathrm{~mm}$ long, outside pale grey-tomentose, inside sericeous; lobes subequal, triangular, about as long as wide, $0.5-1.2 \mathrm{~mm}$ long, acute, entire. Corolla white, outside with some minute glandular hairs at the apex of the tube and the base of the lobes, inside villose with recurved hairs in the throat and with minute glandular hairs in the tube; tube slightly shorter than the calyx; lobes oblong, $2.4 \times 1 \mathrm{~mm}$, obtuse, recurved. Stamens: filaments glabrous, long, after the pollen is shed 4 mm long; anthers glabrous, about 1
mm long. Pistil 10 mm long; ovary ovoid, slightly laterally compressed, $2.2 \times$ $1.2 \times 1 \mathrm{~mm}$, appressed-pubescent, glabrous at the very base; style 7.8 mm long; stigma small, capitate. Capsule unknown.

Distribution: Only known from the type collection.
Ecology: On silicate rocks, in open place; alt. 400 m .


MAP 1. $\triangle$ Nuxia allorgeorum and $\bullet$ the related $N$. isaloensis.
2. Nuxia ambrensis P. Jovet, Not. Syst. 13: 100. 1947; Bull. Hist. Nat. Toulouse 82: 11, pl. 2. 5-8. 1948. Fig. 1, p. 9; Map 5, p. 41

Type: Madagascar: E. of Mt. d'Ambre, Perrier de la Bâthie 17695 (P, holotype).

Deciduous tree, $8-16 \mathrm{~m}$ high. Trunk up to 50 cm in diam. Branchlets minutely pubescent, glabrescent, with 4 or 6 raised lines. Leaves ternate, opposite, or subopposite, petiolate; petiole $12-25 \mathrm{~mm}$ long, minutely pubescent with glandular hairs; blade often large, coriaceous when dry, elliptic, $1.5-3 \times$ as long as wide, $7-16 \times 3-6 \mathrm{~cm}$, obtuse and often at the same time emarginate at the apex, rather abruptly narrowed at the base and decurrent into the petiole, cre-nate-serrate, sparsely and minutely pubescent on both sides, especially on the main veins beneath, glabrescent; 8-12 pairs of secondary veins; tertiary venation inconspicuous. Inflorescence lax, except for the last ramifications, 4-13 $\times$ $5-12 \mathrm{~cm}, 3-6 \times$ branched; peduncle and branches minutely pubescent. Lower bracts leafy, the others very small, scale-like, triangular. Flowers 5-20 together, in head-like clusters, which are $7-8 \mathrm{~mm}$ in diam., sessile, subtended by a few very small triangular bracts. Calyx campanulate, $2.5-3 \times 2 \mathrm{~mm}$, pubescent with glandular hairs outside, sericeous inside; tube sometimes torn by the development of the corolla; lobes equal or subequal, about as long as wide or slightly wider, $0.5-1 \mathrm{~mm}$ long, subacute, entire. Corolla white (?), outside glabrous or with some minute glandular hairs on base of lobes, inside pubescent


Fig. 1. 1-4. Nuxia allorgeorum: 1. branch, $\frac{1}{2} \times$; 2. flower, $5 \times$; 3. opened corolla, $6 \times$; 4. pistil with corolla base, $8 \times$ (1-4. type); $5-8$. N. ambrensis: 5 . branch, $\frac{1}{2} \times$; 6 . flower, $8 \times$; 7. opened corolla, $10 \times$; 8 . pistil with corolla base, $9 \times$ (5-8. type).
with glandular hairs in the middle of the tube; throat, lobes, and base of tube glabrous; tube shorter than the calyx; lobes oblong, $1.5-2 \times 1 \mathrm{~mm}$, rounded or obtuse at the apex. Stamens: filaments glabrous, after the pollen is shed 1.52 mm long; anthers about 1 mm long. Pistil 4 mm long; ovary obcordoid, slightly laterally compressed, $1 \times 0.9 \times 0.6-0.8 \mathrm{~mm}$, appressed-pubescent at the apex, glabrous at the base; style glabrous, 3 mm long; stigma capitate or bilobed. Capsule about as long as the calyx (?), immature 2 mm long and pubescent only at the apex, furthermore glabrous. Seed immature obliquely ellipsoid or fusiform, about $0.6-0.8 \mathrm{~mm}$ long, pale brown, glabrous, longitudinally striate.

## Distribution: Madagascar.

Ecology: Montane forest; alt. 500-1000 m.
Madagascar: Diégo, Louvel 156 (P); eastside of base of Mt. d'Ambre (fl. Sept.) Perrier de la Bâthie 17695 (P, type); Forêt d'Ambavahibe, Mt. d'Ambre, Ursch 156 (P, paratype); Doany Canton, Andapa District (fl. July) Christophe Res. Nat. 7992 (P); sin. loc., Baron 2400 (K, P).
3. Nuxia capitata Bak., Journ. Bot. London 20: 172. 1882; P. Jovet, Not. Syst. 13: 98. 1947; Bull. Nat. Hist. Toulouse 82: 9, pl. 1. 7-9. 1948.

Fig. 2, p. 11; Map 2, p. 12
Type: Madagascar: sin. loc. Baron 23 (K, holotype).
Evergreen shrub or tree, 6-10 m high. Bark pale grey-brown. Branches with medium grey finely fissured bark; branchlets minutely pubescent with glandular hairs to practically glabrous, often sulcate when dry. Leaves opposite or subopposite, petiolate; petiole $6-15 \mathrm{~mm}$ long, minutely pubescent with glandular hairs to subglabrous; blade coriaceous when dry, elliptic or oblong, 2-3 $\times$ as long as wide, $3-8 \times 1-3(-3.5) \mathrm{cm}$, obtuse at the apex, cuneate at the base, sinuate-dentate to crenate-serrate, minutely pubescent with mostly glandular hairs to subglabrous on both sides; tertiary venation reticulate, often paler above and prominent beneath. Inflorescence 3-10 $\times 3-12 \mathrm{~cm}$; branches $2-4 \times$ dichotomously branched and topped by heads of about 5-30 flowers. Peduncle and branches long, with the same indumentum as the branchlets. Lower bracts leafy; upper small, almost linear. Flowers subtended by few small bracteoles, which are $1-3 \mathrm{~mm}$ long, acute or sometimes acuminate. Calyx campanulate, $3-4.5 \mathrm{~mm}$ long, pubescent with glandular hairs outside, inside sericeous; tube $3-6 \times$ as long as the lobes, which are equal or subequal, about as long as wide or slightly wider, $0.5-1 \mathrm{~mm}$ long, subacute, entire; sometimes 2 lobes or 2 pairs of lobes coherent. Corolla white, outside with some minute glandular hairs at the base of the lobes and often also at the apex of the tube, inside pilose as in $N$ involucrata; tube slightly shorter than the calyx; lobes oblong, $1.5-2 \times$ as long as wide, $1.5-2 \times 0.8-1 \mathrm{~mm},{ }^{\boldsymbol{T}}$ obtuse at the apex. Stamens: filaments glabrous, after the pollen is shed $2-3 \mathrm{~mm}$ long; anthers glabrous, about 1 mm long. Pistil 5-8 mm long; ovary obcordoid, slightly laterally compressed, 1-1.5 $\times 0.8-1 \times 0.6-0.8 \mathrm{~mm}$, appressed-pubescent at least in the apical half, glab-


Fig. 2. Nuxia capitata: 1. branch, $\frac{1}{2} \times ; 2-3$. leaves, $\frac{1}{2} \times$; 4. flower, $8 \times$; 5 opened corolla, $8 \times ; 6$. pistil with corolla base, $10 \times$; 7. fruit, $8 \times(1,4-6$. Serv. For. 1019; 2-3. Hildebrandt 3816; 7. Capuron S. F. 650).
rous at the base; style $3.5-6.5 \mathrm{~mm}$ long; stigma capitate or obscurely bilobed. Capsule as in $N$.involucrata.

## Distribution: Madagascar.

Ecology: Montane forest; alt. 1400-1800 m.
Madagascar: Tampoketsa d'Ankazobe, Decary 14942 (P); ibid., Forêt d'Ambohitantely, Humbert 11082 (P); ibid., Anonym. 50-R. 100 (P); Manankazo, NE. of Ankazobe (fl. Nov.) Perrier de la Bâthie 8606 (P); Andreba, near Anjozorobe, Bernardi 11123 (G, K); Fatrape, Anjozorobe, Serv. For. 15155 (P, WAG); Talata, Valonondry, Tananarive District (f., fr. Dec.) Peltier 1581 (P, WAG); Ilafy (ff. Oct.) d'Alleizette $7709 \mathrm{M}(\mathrm{P})$; between Carion and Angavokely (fl., fr. Jan.) Capuron S.F. 650 (P, WAG); near Angavokely Mt., Perrier de la Bâthie 12927 (P); Antsahatsaka, Moramanga (fl. Oct.) Serv. For. 6036 (P, WAG); Sahamaloto, Périnet, Serv. For. 3844 (P), 5752 (P); Périnet (fl. Dec.) Serv. For. 2525 p.p. (P, WAG, other part is N. oppositifolia); Périnet, Antsahatsaka, Serv. For. 3719 (P); Analamazaotra, Périnet Canton (bud and fr. Apr.) Serv. For. 19011 (P); ibid., Randrianasola in coll. Thouvenot 41 (BM, K, P); ibid., Louvel in coll. Perrier de la Bâthie $62(\mathrm{P})$ and in coll. Viguier $62(\mathrm{P})$; ibid., Boiteau 128 B (P, WAG), 128 D (P, WAG); ibid., Ursch 34 (P); Imérina Province, Hilsenberg \& Bojer s.n. (BM); Tsinjoarivo, Ambatolampy District (bud and fr. July) Serv. For. 6020 (P); ibid. (fl. Nov.) Viguier \& Humbert 1879 (P); Ambatotsipihina, Tsinjoarivo Canton, Ambatolampy District (fl. Dec.) Serv. For. 4664 (P); Andohanisardravo, Tsinjoarivo (fl. Nov.) Serv. For. 1019 (P); Imérina (f.) Acad. Malgache Dec. 1904 (P); Ifanangoavana, Imérina (fl. Jan.) Hildebrandt 3816 (BM, BREM, G, K, LE, M, P, W, WAG, WU, Z); Ampamaherana, Fianarantsoa District (fl. Dec.) Serv. For. 16141 (P, WAG); Ranomafana, Ifanadiana District (ft. Dec.) Serv. For. 5604 (P); Ambatovory, d'Alleizette Aug. 1906 (L, P); sin. loc., Baron 23 (K, type), 1941 (BM, K, P), 3650 (BM, E, K, P), 4769 (K); Blackburn s.n. (K); Bojer s.n. p.p. (K, other part is N. oppositifolia); Campenon s.n. (P); Lyall 215 (K); Schufeldt US 156106 (US).


Map 2. Nuxia capitata.
4. Nuxia congesta R.Br. ex Fresen., Flora 21: 606. 1838 (R.Br. in Salt, Abyss. App. 63. 1814, nomen); Bentham in De Candolle, Prod. 10: 435. 1846; A. Richard, Tent. Fl. Abyss. 2: 123. 1851; Engler, Hochgebirgsfl. Trop. Afr. in Abh. Preuss. Akad. Wiss. 1891: 335. 1892 (as Nyxia); Baker in Fl. Trop. Afr. 4(1): 512. 1903; Di Capua in Pirotta, Fl. Erit. in Ann. Ist. Bot. Roma 8: 210.

1903; Sim, For. Fl. Cape Col. 275, pl. 113, f. 1. 1907; Prain \& Cummins in Fl. Cap. 4(1): 1041, 1042. 1909; Fiori, Agric. Col. 5. Suppl. 78, f. 6. B, c. 1911; Marloth, Fl. S. Afr. 3(1): 48. 1932; P. Jovet, Bull. Hist. Nat. Toulouse 82: 18. 1948; Bruce \& Lewis, Loganiaceae in Fl. Trop. E. Afr. 44, f. 8. 7-8. 1960; Dale \& Greenway, Kenya Trees \& Shrubs 251, f. 50. 1961; Verdoorn in Fl. S. Afr. 26: 156, f. 19. 2, 20, 21. 1963; Onochie \& Leeuwenberg in Fl. W. Trop. Afr. 2nd ed. 2: 46, f. 211. 1963; Abrams-Zimmerman, Trees Shrubs Witwatersrand 166, with fig. 1964; Leeuwenberg, Fl. Cam. 12 ( - Fl. Gabon 19): 38, pls. 12 and 13. 1972; Palmer \& Pitman, Trees S. Afr. 3: 1875. 1973 (with photographs). Figs. 3, p. 15 and 4, p. 17; Phots. 1-6, pp. 19-29; Map 3, p. 31
Type: Ethiopia: sin. loc., Rüppell 13 (FR, holotype; isotype: BM). Homotypic synonym: Lachnopylis congesta (R.Br. ex Fresen.) C.A. Smith, Kew Bull. 1930: 17. 1930; Mildbraed, Notizbl. Bot. Gart. Berlin 13: 702. 1937 (as conferta); Phillips, Gen. S. Afr. Flow. Pl. 2nd ed. 576. 1951; Eggeling \& Dale, Indig. Trees Uganda 166. 1952; Andrews, Flow. Pl. Sudan 2: 381. 1952.

Heterotypic synonyms: L. ternifolia Hochst., Flora 26: 77. 1843; De Candolle, Prod. 9: 23. 1845. Type: Ethiopia: Tigre: near Aduwa, Schimper 1159 (FR, holotype; isotypes: BM, BR, BREM, CGE, FI, G, GH, GOET, GRO, K, L, LE, M, MO, MPU, OXF, P, S, UPS, US, W, WAG, WU, Z).
N.congesta var. brevifolia Sond., Linnaea 23: 83. 1850. Type: S. Africa: Transvaal: Pretoria District, Magaliesberg, Zeyher 1327 (holotype not seen, destroyed in B; lectotype: K; other isotypes seen: BM, GH, S, W). Homotypic synonym: Lachnopylis emarginata var. brevifolia (Sond.) C.A. Smith, l.c. p. 28.
N.emarginata Sond., l.c. (erroneously as C. emarginata in Nuxia). Type: S. Africa: Cape Province: Albany District, Bathurst, Kowie R. mouth, Zeyher s.n. (107.11) (holotype not seen, destroyed in B; lectotype: W; other isotypes seen: BREM, FI, HAL, L, LD, NY, P, PRE, S, UPS, US, W, WAG, WU, Z). Homotypic synonyms: N.congesta var. emarginata (Sond.) Prain in Fl. Cap. 4(1): 1042. 1909; L.emarginata (Sond.) C.A. Smith, l.c. pp. 17, 28.
N. pubescens Sond., 1.c. p. 84; Prain \& Cummins, 1.c. p. 1041. Type: S. Africa: Transvaal: Pretoria District, Magaliesberg, Zeyher 1326 (holotype not seen, destroyed in B; lectotype: W; other isotypes seen: BM, CGE, GH, K, S, SAM). Homotypic synonym: L.pubescens (Sond.) C.A. Smith, 1.c. p. 17.
N. tomentosa Sond., l.c. p. 84; Baker, l.c. p. 514. Type: S. Africa: Transvaal: Pretoria District, Magaliesberg, Zeyher 1326a (holotype not seen, destroyed in B; lectotype: W; other isotypes seen: P, SAM; a added to number for specimens with branched hairs). Homotypic synonyms: N.congesta var. tomentosa (Sond.) Cummins in Fl. Cap. 4(1): 1042. 1909; L.tomentosa (Sond.) C.A.Smith, 1.c. pp. 17, 30.
N.sambesina Gilg in Engler, Pflanzenw. Ost-Afr. C: 312. 1895; Baker, 1.c. p. 514; Eyles, Trans. Roy. Soc. S. Afr. 5(4): 442. 1916. Type: Malawi: Zomba, Kirk s.n. (holotype not seen, destroyed in B; lectotype: K). Homotypic synonym: L. sambesina (Gilg) C.A. Smith, l.c. p. 17.
N. angolensis Gilg, Notizbl. Bot. Gart. Berlin 1:74. 1895; Hiern in Cat. Afr. Pl. Welw. 1(3): 700. 1898; Baker, 1.c. p. 514. Type: Angola: Golungo Alto, Alta

Queta, Welwitsch 5670 (holotype not seen, destroyed in B; lectotype: COI (annotated by Gilg); other isotypes seen: BM, C, G, K, LISU, P). Homotypic synonym: L.angolensis (Gilg) Philipson in Exell, Cat. Vasc. Pl. S. Tomé 244. 1944.
N.goetzeana Gilg in Engler, Bot. Jahrb. 30: 375. 1901; Baker, 1.c. p. 514. Type: Tanzania: Ukinga Mts., Goetze 1190 (holotype not seen, destroyed in B; lectotype: G; other isotypes seen: BM, BR, L, P). Homotypic synonym: L.goetzeana (Gilg) Greenway in Burtt-Davy, Check-Lists of For. Trees \& Shrubs of Brit. Emp. No. 5 (= Tanganyika Terr. Checklist) (1): 112. 1940.
N.odorata Gilg in Engler, Bot. Jahrb. 30: 376. 1901; Baker, 1.c. p. 513. Type: Tanzania: Rungwe Mt., Goetze 1159 (holotype not seen, destroyed in B; lectotype: G; other isotypes seen: BM, BR, L, P). Homotypic synonym: L.odorata (Gilg) Greenway, l.c.
N.mannii Gilg in Engler, Bot. Jahrb. 32: 140. 1902; Baker, l.c. p. 512. Type: Cameroun: Mt. Cameroun, Mann 1206 (holotype not seen, destroyed in B; lectotype: K; other isotypes seen: GH, K, LE, W). Homotypic synonym: $L$. mannii (Gilg) Hutch. et M. B. Moss in Fl. W. Trop. Afr. 2: 20, f. 185. 1931; Kew Bull. 1937: 61. 1937.
N.platyphylla Gilg in Engler, Bot. Jahrb. 32: 141. 1902; Baker, l.c. p. 512. Type: Tanzania: Kilimanjaro, Marangu, Volkens 1499 (holotype not seen, destroyed in B; lectotype: G; other isotypes seen: BM, E, K, LE). Homotypic synonym: L.platyphylla (Gilg) Dale in Trees \& Shrubs of Kenya 124. 1936.
N.dekindtiana Gilg in Engler, Bot. Jahrb. 32: 141. 1902; Baker, 1.c. p. 514. Type: Angola: Huila: Mucha R. gorge, Dekindt 205 (holotype not seen, destroyed in B; no isotype seen).
N.rupicola Gilg in Engler, Bot. Jahrb. 32: 142. 1902; Baker, 1.c. p. 514. Type: Angola: Huila: Nene R., Dekindt 204 (holotype not seen, destroyed in B; no isotype seen).
N.breviflora S. Moore, Journ. Bot. 41 : 403. 1903; Prain \& Cummins, 1.c. p. 1041. Type: S. Africa: Transvaal: Johannesburg, Rand 712 (BM, holotype). Homotypic synonym: L.breviflora (S. Moore) C. A. Smith, 1.c. pp. 17, 30.
N. dentata var. transvaalensis S. Moore, 1.c.; C. A. Smith, l.c. p. 25. Type: S. Africa: Transvaal: Johannesburg, Rand 1132 (BM, holotype).
N.viscosa Gibbs, Journ. Linn. Soc. 37: 454. 1906; Eyles, 1.c. p. 442. Type: Rhodesia: Matopo Hills, near the American Mission and on the Silozi, Gibbs 246 (BM, holotype). Homotypic synonym: L. viscosa (Gibbs) C. A. Smith, 1.c. p. 17.
N. siebenlistii Gilg in Siebenlist, Forstw. Deutsch-Ostafr. 113. 1914. Type not cited, not preserved (?).
N.gilletii De Wild., Bull. Jard. Bot. Brux. 5: 15. 1915 and 397. 1919. Type: Zairre: Leopoldville: Boma, Gillet 3275 (BR, holotype).
N.keniensis T.C.E. Fries, Notizbl. Bot. Gart. Berlin 8: 697. 1924. Type: Kenya: western Mt. Kenya, R.E. \& T.C.E. Fries 777 (UPS, lectotype; designated by Bruce \& Lewis, 1960; isotypes: K, S).
N. latifolia T.C.E. Fries, l.c. p. 698. Type: Kenya: S. side Mt. Kenya, Kii R.,


Fig. 3. Nuxia congesta: 1. branch, $\frac{1}{2} \times$; 2. flower, $5 \times$; 3. calyx inside, $4 \times$; 4. portion of corolla inside, $5 \times$; 5 . portion of corolla outside, $5 \times$; 6 . pistil with corolla base, $5 \times$; 7. fruiting calyx, $4 \times$; 8 . fruit with corolla base, $4 \times ; 9$. longitudinal section of fruit, $4 \times ; 10$. seed, $12 \times ; 11$. longitudinal section of seed, $12 \times ; 12$. portion of testa, $60 \times ; 13$. embryo, $24 \times$ (1-2, 4-6. Breteler c.s. MC 164; 3, 7-13. Greenway 7619).
R.E. \& T.C.E. Fries 2035 (UPS, holotype; isotype: K).
L.saxatilis C.A. Smith, 1.c. p. 27. Type: S. Africa: Natal: Alexandra Division, Ellesmere, Dumisa, Rudatis 1399 (K, holotype; isotypes: BM, E, G, L, M, P, PRE, S, W, Z).
L.viscidulosa C.A. Smith, l.c. p. 27. Type: S. Africa: Transvaal: Witwatersrand Division, Witpoortje Kloof, Rogers 19220 (K, holotype; isotype: A).
L. heterotricha C.A. Smith, l.c. p. 28. Type: Botswana: Lobatsi, Rogers 6213 (PRE, holotype; isotypes: BM, BOL, K, Z).
L.speciosa C. A. Smith, I.c. p. 29. Type: S. Africa: Natal: Ismont, Wood 1862 (K, holotype; isotypes: NH, PRE, SAM).
L.schistotricha C.A. Smith, 1.c. p. 30. Type: S. Africa: Transvaal: Pilgrimsrest District, Graskop, Rogers 23028 (K, holotype; isotypes: PRE, WAG).
L.montana C.A. Smith, l.c. p. 31. Type: S. Africa: Transvaal: Pretoria, Waterkloof, Mogg 15186 (K, holotype; isotypes: FHO, PRE).
L.flocculosa C.A. Smith, Kew Bull. 1931: 40. 1931. Type: Angola: Huila: Mounyino, Dekindt 262 (K, holotype; isotypes: LE, LISC, S).
L.compacta C.A. Smith, Kew Bull. 1931: 40. 1931; Eggeling \& Dale, Indig. Trees Uganda 166. 1952; Andrews, Flow. Pl. Sudan 2: 381. 1952. Type: Sudan: above Kippia, Imatong Mts., Chipp 95 (K, holotype).
L.guineensis Hutch. et M.B. Moss in Fl. W. Trop. Afr. 2: 20. 1931; Kew Bull. 1937: 61. 1937; Irvine, Woody Pl. Ghana 602. 1961. Type: Sierra Leone: Mt. Gonkwi, Scott Elliot 4824 (K, holotype; isotypes: BM, GH, P).
L. annobonensis Mildbr., Notizbl. Bot. Gart. Berlin 13: 702. 1937 (Nuxia annobonensis Mildbr., Wiss. Ergebn. Zw. Deutsch. Zentr.-Afr. Exped. 1910-1911. 2: 163. 1922, nomen; E. Guinea Lopez, Ens. Geob. Guinea Cont. Española 345. 1946, nomen); Philipson in Exell, Cat. Vasc. Pl. S. Tomé 244. 1944. Type: Annobon: summit of Pico do Fogo, Mildbraed 6561 (holotype not seen, destroyed in B, photograph in BM; lectotype: BM).
L.thomensis Philipson, l.c. p. 245. Type: São Tomé: sin. loc., Campos 35 (COI, holotype). Homotypic synonym: N.congesta var. thomensis (Philipson) Lewis, Bull. Br. Mus. 3: 105. 1963.

Evergreen or (in Ethiopia sometimes) deciduous tree or shrub, 2-25 mhigh, often gnarled. Trunk in larger trees fluted and irregularly ridged, $5-100(-200)$ cm in diam.; bark pale grey-brown, fissured, peeling off in narrow strips or small thin scales; sapwood brown; wood hard, whitish or buff. Branches with fissured bark; branchlets glabrous to densely pubescent, not lenticellate, with $6(-8)$ raised lines and often sulcate when dry. Leaves ternate (occasionally 4nate), petiolate; petiole glabrous to densely pubescent, $3-20 \mathrm{~mm}$ long; blade coriaceous or subcoriaceous, very variable in shape and size, elliptic, narrowly elliptic, obovate, nearly rhomboid, or suborbicular, $1.3-3(-5) \times$ as long as wide, (1-)2-15 $\times(0.3-) 1.2-7.5 \mathrm{~cm}$, acuminate to emarginate at the apex, cuneate or less often rounded at the base or decurrent into the petiole, entire or sometimes more or less distinctly serrate-dentate or crenate, glabrous to subtomentose with stellate hairs on both sides, midrib impressed above and as


Fig. 4. Nuxia congesta: leaves, $\frac{1}{2} \times(1,10$. Leeuwenberg 3867; 2-3. Breteler c.s. 2573; 4. Fiori 368; 5. Fiori 365; 6, 9. Breteler c.s. MC 140; 7. Revesti 83; 8. Pappi 3612; 11-13. Mogg 23314; 14. Brass 17618).
secondary veins prominent beneath. Leaves on sucker shoots (mostly in the shade) darker green, herbaceous, serrate, and more hairy in the tropical countries, but in southern Africa thicker. Inflorescence variable in shape and size, seemingly umbellate to paniculate, congested or rather lax, $3-15 \times 3-15 \mathrm{~cm}$, $3-7 \times$ branched. Peduncle and branches hairy like the branchlets. Pedicels short or obsolete. Lower bracts leafy, the others small, linear, pubescent, about $1.5-3 \mathrm{~mm}$ long; bracteoles $0.5-2 \mathrm{~mm}$ long, like the bracts. Flowers solitary or three together, fragrant. Calyx green, often viscid, 3-8 $\times 1.5-2.2 \mathrm{~mm}$, minutely to manifestly pubescent with glandular and mostly also ordinary hairs outside, inside sericeous; lobes variable in size, mostly about as long as wide or wider, $0.5-2 \times 1-1.5 \mathrm{~mm}$, acute or less often obtuse, entire, valvate, often two coherent or partially united. Corolla white, outside with recurved pubescence on the lobes which may be reduced to scattered hairs or is rarely absent and with minute glandular hairs at the base of the lobes and the apex of the tube (the latters sometimes on the middle of the tube or on nearly the complete tube too), inside with recurved hairs in the throat and sometimes also at the apices of the lobes and with minute glandular hairs in the tube except for its glabrous base (hairs in throat or hairs in tube are occasionally absent, although never both simultaneously); tube slightly shorter or sometimes - when calyx very short only - longer than the calyx; lobes oblong, $2-3 \times$ as long as wide, $2-5 \times 1-2 \mathrm{~mm}$, obtuse or subacute at the apex. Stamens: filaments only at the very base villose or entirely glabrous, 3-6 mm long; anthers glabrous, $1.2-2 \mathrm{~mm}$ long. Pistil (4.5-) $7.5-13 \mathrm{~mm}$ long; ovary ovoid or elliposid, slightly laterally compressed, $1.5-$ $2.5 \times 1.2-2 \times 1-1.5 \mathrm{~mm}$, appressedly hirto-pubescent, glabrous at the base; style (3-)6-11 mm long; stigma small, capitate or obscurely bilobed. Capsule $0.5-1.5 \mathrm{~mm}$ longer than the calyx, appressedly hirto-pubescent.

Distribution: Southern Arabia, tropical and southern continental Africa and islands in the Gulf of Guinea.

Ecology: In tropical Africa: Mostly light montane forest, there often dominant or codominant, less often scrub, grassland, or Bamboo zone; in Ethiopia and eastern Africa often in Juniperus forest. Alt. (460-) $1100-3000 \mathrm{~m}$. On high mountains on the slopes from about 2000 m to the timber-line, on lower mountains near or at the summit (e.g. Pico do Fogo, Annobon, alt. 460 m ; Mt. Tonkouï, Ivory Coast, alt. 1180 m ). In southern Africa: Often at lower elevation, even at sea level. Dry rocky crests and wooded stony slopes, montane forest or gallery forest, and towards the South in rocky gorges near the coast.

Saoudi Arabia: Arif (fr. Dec.) Philby 137 (K).
Guinea (Conakry): between Fitor (?) and Touba, Herico (fl. Dec.) Pobéguin 2062 (P); Fouta Djallon (fl. Dec.) Chevalier 18011 (K, P); ibid. (fr. Mar.) Schnell 4827 (ABT); Diaguissa Plateau, near Dalaba (fr. Jan.) Jacques Félix 758 (K, P); between Dalaba and Mamou (fl. Jan.) Chevalier 20345 (P); Mt. Loura, near Mali (bud Nov.) Chevalier 34382 (P); Mali (fl. Jan.) Roberty 16579 (G); Mt. Nimba (bud Nov.) J. de Wilde 866 (WAG); ibid. (bud Nov.) Herb. IDERT 3839 (ABD); ibid., Schnell 3705 (P), 3707 (ABT, BR), 3831 (P), 6281 (ABT); Ziama Mts., Macenta region, Schnell 4538 (ABT), 4539 (ABT).

Sierra Leone: Talla Plateaux, Mt. Gonkwi (fl. Feb.) Scott Elliot 4824 (BM, GH, K, P);


Рнот. 1. Nuxia congesta: (herb. W. de Wilde 9903, phot. H. C. D. de Wit, Ethiopia).

Loma Mts. (fl. Jan.) Jaeger 4101 (BM, K), 7069 (WAG); ibid. (fl. Dec.) Morton SL 391 (FHI, K, WAG); Bintumane Peak, Jaeger 7960 (K); ibid. (fl. Jan.) Jones 144 (K, P); Sankanbiriwa Peak, Edwardson 96 (FHO), 97 (FHO).

Ivory Coast: Upper Sassandra R., Mt. Boho, near Zoaulé, Chevalier 21494 (P); Pic Lefebvre, Roberty 16088 (G); Mt. Tonkouì (fr. Mar.) Aubréville 1011 (P); ibid. (f. Dec.) Herb. IDERT 1986 (ABI), 3321 (ABI); ibid. (fr. Apr.) Leeuwenberg \& Bouquet 3867 (ABI, BR, K, MO, WAG); ibid., Nozeran Sept. 1955 (MPU, P); ibid. (fl. Dec.) Roberty 15882 (G); ibid. (fl., fr. Jan.) Schnell 4094 (ABT), 4147 (ABT), 6388 (ABT, BR); Upper Sassandra R., between Gouékangouiné and Droupleu, Chevalier 21448 (P).

Ghana: Akpafu, Hohoe District (fl. Oct.) St.Clair-Thompson 3644 (FHO); Amedzofe (fl. Jan.) de Wit \& Morton A 2871 (K, WAG); ibid., Morton 14 Nov. 1953 (K); near Gbad-zeme-Amedzofe T.V.T., Hohoe District (fl. Nov.) Enti 586 in FH 6875 (FHO, K); Akosombo, Enti \& Hall GC 40239 (FHI); Senchi, Vigne 4052 (EA, FHO); Bana Hill (fr. Mar.) Irvine 893 (E, K); Odumasi (fl. Jan.) Irvine 2115 (E, GC), 2638 (E, FHI).

Nigeria: Sonkwala Mts. Area, Koloishe, Savory \& Keay FHI 25099 (FHI, K); Mambilla Plateau, Chapman 2561 (FHD); Chappal Waddi, Gangirwal, Tuley c.s. 1945 (K), 1948 (K); 19 km W. of Mayo Daga, Tuley \& Magaji 1874 (K).

Cameroun: Cameroun Mt., Boughey 12576 (K); ibid. (fl., fr. Apr.) Brenan 9571 (BM, FHI, FHO, K, P); ibid. (fl., fr. Feb.) Breteler c.s. MC 140 (K, P, WAG, YA), MC 164 (WAG), MC 166 (FHI, K, LISC, P, WAG, YA), MC 256 (P, WAG), MC 272 (K, PRE, WAG, YA), MC 274 (WAG), 2573 (BR, G, K, M, MO, P, WAG, Z); ibid (fl. Jan.) Keay FHI 28630 (FHI, K); ibid. (fl., fr. Dec.-Mar.) Maitland 458 (FHI, K), 996 (FHI, K), 1194 (FHI, K); ibid. (fl. Jan.) Mann 1206 (GH, K, LE, W, type of N. mannii), (fl. Dec.) Mann 2184 (GH, K); ibid. (fl. Mar.) Rosevaer 28/37 (FHI); ibid. (fl. Jan.) Steele 64A (K); ibid. (fr. Feb.) Callies (?) FHI 9583 (FHI); Mondani, Mamfe District (fl. Jan.) Lobe Babute Cam. 15/37 (FHI, K); Bamenda (fl. Dec.) Johnstone 254/31 (FHO); between Bafut and Bamenda (fl. Feb.) Daramola FHI 40507 (FHI, K, WAG); Bafut-Ngemba For. Res. (fl. Feb.) Hepper 2203 (BR, FHI, K, P); ibid. (fl. Jan.) Lightbody FHI 26281 (K); ibid. (fr. Mar.) White 8463 (FHO); Bambuluwe (fl. Jan.) Johnstone 11/31 (FHO); Bambui, Bamenda (fl. Dec.) C.D. Adams GC 11217 (K, WAG); ibid. (fr. Mar.) Brunt 102 (K, P); between Bamenda and Ndop (fl. Dec.) C.D. Adams GC 11277 (GC); Mt. Koupé (fl. Dec.) Letouzey 431 (P, YA); Bambouto Mts., Aubréville 942 (P); ibid. (fl.Dec.)Jacques-Félix 2736(P,WAG); ibid. (budNov.,fr. Aug.) Letouzey 2 (P), 25(P), 31(P), 105 (P); ibid. (bud Nov.) Meurillon 464 (P); Mt. Mbapit, near Foumban (fl., fr. Feb.) JacquesFélix 3105 (P, WAG), 3106 (P, WAG); Mbam Mts. (fl. Dec.) Letouzey 127 (P); Mt. Gotel (fr. Mar.) Jacques-Félix 3331 (P); Tchabal Mbabo (bud Nov.) Jacques-Félix 9001 (P); Mts. Alantika (fl. Jan.) Raynal 13205 (P); Nganha Mts., near Ndigou, (bud Dec.) W. de Wilde c.s. 4515 (WAG), 4525 (WAG).

Fernando Poo: Pico Sta. Isabel (fl. Feb.) Sanford 5954 (K); Moka, Hache R. Falls (fl. Jan.) Guinea 2148 (MO), 2150 (K), 2154 (K).
S. Tomé: Campos 34 (COI, paratype of Lachnopylis thomensis), 35 (COI, holotype of L. thomensis); W. of Pico (fr. Aug.) Monod 11989 (BM); near Casa del Pico (fr. Aug.) Monod 11954 (BM).

Annobon: Pico do Fogo (bud Aug.) Melville 277 (BM); ibid. (fl. Sept.) Mildbraed 6561 (BM, lectotype of Lachnopylis annobonensis).

Zaïre: Léopoldville: Boma (fl. June) Gillet 3275 ( BR , holotype of N. gilletii); Vunda, Songololo Territory (fr. Dec.) Compère 1079 (BR). Kivu: Mts. W. of Lake Edouard, near Lubero (fl. July) Humbert 8754 (BR, P); between Kasindi and Lubango (imm. fr. Jan.) Lebrun 4826 (BM, BR, FHO, US); between Lubango and Luofu, Pangi Territory (fl. July) Louis 4703 (BR, WAG); Kabasha, Rutshuru Territory (fl. Oct.) Lebrun 8058 (BR, P); Bwito, Kihondo (fl. Apr.) Deru 138 (BR); between Kivu and Edouard Lakes (fl. Apr.-May) Humbert 7896 (BR, P); Angi (fl. Sept.) Bequaert 5694 (BR); between Mumba and Kirwa (fl. July) Michelson 960 (BR); S. of Rumangabo, Germain 3445 (BR, P); Nat. Albert Park, Donis 3911 (BR, WAG); ibid., Tshamugussa (fl. Aug.) de Witte 1827 (BR, P); Kurumbu, Masisi Territory (bud, fr. Aug.) Gutzwiller 1961 (BR, WAG); Saké Road, Masisi Territory (fl. Aug.) Devred 3835 (BR, EA, LISC, SRGH); Nyamulagira Vulcano (fl. Feb.) Lebrun 4905 (BR); ibid.,


Рнот. 2. Nuxia congesta: isolated tree heavily damaged by bush fire which is sometimes caused by eruptions (Breteler c.s. 2573, phot. Leeuwenberg, Mt. Cameroun).
near Mushumangabo R. (fl. Dec.) Germain 3092 (BR); between Kasenyi and Saké, Hendrickx 620 (BR); between Saké and Kahundu, Scaetta 258 (BR, FI); between Saké and Goma, Michelson 421 (BR); ibid., Kashaka Hill (fl. Jan.) Germain 3334 (BR); Keshero, Goma Territory (fl. Sept.) Crispiels-Thonon 135 (BR); Kibati (fl. Mar.) Linder 2430 (A, P); km 193 of Bukavu-Goma Road (fr. June) Pierlot 2952 (BR); Nkubi, Kalehe Territory (fr. June) A. Léonard 4580 (BR, WAG); Kahusi Mt., upper Tshinganda R. (bud June) Pierlot 3162 (BR, WAG); Kahusi Mt., near Bukavu-Kisangani Road (fr. July) Pierlot 3207 (BR, WAG); ibid. (fl. May) Lebrun 5527 (BR); ibid. (bud, fl., fr. Apr.) A. Léonard 4001 (BR, WAG); ibid. (fl. June) Hendrickx 5893 (BR); ibid., Musisi Forest, Pierlot 2757 (BR, EA); Bugulumisa, Mulungu, Pierlot 333 (BR, PRE, SRGH); Fendula (fl. June) Christiaensen 2295 (BR); Kisheke R., Kabare Territory, Liegeois 304 (BR); Bushinga, Hendrickx 7786 (BR); ibid., Liegeois 303 (BR); Kapanga Road (fr. Dec.) Michelson 704 (BR); Lolemba Ngomo For. Res., Michelson 636 (BR). K at anga: Zawa Mt., Delvaux 566 (BR), 571 (BR); Lulamba R. source, Van den Brande 244 (BR); Kankelela R. source, 7 km N. of Katshupa, Kundelungu Plateau (fl. Aug.) Malaisse 4500 (BR); Keyberg, 8 km SW. of Lubumbashi (fl. July) Schmitz 719 (BR), 1955 (BR), 2471 (BR).

Rwanda: near Uwinka (fl. Apr.) Troupin 9759 (BR, EA), 9907 (BR, EA, WAG).
Burundi: Ihembe, Renier Henri 305 (BR); Ndora (fl. Sept.) Renier Henri 261 (BR); near Kavumande R. (fl. June) Renier Henri 240 (BR); Bukey, Teza Mt. (fl. June) Lewalle 3840 (BR, SRGH); Uwira (fl. July) Theo Kaessner ('Kassner') 3067 (BM, BR, E, MO, P, Z).

Angola: Cuanza Norte: Quiage, Iculo Peak, Cardoso 124 (COl); Golungo Alto, Welwitsch 5624 (BM, COI, K, LISU); ibid., Mt. Alta Queta (fl. May) Welwitsch 5670 (BM, C, COI, G, K, LISU, P, type of N. angolensis); ibid. (fl. July) Nolde 239 (BM); Mts. Alta Queta and Quilombo, Welwitsch 6689 (BM, K); Luinha, Catomba (fr. July) Welwitsch 5660 (BM, LISU); Dalatanda ( $=$ Vila Salazar) Gossweiler 10241 (BM, COI); Dalatanda-Cazengo, Gossweiler 5596 (BM, COI, LISJC, LISU); Cazengo, Mt. Belo (fr. Aug.) Gossweiler 1653 (COI) ; ibid., near Lucala R. (fl. July) Gossweiler 9306 (BM, K, LISJC, US); Pungo Andongo (fi. May) Welwitsch 5678 (BM, COI, K, LISU). Cuanza Sul: Libolo District (fl. Aug.) G. Boss TRV 36667 (BM, PRE); Amboin, Fazenđa Mt. Café (fl. July) Gossweiler 9307 (BM, COI, K, LISJC, US); between Gabela and Amboin (f1. July) Gossweiler 10635 (COI); ibid. (fl. July) Exell \& Mendonça 3119 (BM, COI, LISC). Benguela: Capanga, Gossweiler 12405 (BM, LISC, LISJC). Moçamedes: Mahitá, Vila Arriaga (fl. Aug.) Gossweiler 13098 (LISC). Huila: Serra da Chela (fl., fr. Sept.) Gossweiler 12637 (LISC); ibid., near Humpata (fl. Aug.) Humbert 16614 (BM, P, WAG); ibid. (fl., fr. Oct.) Gossweiler 13081 (LISC); ibid., Mendes 1501 (LISC), 3779 (LISC), 3780 (LISC); Boca da Humpata (fl. Aug.) Teixeira 2748 (NLI, SRGH, WAG); Lopolo (fr. Aug.) Antunes 3123 (LISC, P); ibid. (fi. July-Sept., fr. Aug.Sept.) Dekindt 251 (E, K, LE, LISC, P), 252 (LE, LISC, W), 253 (EA, K, LISC, Z), 254 (A, LISC, US), 258 (A, E, LISC, WU), 259 (LISC, US, W), 260 (K, LE, LISC, P, S, WU, Z), 263 (LISC, P, Z), 365 (A, E, LISC, W), 366 (LISC); Mounyino (fr. Sept.) Dekindt 262 (K, LE, LISC, S, type of Lachnopylis flocculosa); Lubango, Azancot de Menezes 1124 (K, M, SRGH).

Sudan: Jebel Hamoyet, Red Sea Hills (fl. Apr.) J. K. Jackson 3969 (K); near Khor Hamrik (fl. Apr.) J. K. Jackson 3970 (BR, K); Imatong Mts., near Kippia (fl. Feb.) Chipp 95 (K, type of Lachnopylis compacta); between Itobol and Kippia, Myers 13485 (K); Itobol (fl. Jan.) J. K. Jackson 171 (FHO); Mongalla (fl. Feb.) Johnson 1431 (K); Loyaru, Imatong Mts. (fl. Dec.) A. S. Thomas 1775 (BM, K), 1778 (BM, K); N. end of Dongstona Hills, Torit District (fi. Jan.) J. K. Jackson 1071 (FHO).

Ethiopia: sin. loc., Roth 463 (K); Rüppell 13 (BM, FR, type); near Chelicut, Salt anno 1810 (BM, MO); Anguiah R. banks, Salt s.n. (BM, MO). Eritrea: Hamasen, Maldi-M. Ciafrus, Pappi 298 (FI); Cantabara (fl. Apr.) Revesti 83 (FI); Mt. Laal Amba, near Keren (fl. Mar.) Schweinfurth 835 (FI, G, M); Daari (fl. May) De Benedicto 514 (FI); Abi MandelAlibaret ( $=$ Halib Mentel-Ela Barèd) (fl. Feb.) Pappi 2500 (FI); Halib Mentel-Sella Magasas, Pappi 2482 (FI); Sella Magasas (fl. Mar.) Fiori 366 (FI), 2184 (FI); Mt. Fagena, near Wochi (fl. Apr.) Fiori 365 (FI); Wochi (fl. May) Baldrati 482 (FI); Zagher Mt. (fr. Jan.) Baldrati 3087 (FI); Mt. Anagullè (fl. Apr.) Pappi 39 (FI), 54 (FI); Dedolei, Coazien (fr. May) Baldrati 363 (FI); between Belesa and Dega-Tros and Caramy (fl. Feb.) Pappi 3603 (FI, US), 3612


Рнот. 3. Nuxia congesta: branchlets with sun leaves and flower buds and branchlets with serrate shade leaves (Breteler c.s. MC 140, phot. Leeuwenberg, Mt. Cameroun).
(FI); R. Adikubé, near Addi-Nefas (fl. Mar.) Pappi $4166(94)$ (BM, BR, COI, EA, FI, G, K, L, LE, MO, NY, S, U, W, Z); Bet Girgis, Chiovenda 164 (FI); Garbanaba (?), near Adi Uri (?), Bartolommei-Gioli 58 (FI); Mt. Oualid (fl., fr. May) Schweinfurth \& Riva 1868 (BO, BR, G, K, LE, MPU, NY, P, S, Z); Akele-Guzay, Halai (fi. Mar.) Fiori 367 (FI); ibid., Pappi 3919 (FI); Halai-Valle Amber (fl. Mar.) Fiori 368 (FI). Begemeder: Alto Simièn, Schimper 1890 (P); ibid., Ciglione (fl., fr. Apr.) Pichi-Sermolli 1229 (FI, K, MO), 1234 (BR, FI, P, W); Tällak Valley, Alto Simièn Sebald 1291 (M); Amhara-Simièn, Limolino(fr. July) Chiovenda 851 (FI), 3129 (FI); Lake Tana basin, 4 km from Debra Tabor (fl. Mar.) Pichi-Sermolli 1231 (FI, K); Mt. Abba Bailù (fl. Mar.) Pichi-Sermolli 1226(FI, MO,W); near Gondar(fl. Jan.) Pichi-Sermolli 1227 (FI, MO), 1228 (FI, K); Amba Libò (fl. Mar.) Pichi-Sermolli 1230 (FI); Mt. Quatelé (fl. Mar.) Pichi-Sermolli 1224 (FI), 1225 (FI), 1232 (BR, FI), 1233 (FI). Tigre: near Aduwa (between Massawa and Aduwa) Quartin Dillon \& Petit 26 (P); Chiré, Belesa R. valley (fl. Feb.-Mar.) Quartin Dillon $49 / 7$ (P); Maigoigoi (bud, fr.) Quartin Dillon \& Petit Nov. 1839 (BR, FI, P); Ouidjarah, Quartin Dillon \& Petit s.n. (P); near Aduwa (fl. Jan.) Schimper 1159 (BM, BR, BREM, CGE, FI, FR, G, GH, GOET, GRO, K, L, LE, M, MO, MPU, OXF, P, S, UPS, US, W, WAG, WU, Z, type of Lachnopylis ternifolia); about $55 \mathrm{~km} \mathrm{S} .\mathrm{of} \mathrm{Quiha} \mathrm{(fl}. \mathrm{Jan)}. \mathrm{J}$. Wilde 4446 (WAG); Tembien, Sollazzo 248 (FI); Woina (fi. Apr.) Schimper 1089 (L, P). Walla: Kombolcha, near Dessie (fl. May) O. West 5883 (K, PRE), 5888 (K, PRE). Gojam: 8 km E. of Matakel (fl. Mar.) Kuls 294 (FR); Upper Godeb R. valley, near Arogi Amba, Evans \& Leaky 341 (K); Cabi, 25 km N. of Debra Markos (fl. Jan.) Kuls 47 (FR). Wellega: near Nedjo (fl. Feb.) Mooney 7789 (EA, K); Ghimbi (f1. Feb.) Meyer 8138 (K, MO); Gidami (fl. Dec.) Benedetto 345 (FI); Uaba, Galla Sid (fl. Dec.) Mulchersich 91 (FI); Mt. Damota, near Soddu, Scott 87 (K); Lekemti (fr. Mar.) Mooney 6937 (K). Shoa: Addis Ababa-Blue Nile Road (fl. Feb.-Mar.) Buscalioni 988 (FI), 1258 (FI), 1417 (FJ); W. of Ambo (= Agere Hiwot), W. de Wilde 6375 (WAG); Managasha Nat. Forest, 55 km W. of Addis Ababa (fl. Nov.) Meyer 7482 (K); ibid. (fl. Apr.) W. de Wilde 6420 (WAG); Mt. Wochacha, 15 km W. of Addis Ababa (fl. Jan.) W. de Wilde 9553 (WAG); ibid. (fl. Jan.) Mooney 8877 (FI, K); ibid. (bud, fr. May) Negri 435 (FI); Mulu, 32 km N. of Addis Ababa (fl. Feb.) Bally 3064 (EA, K); Mt. Entotto, 5 km N . of Addis Ababa (fl. Feb.) W. de Wilde 9976 (WAG); ibid. (fl. Nov.) Meyer 7545 (K, MO, US); Mt. Yerer, near Bishoftu (fl. Feb.) Mooney 5761 (K); Tucumal (fr. Apr.) Buscalioni 2310 (FI); Ankober (fl. Mar.) Roth 462 (K); Metahara (fl. Feb.) Giordano 2497(FI); Kuyera,S. of Negelli(fl. Sept.)Kuls956(FR),957(FR); sin. loc., Quartin Dillon \& Petit s.n. (P); Rochet d'Héricourt 36 (P), anno 1842 (P). Hararghe: between Kulubi and Deder (fl. May) IECA E-63 (EA, K); km 13 Bedeno-Langhe Track, Westphal 2429 (WAG); km 36 Kobbo-Asbe Tafari Road, Westphal 1257 (WAG); Gara Mulletta Mts., 20 km W. of Alemaya (fl. Feb.) W. de Wilde 9903 (WAG); ibid., near Bedeno (fl. Jan.) J. de Wilde 4373 (WAG); S. face of Gara Mulletta Mts. (fl. Oct.) J. de Wilde 5856 (WAG); NW. face of same mts., W. of Harar (fl. Feb.) Burger 1447 (K, US); 12 km SW. of Whater (fl. Dec.) Burger 1414 (K, US); W. of Curfacelli (fl. Mar.) Burger 2644 (K); NE. of Lake Alemaya (fl. Nov.) Burger 2328 (K, US); Galla Pass (fl. Feb.) Gillett 5156 (FI, K). Kefa: 30 km N. of Jimma, along Cossa Road, Friis c.s. 527 (WAG); Botot (fr. Mar.) Mooney 6688 (FI, K); 2 km SW. of Wush-Wush, Bonga area (fl. Jan.) J. de Wilde 6283 (WAG); Maji (fl. Jan.) J. de Wilde 6166 (WAG); W. of Maji, Smeds 524 (FI). Arusi: Asella (fl. Feb.) Milchersich 1 (FI); near Asella (fl. Dec.) Mooney 5156 (FI, K); km 3 Asella-Bekoji Road (fl. Jan.) Westphal 3074 (WAG); 8 km S. of Asella (fl. Dec.) W. de Wilde 9228 (WAG); km 61 Asella-Bekoji Road (fl. Jan.) Westphal 3101 (WAG); along Dodola Road, 15 km E. of junction with ShashemeneNeghelli Road (fl. Feb.) Perdue 6461 (K); 20 km SSE. of Shoshamanni (= Shashemene) (fl. Feb.) Burger 2569 (K). Sidamo: Yrgalem (fl. Dec.) Mooney 5348 (FI, K); Irba Moda (fl. Nov.) Milchersich 69 (FI); Bera (fl. Jan.) Kuls 67 (FR); Bore, Haberland 2079 b (FR); 55 km NW. of Kebre Mengist on Yrgalem Road (fl. Dec.) J. de Wilde 6097 (WAG); Sole Valley (fr. Nov.) Senni 2345 (FI); between Irba Moda and Adola (fl. Nov.) Senni 2332 (FI); Adola (fl. Jan.) Mooney 5644 (BR, EA, FI, K), 5647 (FI, K); Maleko, N. of Adola (fl. Dec.) Haberland 2045 (FR), 2061 (FR), 2072 (FR), 2072a (FR); Agheremarian, Alghe (fl. Dec.) Gillett 14527 (BM, BR, EA, FI, K, P, PRE, S, W); Bala, near Agheremarian (fl. Jan.) Mooney 5450 (FI, K); km 12 Mengist-Neghelli Road, Westphal 2737 (WAG). Borana: Mega,


Phot. 4. Nuxia congesta: trunks bearing branchlets with shade leaves (herb. Leeuwenberg \& Bouquet 3867, phot. Leeuwenberg).

Corradi 2750 (FI, W), 2764 (FI). Bale: 38 km W. of Gurie ( $=$ Dinshu) along road to Adaba (fl. Jan.) J. de Wilde 7357 (WAG).

Somalia: Gran Libah, Golis Range (fl. July) Glover \& Gilliland 1224 (BM, EA, FHO, K); E. Al Madu Range, W. of Gezir, Bally 11028 (K); Mait-Erigavo Escarpment (fl. Sept.) Hemming 1956 (EA, FI, K); Nullahs, Upper Sheikh R. (fl. June-July) D. Thomson 25 (K).

Uganda : U1: Mt. Morongole, Karamoja, Dale U 284 (EA); ibid. (fi. Nov.) A. S. Thomas 3303 (ENT, K); Lomwaga Mt. (fl. Apr.) Greenway \& Hummel 7282 (EA, K, PRE); Lwala Mt. (fl. Jan.) Philip 670 (EA, K); Mt. Rom (fl. Dec.) Eggeling 2382 (BR, ENT, K); Dodoth County, Bacon Temp. Spec. 10 (ENT); Mt. Moroto (fl. Dec.) Sangster 899 (ENT); ibid. (ff. Jan.) J. Wilson 636 (EA, K); ibid., Imagit Peak (fl. Jan.) A. S. Thomas 2151 (K); Napak Mt., Lang Brown 85 (EA, K, SRGH); ibid. (fl. Feb.) Sangster 417 (ENT, K); Mt. Debasien (fl. Jan.) Eggeling 2661 (ENT, K), 2736 (K). U2: Bitale-Rukiri Road, Ankole District, Lang Brown 168 (ENT); Hunga (fl. Nov.) Bagshawe 392 (BM); between Lake Mutanda and the Impenetrable Forest, Kigezi (fl. Oct.) Eggeling 4158 (EA); near Kanaba Gap, Cree 274 (ENT); near Rukiga (fl., fr. Dec.) Bagshawe 465 (BM, K); Virunga Mts., Chanzi Hill, Eggeling 927 (EA, K); Chilima, Kigezi (fl. Mar.) Purseglove 2343 (EA, K); Ankole (fl. Mar.) Snowden 1322 (BM, EA, K, P); Rubaya, Kigezi (fl., fr. July) A. S. Thomas 4249 (BR, EA, K); Kachwekano Farm (fl. Apr.) Purseglove 3357 (EA, K); between Sabinio and Mgahinga Vulcanos (fl. June) Humbert 8658 (BR, P); Sabinio Mt. (fl. June) Purseglove 2438 (EA, K); Bufumbira County, Lang Brown 153 (ENT); ibid. (fl. July) G N H 90 (EA); Muhavura Mt., Nkanda, Stauffer 983 (K); Kigezi District, St. Clair-Thompson 2515 (ENT); Soko Hill (fl. June) Purseglove 800 (BR, K); Mgahinga Mt. (fl. Oct.) Purseglove 2529 (EA, K). U3: Sebei County, Kiragga 60 (ENT); ibid., Kimera 29 (EA); Buginyanya, Mt. Elgon (fi. Feb.) Snowden 833 (BM, K, P).

Kenya: K1 : Furroli, Gillett 13916 (EA, K); Mt. Kulal (fl. Aug.-Sept.) J. Adamson 71 (EA, K), 116 (K), 684 (EA); ibid., T. Adamson 4 bis (EA, K); ibid. (fl. Oct.) Bally 5583 (C, EA, K); ibid. (fl., fr. July) Verdcourt 2236 (EA, K), 2250 (EA, K); Mt. Nyiru (fl. Feb.) J. Adamson 394 (G); Marsabit Mt., Lindsay 66 (EA); Poro Mt. (fr. Mar.) J. Adamson 14 (EA, K). K2: sin. loc. (fl. June) W. H. R. Martin 269 (FHI, FHO); Moruassigar, Turkana District (fl. Feb.) Newbould 7180 (EA, K); Kacagalau Hill, Karasuk County (fr. Apr.) Osmaston 4449 (EA, ENT); Cherungani Highway (fl. Dec.) Lind 2853 (EA). K3: Mt. Elgon (fl. Oct.-Nov.) T. H. E. Jackson 340a (EA, K); ibid. (fl. Feb.) G. Taylor 3462 (BM, MO, S); ibid. (fl. Jan., Apr.) Tweedie 1369 (FI, K), 3626 (K); Elgon R. (fl. Jan.) C. Jack 209 (EA, K); Tambach Escarpment (fl. Mar.) Brunt 1539 (K, WAG); Mau Plateau, Nandi, Whyte Nov. 1898 (K); Ol Joro Orok (fl. Feb.) Napper 1225 (BR, EA, K, PRE), 1226 (EA); Mts. Aberdare, E. James anno 1905 (K); ibid. (fl. Apr.) Fries 759 (BR, K, S, UPS), 790 (BR, UPS), 2320 (UPS), 2721 (K, S, UPS); Aberdares Nat. Park, Kinangop side (fl. Jan.) Agnew 7029 (WAG); Kinangop (fi. Dec.) Bally EA 11410 (EA); ibid. (fi. Feb.) D. C. Edwards 2828/1 (EA, K); ibid., Cons. of Forests 39 (FHO); ibid. (fl.) E. H. Wilson 6 Dec. 1921 (A); ibid. (fr. Feb.) Karanja 36 (EA, K, WAG); Olbolossat, D. E. Hutchins Conrydon Mem. Mus. 15141 (EA); ibid. (fl. Mar.) Leakey 830 (BM, BR, FHO, WAG); Elburgon (fl. Nov.) G. S. Baker Conrydon Mem. Mus. 15142 (EA); Lumb. Sitoton Forest Camp (fl. Jan.) Bally 4732 (EA, G, K); Endabarra, Bally 4927 (EA); Mau Plateau, Whyte Nov. 1898 (K). K4: near Kongoni R. (fl. Feb.) Fries 1557 (BR, K, S, UPS); Mt. Kenya (fl. Jan.) Fries 777 (K, S, UPS, type of N. keniensis); ibid., Holyoak 714 (A, BM, EA, FHO); ibid., Porter 755 (EA, FHO); ibid. (fl. Feb.) Rauh Ke 456 (EA); ibid., Synge 1714 (BM); ibid., Kii R. (fr. Mar.) Fries 2035 (K, UPS, type of N. latifolia); Cole's est. Mill (fl. Jan.) Fries 1139 (UPS); E. Aberdare Mts. (fl. Mar.) Fries 2290 (BR, K, UPS); S. E. Aberdare Mts., Kimakia Forest Station (f. Feb.) Kerfoot 767 (EA, K), 1365 (EA, K); Kikuyu Res. (fl. Dec.) Birch \& Trapnell 59/113 (EA); Limuru, D. E. Hutchins Conrydon Mem. Mus. 15149 (EA); Thego R. (fl. July) Leakey OX 690 (EA, FHO); Mumoni Hill, Kitui (fr. Aug.) Gardner 1084 (EA, FHO); Nzaui Hill, Machakos (fi. June) Agnew c.s. 8408 (EA); Chyulu Hills (fl. May) Bally 320 (EA, FI, G, K) 7611 (EA); ibid. (fr. Aug.) Gibbons 472 (FHO). K5: N. of Kisumu, Pole Evans \& Erens 1643 (BR, EA, K, PRE); Kakamega Forest, Machin T 797 (BR, EA, FHO); ibid. (fi. Jan.) Perdue \& Kibuwa 9466 (K); Tiriki Forest (fl. Dec.) Moon 15 (EA, K); 16 km NNE. of Kisii (fl. Nov.) Vuyk \& Breteler 189 (WAG);

PHOT. 5. Nuxia congesta: flowering branches (herb. J. de Wilde 4446, phot. H. C. D. de Wit, Ethiopia),

Cheptuiyet, Kericho District (fr. Mar.) Kerfoot 2141 (EA, K), 4847 (EA, K); NW. of Ngoina Tea Estate (fi. Dec.) Perdue \& Kibuwa 9380 (K); Londiani, Perdue \& Kibuwa 9079 (K). K6: Oloropil, Narok District, Glover c.s. 1445 (EA); Abossi Hill, Glover c.s. 2344 (BR, EA, K, PRE); Kilgoris, Glover c.s. 2586 (EA, K, PRE); Ngong Hills (fl. Nov.-Dec.) Bally 1241 (EA, K), 8440 (EA, K); ibid., Nattrass 1354 (EA); Oldoinyo Orok (fl. Dec.) Bally 4164 (EA). Mshodwi, C. F. Elliot 304 (K); sin. loc., C. F. Elliot 2148 (K); D. E. Hutchins Conrydon Mem. Mus. 15140 (EA); Kerfoot 622 (EA); Powell 39 (K), 95 (K), 112 (K).

Tanzania: T2: Kilimanjaro (fl. Sept.) Carmichael 38 (EA); ibid. (fr. Feb.) Haarer Dao 1170 (EA, FI, K); ibid. (fl. Jan.) T. W. Lewis 254 (K); ibid. (fl., fr. June-July) Pitt-Schenkel 337 (FHO), 364 (EA, FHO); ibid. (fl. Dec.) Schlieben 4414 (B, BM, BR, G, M, P, S, Z); ibid., Rongai (fl. Apr.) Schlieben 5064 (B, BM, BR, G, LISC, MO, P, PRE, US, Z); ibid. (fi. Dec.) Shabani 231 (K), 232 (K); ibid., Baldwin (?) F. H. 1433 (EA); Kibongoto, Kilimanjaro For. Res. (fr. Oct.) Steele 89 (EA); Marangu (fl. Dec.) Volkens 1499 (BM, E, G, K, LE, type of N. platyphylla); near Kamanga sawmill, Moshi District (bud, imm. fr.) Willan 457 (EA); Lengijawe, Arusha District, Peter 42654 (B); Mt. Meru (fl. Jan.) Carmichael 532 (EA, K); ibid., V. C. Gilbert 2251 (EA); ibid. (fl. Jan.) Hughes 190 (EA, K); ibid., L. yamuya 1296 (EA); ibid., Mesfin Abeb 2160 (EA); ibid. (f. Dec.-Jan., Mar.) Richards 20865 (K), 23824 (K), 25037 (K, NY), 25603 (K); ibid. (fl. Feb.) Vesey-FitzGerald 5071 (EA, K); ibid., T. W. Lewis F.D. 1400 (EA); Ngurdoto Crater, Greenway \& Kanuri 12127 (BR, EA, K, PRE); ibid., Leopard Point, Greenway \& Kanuri 11945 (BR, EA, K, PRE); ibid. (f. Dec.) Vesey-FitzGerald 4484 (EA); Kilimanjaro and Meru Mts. (fl. Nov.) Uhlig 673 (EA); Olmotonyi, Arusha (fl., fr. Mar.) Matalu 3020 (EA); Lubagai, W. Arusha District (fr. Feb.) St.Clair-Thompson 1251 (K); Meru Mt. and Mbulu, Bancroft 51 (K); Loliondo (fl. Oct.) Carmichael 1289 (BR, EA, K); Longido Mt. (fr. Jan.) Greenway 4379 (EA, FHO, K); Kitumbeine (fr. Jan.) Greenway 4317 (EA, FHO, K); Kavinyiro Hill, Peter 42908 (B); Olomoti Vulcano (fl. Sept.) B. D. Burtt 4378 (EA, K); Ngorongoro Crater (fl., fr. Dec.) Greenway 9150 (EA, K); ibid., Hornby 668 (EA, K); ibid. (fl. Dec.) F. G. Smith 923 (EA); Ngorongoro Rest Camp, Serengeti Nat. Park (fr. Feb.) Wigg 1058 (EA, K); Mbulumbulu, Greenway 6792 (EA, K); Nou Forest, Mbulu, Matalu 3081 (EA, K); Mdumgara, Peter 43889 (B); Mt. Hanang, Polhill \& Paulo 2311 A (EA, K); ibid. (fr. Feb.) Greenway 7619 (EA, FHO, K, PRE). T3: N. Dare and Kindoroko For. Res. (fl. Aug.) Grant 979 (FHO); Shagayu Forest (fl. May) Drummond \& Hemsley 2626 (BR, EA, K, SRGH); ibid., Willan 585 (EA, K); Shume-Magamba For. Res. (fl., fr. Jan.) Parry 108 (EA, FHO, K); Shume (fl. June) A. S. Adamson 359 (FHO); Sungwi Mt., near Shume (fr. Oct.) Semkiwa 100 (EA, K, PRE); Magamba-Shume Road, Rawcliffe 61 (K); Magamba, Wigg 30 (A, FHO). T4: Gombe Stream Res., Pirozynski 501 (EA, K, WAG); Mukigo, Kigoma District (fl. July) Carmichael 923 (EA); Mpanda District, Kungwe-Mahali Peninsula, Harley 9209 (BR, EA, K); Kungwe Mt. (fi. July) Newbould \& Harley 4629 (BR, K, MO); ibid. (fr. Sept.) Harley 9541 (BR, K, S); Mahali Mts. (fl. Aug.-Sept.) Newbould \& Jefford 1782 (BR, K), 2326 bis (BR, EA, K, LISC, S); Ufipa, Mbisi (fl. Sept.) Vesey-FitzGerald 1918 (SRGH), 1942 (SRGH). T5: Salanga, Kondoa (fl. Aug.) Greenway 832 (EA, K). T6: S. Nguru Mts., Wigg 16 (EA, FHO, K); Ukaguru, Kilosa District, Parry 1802 (EA); Kilwe, Morogoro (fl. June) Wigg 937 (EA); Lupanga, Bruce 1009 (BM, BR, K, P); near Lukwangule Plateau, Uluguru Mts. (fl. Mar.) Semsei 1998 (EA, FHO, K); Lukwangule Plateau, near Chenzema (fl. Mar.) Drummond \& Hemsley 1515 (BR, EA, K, SRGH). T7: Uhimbila, Iringa District (fl. Nov.) Carmichael 268 (EA, FHO, K); Kizinga Plat, Iringa District (fr. Aug.) Wigg 64 (A, E, FHO); Kisinga (fl. Aug.-Sept.) Fraser 22 (FHO); Mufindi (fr. July) Balbo 430 (FI, TOM), 922 (FI, TOM); ibid., Gaetan Myembe 160 (EA, K); ibid. (fl. Dec.) Paget-Wilkes 45 (EA); ibid. (ff. Oct.) Sangiwa 50 (EA, K); Kigogo (fr. Oct.) Gilchrist 48 (EA, FHO); Mbeya Range (fr. Nov.) Kerfoot 1552 (EA, K), 3172 (EA, K); Mbeya Peak For. Res. (fl. Aug.) Kerfoot 4223 (EA, K); Kiwira Fishing Camp, Rungwe District (fl. Aug.) Greenway 8386 (EA, FHO, K); Poroto Mts., Procter 1213 (EA, K, PRE); ibid., St. ClairThompson 922 (EA, K); Elton Plateau (fl. Nov.) Davies E 54 (K); Rungwe Mt. (fl. Aug.) Goetze 1159 (BM, BR, G, L, P, type of N. odorata); Kyimbila, Stolz 2082 (B, C, G, GRO, L, LD, M, S, U, W, WAG, Z), 2161 (C, G, GRO, LD, M, S, W); Yawiri Mts. (fl. Sept.) Goetze 1190 (BM, BR, G, L, P, type of N. goetzeana); Ibagama, Ukwama (fl. Sept.) Ede 19 (EA, K,

Рнoт. 6. Nuxia congesta: flowers (W. de Wilde 9228, phot. W. de Wilde, Ethiopia).

SRGH). Sin. loc., Cons. of Forests 489 (FHO), 506 (FHO); Watkins 557 (EA).
Zambia: Mwinilunga, Holmes 1266 (K); Nyika Plateau (fl., imm. fr. Oct.) Robson \& Angus 369 (BM, K, LISC, SRGH).

Malawi: Sangule Hill, Rumpi District (fl. Sept.) Adiard 303 (FHO, K, PRE, SRGH); S. of Vipya Link Road, 8 km N. of Luwawa Dam (fl. Nov.) Adlard 565 (K, PRE, SRGH); Chikangawa, Vipya Plateau, Chapman 791 (BM, FHO, SRGH); Nchisi Mt., Kota-Kota District (fl. Sept.) Brass 17061 (K, MO, SRGH, US), 17618 (K, MO, PRE, SRGH, US); ibid., Burtt-Davy 21133 (A, FHO, LE), 21253 (FHO); Dedza Mt., Adlard 214 (K, PRE); ibid., Banda 721 (K, SRGH); ibid. (fl. Sept.) Burtt-Davy 21522 (FHO), 21527 (FHO); ibid., Chapman 991 (FHO, K, PRE, SRGH); Cirobwe, Ncheu District (fr. Nov.) Chapman 1022 (SRGH); Zomba Plateau (bud, fr. May) Brass 16143 (MO, SRGH, US); ibid., Buchanan 131 (K); ibid. (fl. Sept.) Chapman 1394 (SRGH), 1458 (FHO, K, PRE, SRGH); ibid., Clements 43 (FHO); Comm. H. H. Johnston 17 Apr. 1897 (K); ibid., Kirk s.n. (K, type of N. sambesina); ibid. (fl. Aug.) Leach 10424 (BR, K, PRE, SRGH); ibid., Salubeni 814 (K, SRGH); ibid., Whyte 4 Sept. 1895 (K), (fr.) Dec. 1896 (K); Shire Highlands (fl. Oct.) Buchanan 39 (E), 217 (E, K); Blantyre, Buchanan in coll. J. M. Wood 6818 (E, NH, SAM); ibid., Topham 669 (FHO); Tuchila Plateau (fl. Aug.) Sharpe 63 (K); Luchenya Path, Adlard 273 (SRGH); Mlanje Mt. (fl. July) Brass 16733 (A, BM, BR, K, MO, SRGH, US); ibid. (fl. Sept.) Burtt-Davy 21978 (FHO), 22093 (FHO); ibid. (fl. Aug.) Chapman 416 (BM, BR, FHO, K); ibid. (fl. Oct.) Clements 75 (FHO); ibid. (fi. Sept.) Humbert 17055 (BR, K, P, WAG); ibid. (fi. Sept.) T. Müller 1555 (SRGH); ibid. (fl. July) Newman \& Whitmore 223 (BM, BR, SRGH, WAG); ibid., Salubeni 1592 (SRGH, WAG); ibid., Seagrief SRGH 88263 (SRGH); ibid., Topham 862 (BR, FHO, K); sin. loc., Buchanan 103 (A, E, LE), 282 (BM, BR, E, MO); Clements 47 (K).

Moçambique: Manica e Sofala: Báruè, Serra de Choa, Torre \& Correira 13466 (LISC); Vila Manica (fr. Nov.) Torre \& Correira 13055 (LISC); Mt. Vengo (fl. Nov.) Torre 6230 (LISC, PRE); Serrà Zuira (f., fr. Nov.) Torre \& Pereira 12938 (LISC); Gogogo Mt., Gorongoza (fl. July) Schelpe 451 (BM, SRGH). Zambézia: Serra do Gúruè (fl. Sept.) Barbosa \& Carvalho 4127 (PRE); Pico Nàmuli, Serra do Gúruè (fl. Aug.) Campos Andrada 1853 (COI, LISC); ibid. (fl. Sept.) Mendonça 2166 B (LISC), 2244 (LISC), 2287 (LISC); Mt. Tumbini (fl. Aug.) Campos Andrada 1814 (COI, LISC), 1814 B (LISC).

Rhodesia: Mazoe, near the Dam (fl. July) Gilliland 133 (BM); ibid., Young in herb. Moss 14847 (BM, J); Salisbury (fl. Aug.) Brain 6156 (K, SRGH); Wedza Mts., Dale c.s. SKF 357 (SRGH); Wedza (fi. Aug.) Eyles 6408 (BM); Inyanga, Eyles 3582 (BOL), 6452 (K, SRGH); Inyanga Nat. Park (fr. Jan.) O. West 6240 (SRGH); Rhodes Inyanga Hotel (fl. May) Chase 5264 (BM, COI, K, LISC, MO, SRGH); Mt. Simbo, H. Wild 7473 (K, SRGH); Samsodza Hill, Chase 3926 (BM, K, SRGH); Umtali District, McGregor 68/37 (SRGH); between Stapleford and Odzani (fl. Sept.) Gilliland 727 (BM, FHO, K, SRGH); Stapleford, E. J. Kelly Edwards M 68/37 (FHO); Stapleford For. Res., Pardy 174/33 (FHO, SRGH); Banti North (fl. July) Chase 3725 (BM, SRGH); ibid. (fl. July) Fisher 1359 (K, PRE, SRGH); Banti For. Res. (fi. Aug.) Grout 44/47 (SRGH); ibid. (fl. July) McGregor 34/47 (SRGH), 35/47 (FHO); Umtali (fl. Oct.) Steedman in herb. Eyles 5129 (K, SRGH); Vumba Mts. (fi. Sept.) Chase 8053 (K, SRGH, WAG); Vumba, near Bunga For. Res. (fl. Oct.) Simon 921 (EA, K, SRGH); Melsetter District (fl. May) O. West 6482 (SRGH); Gungunyana For. Res. (fl. Sept.) Goldsmith 67/61 (K, LISC, M, MO, PRE, SRGH); Gwashe (fl. Sept.) O. West 3725 (K, SRGH); Mutzarara (fr. Oct.) Crook M 201 (K, LISC, PRE, SRGH); Melsetter (fl. Sept.) Swynnerton 606 (BM, K); Chimanimani Mts., Hodgson 59 (SRGH); Chirinda District, Hack 140/50 (SRGH); Turgwe Gorge (fl. May) Biegel 3034 (K, SRGH); Bikita, Pardy 256/33 (FHO); Chilimanzi District, Gibson 29/51 (K, SRGH); ibid., Shasha Kopje, Greenhow 47/51 (SRGH); Shashi, B. R. Thompson 58/51 (SRGH); Victoria, Monro 435 (BM, BOL, BR, S), 735 (BM), 1042 (BM, S); Shashi R., Victoria District, McGregor 5/47 (SRGH); Glen Livet, near Forest Victoria, Acheson 12/47 (FHO, K, SRGH); Chibi District, SW. of Razi Dam, Pope 249 (SRGH); Mt. Emberengwe (Mt. Belingwe) (fr. Oct.) H. Wild 4846 (K, M, MO, SRGH); between Matopos and Maleme Dam, Armitage 216/59 (SRGH); Maleme Dam (fl. Sept.) Crozier 23/65 (K, SRGH); Matopo Nat. Park (fl. Sept.) O. West 2946 (K, SRGH); Matopo


Map 3. Nuxia congesta.

Hills (fl. Oct.) Gibbs 246 (BM, type of N. viscosa); ibid. (fl. Nov.) Plowers 1322 (K, SRGH); Farm Besna Kobila (fl. May) O. B. Miller 5286 (K); Korakora Stream, S. of Farm Absent (fl. Apr.) O. B. Miller 1788 (PRE, SRGH); Silozi, Matopos District (fl. Sept.) Meara 74 (SRGH).

Botswana: E. of road from Kanye to Bathoen Dam (fl. May) O. B. Miller B/315 (PRE); Kanye Hill (fl. May) O. B. Miller B/286 (PRE); near Gaberones, Humbert 15366 (P, WAG); Boschwelatlon, Lobatsi (fl. Oct.) McConnell SRGH 68915 (K, SRGH); Kgobong Valley, Lobatsi District (fr. Nov.) Hillary \& Robertson 543 (K, PRE); Lobatsi (fl. Oct.) Rogers 6213 (BM, BOL, K, PRE, Z, type of Lachnopylis heterotricha).

Swaziland: Havelock Mine (fi. June) O. B. Miller $5 / 23$ (FHO, PRE); Black Mbuluzi Valley (fl. May) Compton 25934 (M, NBG), 25937 (K, NBG, PRE), (fi. July) 30078 (K, NBG, SRGH); Black Mbuluzi Falls (fl. Oct.) Compton 26062 (NBG); Dalriach (fl. Sept.) Compton 30738 (NBG); Millers Falls (fl. May) Compton 25944 (NBG, PRE); Gobolo, Mbabane District (fl.) Ben Dlamini 5 May 1961 (NBG), 9 Aug. 1960 (NBG); Stegi (fi. July) Compton 19760 (NBG); $10 \mathrm{~km} \mathrm{S}$. of Stegi (fl. July) Compton 27898 (FHO, NBG, PRE); Hlatikulu Forest (fl. July) Boocock PRF 5327 (PRE).
S. Africa: Transvaal: Soutpansberg, Junod 1335 (PRE); Crewe Farm, W. Soutpansberg (fl., fr.) Hutchinson \& Gillett 4449 (BM, K, NY, WAG); S. of Berlin, Curson \& Irvine 76 (PRE); near Entabeni (fl. July) Hutchinson \& Gillett 4208 (BM, K, NY); near Louis Trichardt (fr. Sept.) Humbert 10712 (K, P, WAG); 13 km N. of Louis Trichardt (fl. July) van Vuuren 1228 (K, PRE); 8 km W. of Louis Trichardt (f. Nov.) Obermeyer c.s. 344 (K, PRE); Pisang Hoek (fl. July) Galpin 14951 (PRE); 25 km E. of Louis Trichardt (fl. Aug.) Schlieben 7143 (BR, G, K, M), 7148 (BR, G, K, M, WAG), 7149 (BR, M, Z); near Lake Funduzi (fl. July) Weenhoek J 38009 (J); 30 km NE. of Sibasa on Sambandou Road, Codd 6889 (K, PRE); Spruytskloof, Waterberg District (bud, fr. Dec.) Theron 2002 (K, M, PRE, Z); near Krantzberg, Waterberg, Dyer \& Verdoorn 4259 (PRE); ibid. (fl. Aug.) Repton 1088 (PRE); 18 km N. of Warmbad, Marais 1267a (PRE); Hanglip Mt., Potgietersrus District (fl. Aug.) Galpin 13799 (BOL, PRE); Blouberg, Pietersburg District, Strey \& Schlieben 8481 (BM, K, M, SRGH); ibid. (fl. May) Codd 7950 (K, PRE); Duivelskloof (fl. June) Galpin 10106 (K, PRE, Z); Westfalia Estate, near Duivelskloof, J. J. Bos 1312 (M, PRE, SRGH, WAG); near Duivelskloof, Letaba (fl. June) Scheepers 391 (K, M); The Downs (fl. July) Rogers 20196 (BM, PRE, S, Z), 21975 (S); Houtboschdorp (fl. May) van der Merwe 25 (K, PRE); Houtbosch (fl. Oct.) Eastwood 5 (K, PRE); ibid., Burtt-Davy 20204 (FHO); ibid., J. B. Gillett 3222 (K); ibid., Grenfell 1110 (PRE); ibid., Hutchinson 2226 (K); Kratźenstein-Woodbush ( $=$ Houtbosch), Hoffmann $76+81$ in TRV 29951 (PRE); Magoebas Kloof (fl. May) Gerstner 5474 (PRE); Helpmekaar Arboretum (fl. Aug.) Burtt-Davy 20233 (FHO); New Agatha, McCallum s.n. (PRE); Witfontein (fl. May) G. Edwards 18417 (K); Chumies Poort, Pole Evans 19461 H (PRE); Letaba, Cyprus Farm (fl. July) Renny 165 (PRE); Plank Nek, Potgietersrus (fl. May) Mogg 20848 (K, SRGH); Pyramid Estate, Potgietersrus (fl. July) Galpin 8829 (FHO); Eland's R. valley (fl. Apr.) Young TRV 26869 (PRE); Mariepskop (fl. Apr.-May) van der Schijff 4495 (PRE), 4629 (PRE, W), 4648 (PRE, W), 5061 (PRE), 5070 (K), 6046 (PRE), 6792 (A); ibid. (fl. July) van der Schijff (?) PRE 17038 (A); Mariepskop For. Res., Codd 7893 (K, SRGH); Mt. Anderson (fl., fr. Sept.) Humbert 10918 (BR, K, P, WAG); Pilgrimsrest, Rogers 23732 (K); between Ohrigstad and Pilgrimsrest (fl. Sept.) Rauh \& Schlieben 9655 (M, PRE, Z); km 26 of Lydenburg-Sabie Road, Story 3904 (PRE); 26 km SSE. of Lydenburg (fl. Aug.) D. Morris 57 (K, NY, PRE, SRGH); 29 km SSE. of Lydenburg (fl. Aug.) D. Morris 12 (K, PRE); near W. Gold Fields, Pilgrimsrest (fl. July) McLea BOL 3014 (A, BM, BOL, K, SAM, Z); Gods Window Rock Groups, Pilgrimsrest District (fi. Sept.) Mogg 32907 (SRGH), 32968 (SRGH); Graskop (fl. July) Rogers 23028 (K, PRE, WAG, type of L. schistotricha), 23453 (K); ibid., Bernardi 8988 (BR, G, K, S); ibid. (fl. July) Compton 19802 (NBG); Enzelsberg, Marico District (fl. July) Louw 327 (PRE); Mancope Siding, near Groot-Marico, Pole Evans 2222 (PRE); Rustenburg District, E. S. Moore 2 (PRE); ibid., Phillips J 31959 (M); 11 km N. of Swartruggens (fl. July) Leistner 675 (K, PRE); 47 km from Swartruggens on Rustenburg Road (fl. June) Story 5629 (PRE), 5631 (PRE), 5632 (PRE); 3 km N. of Koster (fl. June) Leistner 673 (K); Rustenburg (fl. Aug.) Collins 10524 (PRE); ibid. (fl. Sept.) Galpin 11519 (BOL, K, PRE), 11527 (BM, BOL, K, PRE); 8 km SW. of Rustenburg, Story 994 (K, PRE), 997 (LD, PRE); Phoberg, Holub 5577 (Z); Magaliesbergen, Rustenburg District, Nation 309 (SRGH); ibid., near Bergheim (fr. Nov.) Merxmüller 233 (M); Jacksonstuin Brits District, Acocks 12362 (PRE), 12370 (PRE); ibid., Mogg 14980 (PRE); ibid. (fl. June) Obermeyer TRV 31017 (PRE); ibid., Strey 2864 (K, PRE); ibid. (fl. June) van Vuuren 98 (PRE), 186 (K), 247 (PRE); Magaliesbergen, Burke 259 (BM, K, PRE, SAM, Z); ibid. (fl.) Hendriks 5 June 1942 (PRE); ibid. (fl.) Leendertz 17 Apr. 1900 (L); ibid. (fl. June) Zeyher 1326 (BM, CGE. GH, K, S, SAM, W, type of $N$. pubescens), 1326a (P, SAM, W, type of $N$. tomentosa), 1327 (BM, GH, K, S, W, type of $N$. congesta var, brevifolia); ibid., Kommando Nek (fr. Sept.) Humbert 10527 (B, P); Magaliesbergen, Breeds Nek, Lam \& Meeuse 4825 (L, W); Mountain View, Magaliesbergen (fl. Apr.) Mogg 15136 (FHO, K, PRE, paratype of Lachnopylis montana), (fl. Aug.) 15186 (FHO, K, PRE, type of L. montana); Doornkloof, Pretoria District, Pole Evans 1038 (PRE); ibid., A. B. Gillett 173 (K); Sanadu, Brain 10340 (SRGH); Ashbury, Obermeyer 432 (PRE); ibid. (fr. Oct.) Meebold 13250 (M), 13251 (M); Hartebeestpoortdam (fl. Mar.) Fairall 1611 (NBG); ibid., Lotsy \& Goddijn 365 (L); ibid. (fl. Oct.) Smuts \& Pole Evans 1506 (PRE); ibid., Vahrmeijer 415 (PRE); between Swart-
spruit and Hartebeestpoort, Verdoorn 1217 (PRE); Hornsnek, 19 km W. of Pretoria (fl. July) Schlieben 7045 (BR, G, K, M), 7058 (BR, G, K, M, WAG); ibid. (fl. Apr.) Verdoorn 1216 (FHO, PRE); Tsillikat's Nek, Magaliesbergen, 32 km W. of Pretoria (fr. Nov.) J. B. Gillett 2583 (K); Daspoort Range (fl. Sept.) Repton 1016 (PRE); Pelindaba (fl. June) Leistner 662 (K, PRE), 663 (PRE); ibid. (fl. June) Story 5472 (BM, K, PRE), 5473 (K, PRE), 5623 (K), 5624 (K, M, PRE), 5625 (PRE), 5626 (K), 5627 (BM, PRE); near Pretoria, J. W. C. Kirk 30 (K); ibid. (fl., fr. Sept.) McLea BOL 3102 (BOL, K); Pretoria, J. H. Pont 752 (Z); ibid. (fl., fr. June) van der Bijl 7661 (E, P, SAM, Z); ibid., Groenkloof (fr. Nov.) Burtt-DavyH 3207 (FHO); ibid. (fl. Sept.) Pole Evans 454 (K, PRE); Rietendale, near Pretoria, Lanjouw 770 (U); The Willows, Pretoria (fl. Sept.) de Winter 5950 (PRE); Fountains Valley, Pretoria, Trapnell 549 (K); Fairy Glen, Leendertz 5403 (PRE); Tygerpoort Kopje (fr. Nov.) Merxmüller 297 (M); Wonderboompoort (fl. May) Leendertz 944 (BOL, BR, L, PRE); ibid., Lotsy \& Goddijn 633 (L); ibid., Mogg \& Dyer 17 May 1935 (K); ibid. (fl. May) Mogg 14755 (PRE), 14759 (PRE); ibid., Verdoorn 5707 (K), 5708 (K, PRE), 5709 (PRE), 5710 (K); jbid. (fl. Sept.) Galpin 6993 (GRA, PRE); ibid. (fl. Apr.) Gerstner 5275 (PRE); Wonderboom, Ferreiria 2 (PRE); Wonderboom Res., Repton 1762 (PRE), 1763 (PRE); Koedoespoort (ff. May) Leendertz 626 (K, PRE); ibid., Rehmann 4665 (K, Z), 4666 (Z), 4667 (K. Z); Kopje behind Koedoe Hotel, Nicholson 313a (NH); Silverton, Story 1355 (PRE); ibid. (fl. July) C. A. Smith 2849 (PRE); ibid. (fl. July) Mogg 15093 (PRE); ibid. (fl. July) Keet 1106 (FHO, PRE); Irene, Smuts 1311 (K, PRE); Swawelpoort, E. of Pretoria (f., fr. July) Kirges 1771 (PRE); ibid. (fl.) Rehm Sept. 1948 (M); Baviaanspoort (fr. Oct.) Meebold 13249 (M, NY); ibid., Obermeyer TRV 27523 (PRE); ibid., Repton 1092 (PRE); ibid. (fi. July) C. A. Smith 353 (PRE); road to Delmas, near Rietvlei, Pretoria (fl. Sept.) Obermeyer 9 (PRE); Donkerhoek, 35 km E. of Pretoria, Repton 599 (PRE); ibid. (fl. Aug.) Acocks 23464 (K); Spitskop, 19 km ENE. of Bronkhorstspruit, Story 5465 (BOL, K, PRE), 5466 (EA, K, PRE), 5467 (K, SRGH), 5468 (K, M, PRE); near Premier Mine, Repton 477 (PRE); ibid., Rogers 25353 (Z); Krugersdorp District, Wells 2275 (K, M, PRE); ibid., Morgenzon (fl. Oct.) Rose Ines 130 (PRE); Wysfontein, Rustenburg District (fl. Aug.) K. Smith 10 (BOL, K); Hekpoort, Krugersdorp, Phillips 410 (PRE); ibid. (fl.) Hafstrom \& Lindeberg 16 Aug. 1936 (S); Gladysvale (fl. June) Leistner 660 (PRE); ibid. (fl. June) Story 5470 (K, M, PRE), 5471 (K, PRE), 5621 (PRE), 5622 (PRE); King's Kloof, Johannesburg (fl. Oct.) Moss 11344 (BM, K, PRE); Johannesburg (fl. Aug.-Oct.) Moss 2475 (BM, K, PRE), 2476 (Z), 2478 (K, PRE), 2672 bis (PRE), 4671 (K, S), 7966 (PRE), 7967 (PRE), 11341 (BM); ibid. (fl. June) D. P. Murray 646 (BR, PRE); ibid., Thoday 200 (SAM); ibid., Houghton Ridge (fl. May) Burtt-Davy 15243 (BOL, CGE, PRE), 15247 (CGE, K), 15249 (BOL, CGE); ibid. (fl. Aug., Nov.) Moss 2282 (K), 2477 (BM, K, PRE); ibid. herb. Moss 27110 (PRE), 27111 (PRE), 27113 (PRE), 27116 (PRE); Kensington, Johannesburg (fi. Sept.) Gerstner 6420 (PRE); ibid. (fl. Feb.) Boyd in herb. Moss 14709 (K, PRE); ibid. (fl. JulyAug.) Weeks 3 (PRE), 5 (BM, PRE); Observatory Ridge, Johannesburg, Burtt-Davy 15903 (CGE, FHO); Orange Grove (f. Sept.) Moss 4130 (BM, K, PRE, Z), 4666 (BM, K), 4670 (PRE); ibid. (fr. Nov.) Rogers 22362 (S); Giloolie's Farm, Mogg 18602 (K, M); Rietfontein (fl. Oct.) Moss 4667 (PRE); Pepper Ridge (fl. Sept.) Gilfillan 100 in herb. Galpin 6051 (GRA, PRE); Schoemanskloof, E. Johannesburg, Repton 890 (PRE); Johannesburg N. Escarpment, Witwatersrand Series, R. F. Rand 712 (BM, type of $N$. brevifora), (fl. Dec.) 1132 (BM, type of $N$. dentata var. transvaalensis); Witpoortje Kloof (fl. Aug.-Oct.) Moss 2479 (PRE, Z), 4669 (PRE), 4673 (PRE), 11347 (PRE), 17687 (BM, PRE), 18250 (BM, PRE), 18251 (K); ibid., Gilmore TRV 26372 (PRE); ibid. (fl. May) Prosser 1214 (K); ibid. (fr. Oct.) Rogers 19220 (A, K), 19221 (P, Z); ibid. (fr. Nov.) Mogg 19202 (M); Swartkop, 29 km NW. of Johannesburg (fl. Jan.) Mogg 21650 (SRGH), 21727 (K); Wilgespruit, 19 km NW. of Johannesburg (fl. Sept.) Mogg 21834 (Z), 25031 (Z); Leeuwkop Farm Colony, 26 km N. of Johannesburg (fl. Aug.) Mogg 23314 (MO, SRGH); Norscot, 26 km N. of Johannesburg, Mogg 19186 (PRE); Alberton (fl. July) Moss 14708 (PRE); Suikerbosrand, Mogg 18078 (SRGH, Z); ibid., Moss 17630 (PRE); Heidelberg Kloof (fl. July) Elffers 20 (NBG); Boschfontein, Heidelberg District, Mogg 25501 (M); Klipriviersberg (fi. May) Ommanney 121 (BM, K); Vrisgewaag Farm, 74 km SE. of Johannesburg, Mogg 25200 (PRE), 25289 (SRGH); Potchefstroom District (ff. Oct.) Louw 1062 (K, PRE); Zeekoefontein, Vaal R. bank, Mogg 19732 (FHO); Potchef-
stroom, Vahrmeijer 1572 (K, PRE); Water Fall, Farm, Phillips 357 (PRE); Olifants R. Gorge (fr. Oct.) Mogg 22474 (MO, PRE); 8 km W. of Middelburg (fl. May) Phillips \& Ines 1384 (PRE); Botjebelo, N. of Middelburg, Hardy 2447 (K, PRE); ibid. (fl. July) Marloth 11742 a (A, PRE), 11742 b (PRE); Belfast, Smuts 9 (K, PRE); Berlin Forest Station, Nelspruit District, Mogg 22 Apr. 1944 (PRE); Barberton, Rogers 30462 (K, S, Z); ibid., Thorncroft 2089 (A, PRE); ibid. (fl. Aug.) Legat 1313 (BOL); Saddleback Mt. (f. May) Galpin 946 (BOL, K, PRE, SAM); ibid. (fl. May) Thorncroft 129 (K, NH); Nelshoogte Forestry Station, Codd 9556 (K, PRE, SRGH); km 23 Barberton-Havelock Mine Road (fl. Aug.) Acocks 12863 (PRE); ibid. (fl. Aug.) Codd 1613 (PRE); John Bull Mt., Kaap Valley (fl. May) Thorncroft 3039 (NH); Mt. Marovounge, Junod 2419 (Z). Natal: Ngome Forest (fl. July) Gerstner 4382 (NH, PRE), 4884 (BR, NH, PRE); Nongoma (fr. Oct.) Gerstner 2514 (NH); ibid., Wendelane R. (fl. Feb.) Gerstner 4405 (NH), 4412 (NH); Nhlawati, Hlabisa District (fl. June) Ward 3441 (K, M, NH, SRGH); Nkandla (fl. Sept.) Acocks 11806 (NH, PRE), 11811 (BOL, NH, PRE); Nkandla For. Res. (fl. Oct.) Prior PRF 5404 (PRE); 16 km SE. of Nkandla (fl. June) Codd 1373 (PRE); between Qudeni and Dolwana Store (fl. June) D. Edwards 1515 (PRE); Tugela Valley, below Ngobeni (fr. Mar.) O. West 1977 (NH); Ingoma, W. T. Gerrard 1510 (BM, K, W); Inanda, J. M. Wood 576 (BOL, K, NH, Z); Umgeni R., near Durban (fl. June) Pillans 16582 (BOL); near Bevaan R. (fr. July) J. M. Wood 3190 (K, NH); Krantz Kloof Nat. Res., Pinetown District, Moll 3315 (K, PRE); Ixopo, Ismont, J. M. Wood 1862 (K, NH, PRE, SAM, type of Lachnopylis speciosa); Dumisa, Alexandra (= Umzinto) District (fl. May) Rudatis 1399 (BM, E, G, K, L, M, P, PRE, S, W, Z, type of Lachnopylis saxatilis); Oribi Flats (fl. Apr.) McClean 399 (K, L, NH, P, PRE, U). Cape Province: Coffee Bay road (fl. Feb.) Wells 3552 (GRA, K, SRGH); Butterworth District, N. edge of Kei Valley (fl. July) Acocks 12760 (PRE); near East London (fl. Apr.) Flanagan 94 (GRA, NH, PRE, SAM, Z); ibid. (fr.) Kuntze 5 Mar. 1894 (K), 5 Apr. 1894 (NY); ibid., Sim Mar. 1897 (PRE); ibid. (fl.) J. M. Wood 21 Mar. 1896 in herb. Galpin 3228 (PRE); Kei Road, King Williams Town District (fl.) G. A. Ranger 22 Sept. 1952 (K, LD, PRE); Komgha, near Kei R. mouth, Flanagan s.n. (FHO, K, S); Perie Forest, near King Williams Town, Scott Elliot 961 (E); Peddie (fl. Apr.) Barker 7811 (NBG); 7 km E. of Peddie (fl. Apr.) S. J. Lewis 4199 (SAM); Fish R. valley, Kaffir Drift, Peddie District, O. West 2038 (NH, PRE); Bathurst District (fl. Sept.) Sidey 3838 (S, US); Kariega R., Story 3250 (PRE); Hopewell, Kariega R. valley, Acocks 11042 (PRE); near Bathurst, MacOwan 297 (BOL, GH, K, NY, OXF, S, SAM, Z); Kowie R. bank (fl. Nov.) S. Britten 2993 (GRA); Kowie R. mouth (fl., fr. Nov.) Zeyher 107.11 (BREM, FI, HAL, L, LD, NY, P, PRE, S, UPS, US, W, WAG, WU, Z, type of N. emarginata); near Port Alfred (bud, fr. Oct.) Burchell 4026 (GH, K, LE, PRE); ibid. (fl. June) Tyson 12970 (BOL, PRE).

Cult.: Ivory Coast, near Adiopodoumé, 17 km W. of Abidjan, Leeuwenberg 3822 (ABI, WAG); S. Africa, Transvaal, Bot. Garden, Pretoria, Verdoorn 2424 (PRE).

Notes: Nuxia congesta, the most widely distributed of all species is very variable. The leaves vary much in size, shape, margin, thickness, and indumentum, even in a single specimen. As was observed by the present author in Breteler c.s. MC 140, the shade leaves are dark green, serrate, herbaceous, and much more hairy than the sun leaves which are thicker, paler green, and entire. This correlation of characters can be observed in only some of the specimens examined. The sun leaves may also be serrate, dark green, and/or densely hairy. The leaves of the specimens from southern Africa are mostly smaller. For the rest they vary in all characters almost throughout the range. The inflorescences are mostly congested, but they may be lax. The flowers vary far less. They have a variable indumentum and size, but relatively speaking they are rather constant, as in all Nuxia species. The calyx lobes often cohere or are partly united, but in
this respect they show a clear range of variation within a single inflorescence, independent of the collecting locality.

After comparing the specimens cited the present author agrees with Bruce \& Lewis (1960) and Miss Verdoorn (1963) with regard to the species concept. Here even some more synonyms are added: N.angolensis, N.gilletii, N.rupicola, and, L.thomensis. As was suggested by the first-named authors a few weakly defined forms or races may be distinguished, but they are not as clear-cut as supposed. They are even more weakly defined than those of Strychnos madagascariensis Poir. Therefore it is entirely justified that neither Lewis nor Miss Verdoorn did indicate the races on the identification labels of the specimens they examined.
5. Nuxia coriacea Solered. in Engler, Bot. Jahrb. 17: 557. 1893; P. Jovet, Not. Syst. 13: 102. 1947; Bull. Hist. Nat. Toulouse 82: 11, pl. 3. 1-4. 1948.

Type: Madagascar: Imérina, near Tananarive, Hildebrandt 4050 (M, holotype; isotypes: BREM, G, K, LE, P, W, WAG, WU, Z).

Fig. 5, p. 37; Map 4, p. 36
Heterotypic synonym: N. subcoriacea P. Jovet, 1.c. p. 103; 1.c. p. 11, pl. 3. 5-7. Type: Madagascar: Analamazaotra, Ramanantoavolana in coll. Thouvenot 28 ( P , holotype; isotypes: $\mathrm{BM}, \mathrm{K}$ ).

Shrub or tree 14-25 m high. Trunk 13 cm in diam. (only once noted). Bark pale grey-brown. Branches pale to dark grey, with bark peeling off; branchlets minutely pubescent with glandular hairs of glabrous, rather thick, with 6 or 8 raised lines. Leaves ternate or quaternate, petiolate; petiole $10-40 \mathrm{~mm}$ long, minutely pubescent to glabrous; blade thickly coriaceous when dry, narrowly elliptic to ovate, 2.5-3.5 $\times$ as long as wide, $3-12 \times 1-3.5 \mathrm{~cm}$, rounded or obtuse at the apex, decurrent into the petiole, entire, with revolute margin, glabrous on both sides; costa impressed above; venation inconspicuous. Inforescence lax, except for last branching, $8-20 \times 8-15 \mathrm{~cm}$, branches like peduncle glabrous, 4-5 $\times$ dichotomously branched and topped by clusters of 3-10 flowers. Sometimes a single flower on a short pedicel placed between the ultimate ramifications. Lower bracts leafy, the others small, nearly linear, about 2 mm long. Flowers subtended by some small nearly linear, $1-2 \mathrm{~mm}$ long bracts, which are acuminate. Calyx campanulate, $3-4 \mathrm{~mm}$ long, pustulate with glandular hairs outside, inside sericeous; tube about $2-3 \times$ as long as the lobes, which are subequal or unequal, $1-2 \times 1-1.2 \mathrm{~mm}$, acute, entire; often 2 lobes united at the base or coherent at the apex. Corolla creamy, outside with some minute glandular hairs at the base of the lobes and the apex of the tube, inside pilose in the throat and with a zone of minute glandular hairs in the middle of the tube or glabrous; tube slightly shorter than the calyx; lobes oblong, 1.2-2.5 $\times$ as long as wide, $1.5-2 \times 0.8-1.2 \mathrm{~mm}$, obtuse or rounded at the apex. Stamens: filaments glabrous, after the pollen is shed $2-3.5 \mathrm{~mm}$ long; anthers about 1 mm long. Pistil $4-5 \mathrm{~mm}$ long; ovary obcordoid, slightly laterally compressed,
$1.5 \times 1.2 \times 1 \mathrm{~mm}$, appressed-pubescent except for the glabrous extreme base; style $2.5-3.5 \mathrm{~mm}$ long; stigma capitate. Capsule about as long as and included in the calyx, appressed-pubescent except for the glabrous extreme base, 3.5-4 $\times 1.4 \times 1.3 \mathrm{~mm}$. Seed fusiform, $1.5 \times 0.3 \mathrm{~mm}$, longitudinally striate.

Distribution: Madagascar.
Ecology: Montane forest; alt. 1000 m .
Madagascar: Mt. d'Ambre, Diégo-Suarez (fr. Dec.) Bernardi 11966 (G, K); ibid. (ff. Jan.) Cours \& Humbert 5367 (P, WAG); ibid. (fr. Jan.) Capuron S.F. 683 (P, WAG); Forêt d'Ambre (fr. Mar.) Serv. For. 7199 (P); ibid. (fl. Dec.-Jan.) Humbert 32111 (P, WAG), 32112 (P, WAG); Ambatoharanana, near Antsevabe (fl. Mar.) Cours 4130 (P); Rahobevana (fl. Mar.) Cours 4382 (P); Analamazaotra (fl. Nov.) Ramanantoavolana in coll. Thouvenot 28 (BM, K, P, type of N. subcoriacea); Imérina, near Tananarive (fr.) Hildebrandt 4050 (BREM, G, K, LE, M, P, W, WAG, WU, Z, type); Ampamaherana, Fianarantsoa Province (fl. Mar.) Serv. For. 2016 (P); Andrambovato, Tolongoina, Serv. For. 5600 (P); Andrambovato, Fort Carnot (fl. Mar.) Serv. For. 5187 (P).

Notes: The calyx of the type of Nuxia subcoriacea is $3-3.2 \mathrm{~mm}$ long, not $2-3 \mathrm{~mm}$ as is indicated by Jovet. The length of the peduncle, inflorescence axis, and branches is more variable than is supposed by Jovet. Therefore, as none of the differential characters used will stand, the present author proposes to reduce $N$.subcoriacea to a synonym of $N$.coriacea, after having compared all specimens cited.

Specimens with much branched inflorescences and small flowers of N.pachyphylla may be confused with those of $N$.coriacea. The latter, however has always glabrous leaves and inflorescence branches while the inflorescence branches of N.pachyphylla are mostly pubescent and the leaves are mostly hairy.


Map 4. - Nuxia coriacea, A N. gracilis.


Fig. 5. Nuxia coriacea: 1. fruiting branch, $\frac{1}{2} \times ; 2$. flower, $8 \times$; 3. opened corolla, $8 \times$; 4. pistil with corolla base, $8 \times$; 5. fruiting calyx, $8 \times ; 6$. seed, $24 \times$ (1, 5-6. type; 2-4. Ramanantoavolana in coll. Thouvenot 28 ).
6. Nuxia floribunda Benth. in Hooker, Comp. Bot. Mag. 2: 59. 1836; Walpers, Rep. 3: 331. 1845; Bentham in De Candolle, Prod. 10: 435. 1846; Pappe, Silva Cap. 2nd ed. 30. 1862; Wood \& Evans, Natal Pl. 1: 48, t. 59. 1899; Baker in Fl. Trop. Afr. 4(1): 515. 1903; Sim, For. Fl. Cape Col. 274, t. 157. 1907; Prain \& Cummins in Fl. Cap. 4(1): 1039. 1909; Marloth, Fl. S. Afr. 3(1): 48, f. 16. 1-8, f. 18. 1932; Bruce \& Lewis, Loganiaceae in Fl. Trop. E. Afr. 43, f. 8. 1-3. 1960, p.p., excl. syn. N.siebenlistii; Palmer \& Pitman, Trees S. Afr. 295. 1961 ; Dale \& Greenway, Kenya Trees \& Shrubs 251. 1961; Verdoorn in Fl. S. Afr. 26: 156. 1963; Palmer \& Pitman, Trees S. Afr. 3: 187. 1973 (with photographs).

Fig. 6, p. 39; Map 5, p. 41
Type: S. Africa: Cape Province, Uitenhage District, Swartskops R., Ecklon \& Zeyher 115 (K, holotype; isotypes: BM, BOL, FR, GH, M, OXF, P, S). Homotypic synonym: Lachnopylis floribunda (Benth.) C.A. Smith, Kew Bull. 1930: 25. 1930; Eggeling \& Dale, Indig. Trees Uganda 166. 1952.

Heterotypic synonyms: N.usambarensis Gilg in Engler, Glied. Veg. Usambara in Abh. Preuss. Akad. Wiss. 1894: 63. 1894 and in Engler, Pflanzenw. OstAfr. C: 312. 1895. Type: Tanzania: W. Usambara Mts., near Mshusa, Holst 9070 (holotype not seen, destroyed in B; lectotype: Z; other isotypes seen: BM, COI, E, G, K, LE, M, NH, P, S, US, W, WAG, WU).
N.floribunda var. holstii Gilg in Engler, Glied. Veg. Usambara in Abh. Preuss. Akad. Wiss. 1894: 54. 1894. Type: Tanzania: W. Usambara Mts., Mshusa, Holst 9138 (M, lectotype; isotypes: COI, K, LE, W, Z). Homotypic synonym: N.holstii (Gilg) Gilg in Engler, Pflanzenw. Ost-Afr. l.c.; Baker, l.c.; Eyles, Trans. Roy. Soc. S. Afr. 5(4): 442. 1916.
N. volkensii Gilg in Engler, Pflanzenw. Ost-Afr. 1.c. Type: Tanzania: Kilimanjaro, Volkens 1686 (holotype not seen, destroyed in B; lectotype: K; other isotypes seen: BM, E, G, PRE).
N.polyantha Gilg in Engler, Bot. Jahrb. 30: 376. 1901; Baker, I.c. p. 513. Type: Tanzania: Njombe District, Livingstone Mts., Goetze 1282 (L, lectotype; isotypes: A, BM, G, P). Homotypic synonym: Lachnopylis polyantha (Gilg) C. A. Smith, l.c. p. 18.

Shrub or tree, $2-25 \mathrm{~m}$ high. Trunk $10-60 \mathrm{~cm}$ in diam. Bark rough, grey or grey-brown, fissured. Wood white or pale yellow, hard, close-grained. Branches pale grey-brown, with finely longitudinally fissured bark which peels off, with raised leaf cushions; branchlets glabrous or minutely pubescent with glandular hairs and glabrescent, sulcate. Leaves ternate, opposite, decussate, or occasionally in a few lateral branchlets alternate, mostly distinctly petiolate; petiole 355 mm long, glabrous or minutely pubescent; blade coriaceous or papyraceous, elliptic, narrowly elliptic, or nearly so, $2.5-4(-6) \times$ as long as wide, $4-16 \times$ $1-7 \mathrm{~cm}$ (up to $20 \times 7 \mathrm{~cm}$ observed in greenhouse), acuminate or less often acute at the apex, cuneate at the base or decurrent into the petiole which is sometimes partly winged, dentate, crenate, or entire, glabrous or with very minute scattered glandular hairs on both sides; venation often reticulate, more or less prominent on both sides. Inflorescence lax or sometimes only in the ultimate rami-


Fig. 6. Nuxia floribunda: 1. branch, $\frac{1}{2} \times$; 2. inflorescence, $\frac{1}{2} \times$; 3. leaf, $\frac{1}{2} \times$; 4. opening bud, $7 \times$; 5 . flower, $7 \times$; 6 . opened corolla, $10 \times ; 7$. pistil with corolla base, $10 \times ; 8$. ovary, $10 \times$; 9. young stamen, $10 \times$; 10 . outer and 11. inner side of stamen, $10 \times$; 12. fruiting calyx, $7 \times$; 13. seed, $7 \times$; 14. seed, $20 \times(1,5-8$. H. Wild 6593; 2. Lewalle 815 ; 3, 12-14. Donis 3936 ; 4, 9 . Torre \& Correira 14853; 10-11. Greenway 3520).
fications congested, mostly large, paniculate or seemingly umbellate, 4-32 $\times$ $4-25 \mathrm{~cm}, 4-9 \times$ branched. Branches often greenish or creamy, glabrous or minutely pubescent with glandular hairs. Flowers fragrant, pedicellate or sessile, solitary or in clusters of three together, subtended by several minute bracts or bracteoles which are about $0.5-1 \mathrm{~mm}$ long and triangular. Calyx creamy or green, often viscid, $2.5-3.8 \mathrm{~mm}$ long, minutely pubescent with glandular hairs outside, inside sparsely and/or minutely appressed-pubescent; tube about 3-5 $x$ as long as the lobes which are equal or unequal, triangular or broadly triangular, $0.6-1.2 \times 0.6-1.2 \mathrm{~mm}$, acute or less often obtuse, entire or sometimes tridentate; sometimes two lobes coherent or partly united. Corolla white, outside with some minute glandular hairs at the base of the lobes and at the apex of the tube (less often on almost the entire tube), inside with a ring of slightly recurved rather thick hairs at the base of the lobes and pubescent with glandular hairs in the tube of which extreme base is glabrous; tube slightly shorter than the calyx; lobes oblong, about as long as the tube, $1.8-3.3 \times$ as long as wide, $1.8-2.2 \times 0.6-1 \mathrm{~mm}$, acute, obtuse, or rounded at the apex. Stamens: filaments white, kneed and there pilose-pubescent just above the base, and at the extreme base pubescent" with glandular hairs, as the latter is situated within the zone of glandular hairs at the innerside of the corolla, after the pollen is shed $2-3.8 \mathrm{~mm}$ long; anthers white, turning pale brown, about $0.5-0.6 \mathrm{~mm}$ long. Pistil $3-6.5 \mathrm{~mm}$ long; ovary subglobose or nearly obcordoid, mostly laterally compressed, $1 \times 0.7 \times 0.5-1.5 \times 1.3 \times 1 \mathrm{~mm}$, glabrous or occasionally with a few hairs at the apex; style white, glabrous, $2-4.5 \mathrm{~mm}$ long; stigma small, capitate. Capsule brown, mostly conspicuously longer than the calyx, nearly obovoid, 3-5 $\times 1.3-2 \times 1.3-2 \mathrm{~mm}$, glabrous, retuse and with two impressed lines of dehiscence at the apex. Seeds $0.8-0.9 \times 0.2 \mathrm{~mm}$.

## Distribution: Eastern and southern Africa.

Ecology: Forest (where often on riverbanks), scrub, savanna, or heath vegetation; in tropical regions from 800 to 2400 m altitude and there in forest often dominant; in Natal and Cape Province at $0-1000 \mathrm{~m}$ altitude.

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Map 5. - Nuxia floribunda, A N. pseudodentata, ■ ambrensis.

Burundi: Mukarumbi (fl. May) Robyns 2357 (BR, NY, P); Gakara, Bujumbura Territory (fi. May) Lewalle 3555 (BR); Ijenda (fr. Oct.) Lewalle 2125 (BR, WAG); Mayuyu, Karonge Road (f. May) Lewalle 815 (BR, WAG); Kumuyange (fl. May) Lewalle 5669 (G, WAG).

Uganda: U2: Kigezi District, St. Clair-Thompson 2514 (EA); Rukungiri (fl. June) Eggeling 3675 (BR, EA); Mafuga, Kinkizi County (fr. Oct.) Lang Brown 160 (EA, ENT); Kachwekano Farm (fl. Feb., Apr.) Purseglove 3323 (EA, K), 3358 (EA, K).
Kenya: K6: Ngulia Hill (fl., fr. Aug.) Rammell B 284 (EA, FI). K7: Teita Hills (fl. Apr.) Bally 12719 (G, K); ibid. (fr. July) Dale F. D. 3783 (BR, EA, K, P); ibid. (young bud, fr. Sept.) Drummond \& Hemsley 4392 (EA, K, SRGH).

Tanzania: T2: Kilimanjaro (fl. Dec.) Schlieben 4402 (B, BM, BR, G, LISC, M, P, S, Z); ibid., Willan 611 (EA, K); Kibongoto, Kilimanjaro For. Res. (fl. Aug., fr. Oct.) Steele 42 (EA, K, M, PRE), 100 (EA, K), 157 (EA, K, PRE); Mashame, Haarer 1027 (EA, FI, K); Old Moshi, Steele 20 (EA, K); Kilema, Kilimanjaro, Volkens 1686 (BM, E, G, K, PRE, type of N. volkensii). T3: Ugweno, Pare, Davies 1155 (EA); between Kilomeni and Kisangara (fr. June) Peter 11580 (B), 11666 (B); between Kilomeni and Lembeni (fr. June) Peter 11712 (B); Kindoroko For. Res. (fi. Aug.) Grant (?) H 49/36 (EA); near Mbaga, Peter 51828 (B); ibid. (fl. July) Semsei 2103 (EA); Usambara Mts., Buchwald 619 (BM, COI, K); near Mshusa (fl. Aug.) Holst 9070 (BM, COI, E, G, K, LE, M, NH, P, S, US, W, WAG, WU, Z, type of $N$. usambarensis), (fr. Aug.) Holst 9138 (COI, K, LE, M, W, Z, lectotype of N. floribunda var. holstii); Kivuga Mt., W. Usambara (fl., fr. Dec.) Willan 547 (EA, K); Magoma, S. Pare Mts. (fr. June) Greenway 6477 (EA, K); Shume For. Res. (fl. July) Maber 139 (K); Shagayu (fl. July) Carmichael 638 (EA, K); Shagayu For. Res. (fl. May) Drummond \& Hemsley 2546 (BR, EA, K, LISC, SRGH); ibid. (fr. Oct.) Mgaza 618 (COI, EA, K); ibid., Msuya 19 (EA,
K); ibid. (fl. May) Proctor 195 (EA, K); ibid. (fl. Aug.) Semsei 2202 (EA, FHO, K); near Shagayu (fl. Sept.) Semkiwa 97 (EA, K, PRE); Zevigambo, 3 km NW. of Mlalo (fl. June) Drummond \& Hemsley 2947 (EA, K, SRGH); Mkuzi (fl. May) Drummond \& Hemsley 2797 (BR, EA, K, SRGH); Mlalo, Umba (fr. July) Holst 3745 (EA, paratype of N. floribunda var. holstii); Mkuzu For. Res., Kaghembe 5 (K); near Mazumbai (fr. Apr.) Peter 16521 (B); between Mazumbai and Mzinga (fl. Aug.) Braun 2748 (EA); ibid. (fl. Aug.) Brunnthaler 258 (WU); near Preparatory School, Lushoto District (fl. Apr.) Borota 2 (BR, EA, K); Blackmoris Estate, near Lushoto (fr. Nov.) Wigg 72 (FHO, K); Vuga (fr. Mar.) Wigg 134 (FHO); Sakare (fl. Sept.) Holtz 758/02 (EA); near Makuyuni, Koritschoner 1388 (EA, K); near Balangai (fr. Mar.) Peter 16061 (B); Heidelberg, near Balangai, Peter 16094 (B); Bumbuli (fl. Dec.) Meinhof 124 (A, E, LE, P, S, US, W, WU, Z). T6: S. Nguru Mts., Wigg 47 (EA, K); ibid., Ruhamba Peak (fl. Apr.) Drummond \& Hemsley 1961 (BR, EA, LISC, SRGH); Manyangu Forest (fl. Apr.) Drummond \& Hemsley 2002 (BR, EA, K, SRGH); Koluhamba, Nguru Mts., Turiani (fl. Apr.) Semsei 1129 (EA); Uluguru Mts. (fl. Apr.) Bruce 1121 (K); ibid. (fl. Nov.) Schlieben 2989 (BM, BR, G, K, M, P, S, Z); ibid., near Morningside (fl. May) Semsei 1178 (EA, FHO, K); Lubwengulu (fl. Aug.) Lindenberg (?) 80 (K); Kitundu (fl., fr. Mar.) Bruce 944 (BM, BR, EA, FI, K, P); Silesian Mission, near Morogoro, Peter 6815 (B); Bunduki (fl. Mar.) Semsei 1095 (BR, EA, K); Kisarawa (fl., fr. June) Swynnerton 805 (BM, K, SAM). T7: Iringa District, Wigg 32 (FHO); ibid., Uzumawa Scarp. Res. (fl. June) Wigg 30 (FHO); Mgamba (fl. Aug.) Pitt-Schenkel 372 (EA, FHO); Isata, Iringa District (fl. July) Carmichael 201 (EA, FHO, K); Mufindi (fl. July) Balbo 176 (TOM); ibid., Nyamalalo (fl., fr. Oct.) Benedicto 74 (EA); Lulanji, Gilchrist 25 (EA); Mjombe (fl. Sept.) F. G. Smith 1297 (EA); Ussangu (fi. June) Goetze 988 (A, BO, BR, G, L, P, paratype of N. polyantha); Rungwe Mt. (fl. Sept.) Procter 1421 (EA, K); Mwakaleli (fr. Aug.) Issa 58 (K); Kyimbila, Rungwe District, Stolz 2065 (B, C, G, GRO, L, LD, M, S, U, W, WAG, Z); Ukinga Mts. (fl. Sept.) Goetze 1282 (A, BM, G, L, P, lectotype of N. polyantha); Lupembe (fl. Aug.) Greenway 3520 (EA, FHO, K); upper Ruhudji R., near Lupembe (fl. May) Schlieben 833 (B, BM, BR, G, K, M, P, S, Z), 943 (BR, G, P, Z). T8: Matengo Highlands (fl. May) Zerny 680 (W). Sin. loc., Cons. of Forests 756 (A); St. Clair-Thompson 840 (EA, K).

Zambia: Mbeya-Chinsali Road (fl. July) Lawton 733 (K, SRGH); Nyika Plateau, Lundazi District, White 2737 (FHO, K).

Malawi: Mafinga Mts. (fr. Nov.) Robson 543 (K); Matipa For. Res., Kurungwe (fl. Aug.) Chapman 229 (FHO); Kondowe (fl. July) Whyte 392 (K); Nyika Plateau (fl. Aug.) Brass 17295 (A, BM, BR, K, MO, WAG); ibid. (fl. July) Chapman 115 (BR, FHO, K); Nyika (fr. Dec.) Fanshawe 7300 (FHO, K); Chelinda Hill, Nyika Plateau, Rumpi District (fl. Sept.) Adlard 309 (FHO, SRGH); Vipya Escarpment, Kawendama (fl. July) Chapman 1666 (FHO, K, SRGH).

Moçambique: Zambézia: Gúruè, Serra do Gúruè (fl. Feb.) Torre \& Correira 14853 (LISC).

Rhodesia: Salisbury (fr. Apr.) Brain 10837 (SRGH); ibid. (fr. Apr.) Eyles 3411 (BOL, K, LD, SAM); Inyanga District, Barnes in herb. Eyles 3582 (SRGH); ibid. (fl. Apr.) Chase 4487 (BM, BR, COI, LISC, MO, PRE, SRGH); ibid., Mtarazi Road (fl. Mar.) O. West 4829 (SRGH); Inyanga (fl. June) Orpen 3/38 (FHO); Stapleford (fl. July) Schelpe 601 (K, SRGH); Stapleford For. Res. (fr. Oct.) Goldsmith 44/47 (FHO, SRGH); ibid. (fl. Aug.) L. E. Taylor 3248 (NBG); Banti For. Res. (fr. Nov.) Mavi 482 (K, SRGH); Umtali (fr. Oct.) Steedman in herb. Eyles 5109 (K, SRGH); Vumba Mts. (fl. May) Chase 4525 (BM, BR, COI, K, LISC, MO, S, SRGH, UPS); ibid. (fl. June) Munch 374 (K, SRGH); ibid. (fl. May) Plowers 2183 (K, LISC, SRGH); Melsetter, Swynnerton 1294 p.p. (BM, SRGH, other part is N. oppositifolia), 1902 (BM, K); Victoria District (fl. Apr.) Henkel in herb. Eyles 3778 (SRGH); Mt. Buhwa (?), Belingwe District (fr. July) O. West 6676 (SRGH); sin. loc., McGregor 12/46 (FHO).

Swaziland: Hlatikulu Forest (fr. Oct.) Compton 30232 (NBG, PRE).
S. Africa: Transvaal: Messina (fl. June) Rogers 21172 (K, NH); Entabeni For. Res., Soutpansberg District, Codd 3043 (PRE); ibid., Story 1869 (PRE); near Entabeni (fl. Aug.) Hutchinson \& Gillett 4214 (BM, COI, K, NY, SRGH); Buckworth, 18 km W. of Mountain

Inn (fl. May) Meeuse 10244 (BR, G, K, M, PRE, Z); Kranz Hoek Peak (fl. July) Galpin 14903 (K, PRE); Muchindudi Falls (fl. June) Bruce \& Kies 11 (PRE); near Louis Trichardt (fr. Sept.) Humbert 10569 (P, WAG); Mountain Inn, 6 km N. of Louis Trichardt (fl. May) de Winter 7751 (K, M, PRE, SRGH, Z); 15 km E. of Louis Trichardt (fl. Oct.) Schlieben 7357 (BR); Tshakoma, Sibasa District (fl. May) van Warmelo 5157/16 (PRE); ibid., Obermeyer 1186 (PRE); 25 km from Sibasa into Soutpansberg Mts. towards Lake Funduzi, Rodin 4108 (K, MO, NBG, PRE, S, US, W, Z); Pietersburg District, Burtt-Davy 20271 (FHO); ibid., Blouberg (f. May) Leemann 94 (K, PRE); Pietersburg (fr. Nov.) Rogers 21976 (G); Helpmekaar Arboretum, Pietersburg District (fr. Aug.) Burtt-Davy 20232 (K); Westfalia Estate, near Duivelskloof, J. J. Bos 1311 (M, PRE, WAG); Houtboschberg (fl. July) Galpin 9722 (K, PRE); Houtbosch (= Woodbush) (fl. Aug.) Eastwood 1099 (BOL); ibid. (fl. Oct.) Grenfell 1135 (FHO); ibid. (f. July-Aug.) C. E. Legat PRF 9708 (PRE); Kratzenstein-Woodbush, Hoffmann 122 (PRE); ibid., near Haenertsburg (fr. Sept.) Humbert 10730 (P); near Haenertsburg, C. E. Legat 122 (BM, FHO, Z); ibid. (fl. Aug.) Obermeyer TRV 31972 (BR, PRE); Magoebas Kloof (fl. Aug.) Biegel 2241 (SRGH); ibid. (fl. May) Codd \& de Winter 5589 (K, SRGH); Rosendal, Letaba District (fl. Apr.) Scheepers 621 (BM, BR, FHO, K, M, SRGH); Cyprus Farm, Letaba District (ff. July) Renny 159 (PRE); New Agatha (fl. Apr.) McCallum 137 (A, FHO, P, PRE); ibid. (fl. Apr.) P. J. Müller \& Scheepers 34 (K); Mariepskop, Pilgrimsrest District, Leistner c.s. 3326 (K, PRE); ibid. (fl. Mar.) Smuts \& Gillett 3602 (PRE); ibid. (fl. Apr.) van der Schijff 4397 (PRE, W), 4657 (PRE), 5635 (K, PRE); ibid. G. van Son TRV 32858 (K, PRE); Belvedere, Pilgrimsrest District (fr. Sept.) Davidson \& Mogg 33518 (K, UPS); Pilgrimsrest, Transvaal Dept. Agr. 876 (PRE); near Sabie, Bernardi 8941 (G, K); Rietvlei, near Belfast (fl. June) Smuts 18 (K, PRE); Kaapsche Hoop, Barberton District (fl. Aug.) Thorncroft 2123 (FHO, PRE); between Barberton and Badplaas (fl. Aug.) van der Schijff 1270 (K, PRE); Barberton, Thorncroft 736 (BM); Lomati Valley, near Barberton (fl. June) Thorncroft 621 (NH), 3040 (FHO, NH). Natal: W. Zululand, A. G. Baker 528 (K, NH); Ngomi Forest (fl. July) Gerstner 4379 (PRE), 4883 (NH, PRE); Nongoma (fl. July, Oct.) Gerstner 2532 (NH, PRE), 2887 (NH); Nhlawati, Hlabisa District (fl. July) Ward 3214 (FHO, G, K, M, NH, PRE, SRGH); Umgayi, Mgoro R., Ward 5041 (K); Babanango, K. F. King 473 (NH); Nkandla (fl. Sept.) Meebold 13247 (COI, M, NY); Nkandla Forest, D. Edwards 1466 (PRE); ibid. (fl. Sept.) Forbes 765 (NH); ibid. (fl. Dec.) Wenning 13A (COI, K, PRE); Qudeni (fl. Oct.) G. W. Davies in herb. J. M. Wood 7877 (MO); ibid., D. Edwards 1116 (SRGH); ibid. (fl. Sept.) G. H. Davis 137 in herb. J. M. Wood 8374 (E, SAM); Ngoya Forest (fl. Aug.) E. A. F. Schmidt 1454 (A, PRE); Eshowe, Rogers 24459 (A); Cato Ridge (fl.) McClean \& Ogitvie 19 Aug. 1936 (NH, PRE); Ngole Dam, Camperdon District, Wells 1319 (PRE); Inanda (fl. July) J. M. Wood 980 (BM, BOL, K, NH); Durban, Gueinzius 533 (P,W); Berea (fl. May) J. M. Wood 7183 (BM, E, PRE); Umgeni R., Durban (fl. July) Gueinzius 113 (P, S, W); Inswatzi (fl. Sept.) J. Wylie in herb. J. M. Wood 10075 (E, G, L, NH, PRE, WRSL); Otto's Bluff (fl. July) Rump NH 21276 (NH); near Illovo R. (fl. June) W. T. Gerrard \& McKen 1893 (BM, K, NH, W); Umkomaas R., Wheeler July 1900 (Z); Umgaya Flat, Dumisa, Alexandra ( $=$ Umzinto) District (fl. June) Rudatis 1015 (BM, E, G, GRO, K, L, LY, M, P, PRE, S, W, Z); Karkloof Falls, Ryecroft 27 (NH); Harding District, Wheeler May 1906 (LD); Bedford Farm, Harding, Strey 9159 (K); near Port Shepstone (fl. June) McClean NH 21261 (NH); Umzimkulwana Gorge (fl. June) O. West 2014 (NH); Timbankulu, Port Shepstone (fl. June) Strey 8735 (K, SRGH); Murchison, Izotsha Falls, Strey 7558 (K, NH, PRE); Oribi Gorge, L. L. Britten PRE 30626 (PRE); ibid., McClean 488 (K, MO, NH, PRE); sin. loc. (fl. Nov.) Sidey 3971 (S, US). Cape Province: Port St. Johns, Strey 9007 (K); 5 km N. of Flagstaff, Transkei (fl. July) Strey 6724 (BR, K, NH, PRE, S); Egossa Forest, E. Pondoland, Sim 2390 (BOL, PRE); Manubi Forest, Kentani District (fl. July) Pegler 1263 (BOL, SAM); Mambi Station (= prec. ?), For Officer 870 (E, L, Z); Manubi For. Res. (fl. Aug.) Laher 2035 (K); Kei R. mouth, Komgha District (fl. July) Flanagan 2340 (K, MO); Stutterheim Commonage, Acocks 9718 (PRE); Perie Forest, near King Williams Town, Flanagan 2199 (GRA, PRE); ibid. (fr. Nov.) Galpin 5898 (PRE); Evelyn Valley, Perie Mts. (fl. Oct.) D. E. Hutchins 951 (E); near Great Fish R., Masson s.n. (BM); 3 km SE. of Howieson's Poort Hotel, Albany District, Strey 3240 (PRE); Zuurberg, Holland 306 (PRE); Port Elisabeth, E. West 63 (K);
near Loeri, near Port Elisabeth (fl. Aug.) Rodin 1093 (BOL, K, MO, PRE, US); Van Stadens R. Drift (fi. July) J. L. Drège 5607 (PRE); Van Stadens Mt. (fl. July) Ecklon \& Zeyher 4.7 (W); Van Staden's R. (fr. Sept.) Paterson 723 (NH, Z); Van Stadens Pass, Vahrmeyer 2284 (K); Van Stadens Nat. Res., Wells 3238 (PRE); between Van Stadens R. and Galgebosch, Burchell 4673 (K); Krakakamma, Zeyher s.n. (K); Longmore For. Res. (fl. Sept.) F. R. Long 1023 (GRA, K, PRE); ibid. (fl. June) Marais 395 (K, PRE); near Uitenhage (bud, fl., fr. Dec.) Burchell 4241 (FI, G, GOET, K, L, M, P, S, W); Kamoeks, Uitenhage District (fi. July) L. L. Britten 5990 (PRE); Swartkops R., near Uitenhage (fl. Sept.) Ecklon \& Zeyher 115 (BM, BOL, FR, GH, K, M, OXF, P, S, type); ibid., between Vila Paul Maré and Uitenhage (fl. May) Ecklon \& Zeyher 2.5 (BREM, M, PRE, S, W, Z), (fl. July) 2.7 (A, BREM, C, E, FI, FR, G, GH, GOET, L, LD, LE, M, MO, NY, P, PRE, UPS, US, W, WU, Z); near Vila Paul Maré (fl. May) Zeyher 3524 (BREM, M, P, SAM, UPS, W, WAG); Swartkops R., Springfields (fr. Dec.) For. Dept. P.E. 144 (GRA); Winter Hoek Mts. (fl. Sept.) Fries c.s. 928 (LD); between Gamtoos and Kromme Rs., Drège 3524a (PRE, SAM), s.n. (C, G, K, L, LD, LE, M, P, S, W); between Patentie and Mistkraal (fl. Apr.) G. J. Lewis 4309 (SAM); Mistkraal, Humansdorp District (fl. Apr.) Barker 7882 (NBG); Assegai Bosch (fl. Aug.) Rogers 2843 (BM, CGE, PRE, SAM, Z); ibid., Thode A 2562 (K, NH, PRE); 5 km W. of Cambria, Patentie-Willowmore Road, Story 2318 (GRA, PRE); Ratels Bosch (fl. Oct.) Fourcade 507 (K, M, NH, PRE); Witte Els Bosch (f. Aug.) Fourcade 844 (K); Storms R., Tsitsikama, Humansdorp District (fl. Sept.) Galpin 4833 (K, PRE); near Knysna (fl. July) Duthie 690 (GRA); ibid. (fl.) Michell 29 June 1917 (PRE); ibid. (fl. Jan.) E. H. Wilson 690 (A); near Knysna R. ford (fl. July) Burchell 5537 (G, K, NY, S); Buffelsnek, Klein R., near Knysna (fl.) Hafstrom \& Lindeberg 9 Dec. 1936 (S); Millwood, near Knysna, Lanjouw 615 (U); Knysna Forest (fl. Nov.) Bolus 2145 (BOL, K); ibid. (fl. June) Burchell 5448 (BM, FI, GOET, K, L, LE, M, P, W); ibid., Lam \& Meeuse 4721 (L); ibid. (fl.) Laughton Oct.-Dec. 1938 (L, U); ibid. (fl.) Marloth Nov. 1898 (PRE); ibid., Sorensen 386 (C); ibid. (fl. Nov.) Wedermann \& Oberdieck 929 (K, PRE); Deepwalls For. Res. (fr. Nov.) J. J. Bos 852 (WAG); ibid. (fl.) Lindeberg 5 Dec. 1936 (S); ibid. (fl. Sept.) Marsh 1323 (K, SRGH); ibid. (fr. Nov.) Peter 51826 (B); ibid., Phillips 7361 (FHO); Kaimans R., Knysna Forest (fl. Sept.) Garside 4871 (K); road to Avontuur from Keurbooms R., J. B. Gillett 1480 (K); Kaatjes Kraal, near Yzer Nek, Burchell 5240 (BOL, E, K, LE); Plettenberg Bay, Bowie s.n. (BM); ibid., Niven 119 (BM); ibid. (fl. Oct.) Rogers 15468 (G), 27889 (P, Z); ibid. (fl. Sept.) B. Smart TRV 22812 (PRE); between Keurbooms and Bietouw Rs. (f. Apr.) Burchell 5295 (BOL, E, GH, K); E. of Keurbooms R. (fl. Oct.) N. C. Gillett 4561 (K); near George (fl. Aug.) Humbert 9847 (BR, K, P); ibid. (fl.) Prior 6 Aug. 1847 (K); ibid. (f.) A. F. W. Schimper Oct. 1898 (Z); Woodville, George District (fl. July) Burtt-Davy 20125 (A, FHO); Touws R., below Outeniqua Mts. (fl. Aug.) Melvill 70/372 (K); Montagu Pass, Outeniqua Mts., Rehmann 208 (BR, Z); Kirstenbosch (fl. Oct.) Meebold 141 (M); Cape Peninsula, Mund \& Maire annis 1820-1821 (COI, K, LE, NH); sin. loc., Boivin s.n. (E, P); Drège 3488 (P); Pamplin 8953 (BM); Verreaux anno 1831 (BR, G); Zeyher 3525 (P).

Cult.: U.S.A.: California: Berkely (fl. July) Floy Bracelin 2856 (GB, L); Vera Cruz Estate, W. Los Angeles (fl. Jan.) P. Raven c.s. C 108 (NY). Great Britain: Edinburgh, Royal Bot. Garden, Leeuwenberg 3517 (WAG). Netherlands: Wageningen, Leeuwenberg 3565 (WAG, seedling of herb. J. J. Bos 310 ). Kenya: Karen (fl. June) Bally 7400 (G, K). Rhodesia: Erin For. Res. (fl. Sept.) H. Wild 6593 (K, SRGH, WAG). S. Africa: Transvaal, Westfalia Estate, near Duivelskloof (f. Feb.) J. J. Bos 1345 (M, PRE, WAG); Cape Province, Stellenbosch, Univ. Bot. Gardens (fl. Aug.) J. J. Bos 310 (K, M,WAG). Australia: Univ. of Adelaide, Waite Inst. Arboretum (fl. Sept.) Symon ADW 37387 (K).

Note. N. floribunda is related to N. pseudodentata (q.v.).
7. Nuxia glomerulata (C. A. Smith) Verdoorn, Bothalia 7: 14. 1958; Verdoorn in Fl. S. Afr. 26: 150, f. 19. 1. 1963; Palmer \& Pitman, Trees S. Afr. 3: 1869. 1973.

Fig. 7, p. 47; Map 6, p. 46
Basionym: Lachnopylis glomerulata C.A. Smith, Kew Bull. 1930: 24. 1930.
Type: S. Africa: Transvaal: Rustenburg District, Swartruggens, Fouché 9 (PRE, holotype; isotype: K).

Heterotypic synonym: Lachnopylis suaveolens C.A. Smith, l.c. p. 23. Type: S. Africa: Transvaal: Marico District, Zeerust, Rogers 20369 (PRE, holotype; isotypes: BM, NH, P, Z).

Straggling shrub or small tree, $1-4.5 \mathrm{~m}$ high. Branches pale grey-brown, sometimes blackened by bush-fire, with finely longitudinally fissured bark which splits and peels off, with slightly raised leaf cushions; branchlets pubescent, sulcate. Leaves ternate, mostly distinctly petiolate; petiole 1-10 mm long, mostly narrowly winged, pubescent or glabrous; blade coriaceous when dry, obovate to elliptic or narrowly so, $1.5-3 \times$ as long as wide, $1.5-4.8 \times 0.5-1.8 \mathrm{~cm}$, acute, obtuse, rounded, or emarginate at the apex which has an apiculate tip, decurrent into the petiole, entire or with few small distinct teeth in the upper half, pubescent on both sides, but soon glabrous, especially above; venation rather inconspicuous, reticulate. Inflorescence lax except for the ultimate ramifications, 4-9 $\times 3-9 \mathrm{~cm}, 3-5 \times$ branched. Branches pubescent, dichotomously branched. Flowers sweet-scented, sessile in clusters of about 7-15, subtended by several minute bracts which are about $0.5-1 \mathrm{~mm}$ long and triangular. Calyx $2.5-3.5 \mathrm{~mm}$ long, pubescent with glandular hairs outside, inside appressedly hirto-pubescent; tube about $3-5 \times$ as long as the lobes which are unequal, triangular or nearly so, mostly wider than long, $0.3-1 \times 0.6-1 \mathrm{~mm}$, acute or subacute, entire or tridentate; once or twice two lobes partly united in a single flower. Corolla white, outside with a few minute glandular hairs at the apex of the tube and the base of the lobes, inside with a pilose ring of recurved hairs in the throat or more often at the base of the lobes which is followed by a zone of pubescence of glandular hairs covering nearly the complete inner side of the tube; tube slightly shorter than the calyx; lobes oblong, almost as long as the tube, $2-2.2 \times$ as long as wide, $1.8-2.2 \times 0.8-1 \mathrm{~mm}$, obtuse at the apex. Stamens: filaments with some curled hairs and often at the same time below these some glandular hairs, after the pollen is shed $2-3.5 \mathrm{~mm}$ long; anthers about 0.6 mm long. Pistil $3-6 \mathrm{~mm}$ long; ovary subglobose, laterally compressed, 0.7 $1.3 \times 0.5-0.9 \times 0.3-0.6 \mathrm{~mm}$, appressed-pubescent at the apex only, further glabrous; style glabrous, $2-5 \mathrm{~mm}$ long; stigma small, capitate. Capsule about as long as the calyx, 2.5-3 $\times 1.2 \times 1 \mathrm{~mm}$, appressed-pubescent at the apex.

Distribution: S. Africa (Transvaal).
Ecology: Open hill sides, rocky western slopes or in deep rocky ravines; alt. 1600 m . (teste Leistner 664).
S. Africa: Transvaal: Zeerust, Marico District (fr. Mar.) Rogers 20369 (BM, NH, P, PRE, Z, type of Lachnopylis suaveolens); ibid. (fr. June) Story 5634 (PRE), 5635 (PRE), 5636 (BM, PRE); ibid. (fl. Jan.) Thode A 1448 (GH, K, MO, NH, PRE); Sephton's Nek, 5 km N.
of Zeerust (fl., fr. June) Leistner 664 (BM, K, PRE); Hills above Zeerust (fl. Feb.) Hutchinson \& Phillips 2950 (BM, BOL, K); Swartruggens, Rustenburg District (fl. Feb.) Fouché 9 (K, PRE, type); ibid., Sutton 898 (PRE); ibid., near Elands R. (fl. Dec.) Sutton 890 (PRE); Mazista, Elands R. (fl. Oct.) Sutton 1176 (PRE), 1177 (K, PRE); Diepkloofstroom, Rustenburg District, Coetzee 860 (K); Moiloa, Matlantswe, Holub 286 (Z); Phoberg (fi.) Holub 2 May 1887 (Z); Pelindaba, Pretoria (bud, fr. Aug.) Killick \& Strey 2252 (BM, FHO, K, M, NBG, SRGH); ibid. (fl.) Mogg 2 Jan. 1928 (BM, BR, K, PRE); ibid. (fl., fr. Mar.) Strey 3043 (BM, BOL, EA, FHO, M, PRE, UPS), 3044 (K, M, PRE, SRGH); Magaliesberg, Burke s.n. (MPU, WAG); Gladysvale, 15 km W. of Krugersdorp (fl. Feb.) Rodin 3856 (K, MO, US); Jack Scott Priv. Nat. Res., Krugersdorp District (fl. Feb.) Wells 2426 (K).


Map 6. A Nuxia glomerulata, - N. involucrata.
8. N.gracilis Engl. in Engler, Bot. Jahrb. 10: 243. 1888; Prain \& Cummins in Fl. Cap. 4(1): 1040. 1909; Verdoorn in Fl. S. Afr. 26: 151. 1963.

Fig. 7, p. 47; Map 4, p. 36
Type: S. Africa: Cape Province: Hay District, Klein Boetsap, Marloth 980 (holotype not seen, destroyed in B; lectotype: PRE; isotypes: K, PRE). Homotypic synonym: Lachnopylis gracilis (Engl.) C.A. Smith, Kew Bull. 1930: 24. 1930.

Shrub 1.50-3.50 m high; branches pale grey or grey-brown, with finely longitudinally fissured bark which splits and peels off, with slightly raised leaf cushions; branchlets minutely pubescent with glandular and ordinary hairs, striate. Leaves ternate, often viscid, sessile or shortly petiolate; petiole up to 2 mm long, minutely pubescent; blade coriaceous when dry, narrowly to very narrowly elliptic, 4-7 $\times$ as long as wide, $1-4 \times 0.3-1 \mathrm{~cm}$, acute or obtuse at


Fig. 7. 1-4. Nuxia glomerulata: 1. branch, $\frac{1}{2} \times$; 2 . flower, $8 \times ; 3$. fruiting calyx, $10 \times ; 4$, pistil, $10 \times\left(1-2,4\right.$. Thode $1448 ; 3$. Leistner 664). $5-10$. N. gracilis: 5. branch, $\frac{1}{2} \times$; 6. flower, $8 \times ; 7$. opened corolla, $8 \times ; 8$. pistil with corolla base, $7 \times ; 9$. inflorescence, $1 \times ; 10$. fruiting calyx, $10 \times(5-8,10$. Story 4052; 9. Phear Nov. 1913).
the apex, decurrent into the petiole or into the base, distinctly serrate at least in the upper half, glabrous above (only with minute hairs when young), minutely pubescent and glabrescent beneath; venation reticulate, not or obscurely prominent on both sides. Inflorescence a compound cyme; flowers pedicellate, 8 or more in a terminal umbel-like cluster; branches pubescent, angled, the lower primary branches long, usually more than 1 cm long and mostly only once dior trichotomously branched, the secondary shorter, usually less than 1 cm long. Pedicels pubescent, $1-7 \mathrm{~mm}$ long ( $2-7$ in specimens from the Cape Province and $1-3 \mathrm{~mm}$ in specimens from Transvaal). Lower bracts leafy, the others very small, linear, about $1-2 \mathrm{~mm}$ long. Flowers sweet-scented. Calyx $2.8-4.2 \mathrm{~mm}$ long, pubescent with ordinary and glandular hairs outside, sericeous inside; tube 3-5 $\times$ as long as the lobes, which are subequal or unequal, triangular, about as long as wide or wider, $0.5-1.2 \mathrm{~mm}$ long, acute, entire; sometimes some lobes partly united. Corolla white, outside with a few minute glandular hairs at the apex of the tube and the base of the lobes, inside pilose in the throat with recurved hairs and pubescent with glandular hairs in the tube (latters occasionally wanting), base glabrous; tube mostly slightly shorter, but sometimes slightly longer than the calyx; lobes oblong, 1.5-2 $\times$ as long as wide, 1.8-2.2 $\times 1-1.5 \mathrm{~mm}$, rounded at the apex. Stamens: filaments pilose at the base, often even well above the pilose ring in the corolla throat, after the pollen is shed $2.8-6 \mathrm{~mm}$ long; anthers about 0.5 mm long. Pistil $4.5-7.5 \mathrm{~mm}$ long; ovary subglobose, slightly laterally compressed, $1-1.5 \times 0.8-1.2 \times 0.6-1 \mathrm{~mm}$, ap-pressed-pubescent except for the glabrous extreme base; style glabrous, $3-6 \mathrm{~mm}$ long; stigma small, capitate. Capsule about as long as the calyx, appressedpubescent. Seed $0.4-0.6 \times 0.15-0.25 \mathrm{~mm}$.

Distribution: South Africa (Transvaal, Cape Province).
Ecology: Bush along water course or along seasonal water pool; alt. 10002000 m .
S. Africa: Transvaal: Wolkberg, 19 km SE. of Boyne on road to Ashmole Dales, Pietersburg District (fl. Dec.) Codd 10401 (K, M, PRE); 35 km N. of Schoonoord, Lydenburg District (fl. Nov.) Acocks 20951 (K); Lulu Mts., Lydenburg, Mogg 16967 (PRE); Sekukuniland (fr. Apr.) Barnard 20 (PRE); ibid., Schoonoord (fl., fr. Oct.) Barnard 85 (PRE); ibid., van Warmelo 59 (PRE); Mooihoek Chrome mine, W. of Driekop, Lydenburg District (fl., fr. Mar.) Codd \& Dyer 7698 (EA, K, PRE, SRGH, UPS); ibid. (fl. Mar.) Story 4052 (GRA, K, PRE); Steelpoort R. valley, Middelburg District (fl. Oct.) Meeuse 10261 (FHO, K, M, S); Roosenkal Hammand's Mine, 210 km ENE. of Johannesburg, Dahlstrand 1879 (PRE). Cape Province: Watersmeet, Vryburg (fl.) Phear Nov. 1913 (BOL, GRA, SAM); near Taungs (fl., fr. Jan.) Rodin 3428 (BOL, K, MO, PRE, S, US); Buxton, Taungs District (fl. Feb.) Brueckner 1216 (K, PRE); Klein Boetsap, Hay District (fr. Feb.) Marloth 980 (K, PRE, type); Barkly West, Warrenton (fl. June) Acocks 5743 (BOL, K, NH); Potfontein, 16 km W. of Ulco (fr. Jan.) Leistner 1559 (K, M, NBG, PRE, SRGH, WAG); Upper Campbell, Griqualand West, Burchell 1827 (K); Campbell Kloof, Herbert (f. Dec.) Acocks 1423 (BOL); Lower Campbell, Burchell 1817 (A, K, LE); Doringbult, Herbert District, Acocks \& Hafstrom H 1026 (PRE); Ghaap Plateau, Douglas District (fl. Dec.) Marais 1473 (PRE).

Note. Nuxia gracilis is the only species of this genus the flowers of which are all pedicellate, although they are arranged in clusters.
9. Nuxia involucrata Aug. D.C., Bull. Herb. Boiss. 2. 1: 577. 1901; P. Jovet, Not. Syst. 13: 100. 1947; Bull. Hist. Nat. Toulouse 82: 9, pl. 2. 1-2. 1948.

Fig. 8, p. 51; Map 6, p. 46
Homotypic synonym: N. involucrata var. typica P. Jovet, l.c. Type: Madagascar: Maroa, Mocquerys 26 (G, holotype; isotype: Z).
Heterotypic synonyms: N. involucrata forma brevibracteata P. Jovet, 1.c.; 1.c. pl. 2. 3. Type: Madagascar: Ankaizinana, Decary 1793 (P, lectotype).
N.involucrata forma grandiflora P. Jovet, l.c.; 1.c. pl. 2. 4. Type: Madagascar: Ankaizinana, Decary 1785 (P, holotype).
N.chapelieri P. Jovet, 1.c. p. 103; 1.c. p. 11, pl. 3. 8-9. Type: Madagascar: sin. loc., Chapelier s.n. (P, holotype).

Evergreen shrub or tree, $1.50-15 \mathrm{~m}$ high. Branches pale grey, with finely fissured bark, with slightly raised leaf-cushions; branchlets minutely pubescent with glandular hairs, glabrescent, often sulcate when dry. Leaves opposite or ternate, shortly petiolate; petiole $1-5(-7) \mathrm{mm}$ long, minutely pubescent with glandular hairs to subglabrous; blade coriaceous when dry, narrowly to very narrowly elliptic or obovate, rarely elliptic, $2.5-6 \times$ as long as wide, $3-13.5 \times$ $0.6-3.5 \mathrm{~cm}$, acuminate with obtuse tip to obtuse at the apex, decurrent into the petiole or sometimes in some leaves cuneate at the base, entire to crenatedentate, minutely pubescent with mostly glandular hairs or subglabrous on both sides; venation mostly inconspicuous, not or slightly prominent beneath. Inflorescence $2 \times 2.5-10 \times 9 \mathrm{~cm}$; branches $1-4 \times$ dichotomously branched and topped by heads of about $5-30$ flowers. Peduncle and branches long, with the same indumentum as the branchlets. Lower bracts leafy, the others small, almost linear. Flowers subtended by several bracts which are variable in shape and size, mostly narrowly oblong, $2-6 \mathrm{~mm}$ long, mostly obtuse, sometimes acute. Calyx 4-6 mm long, pubescent with glandular hairs outside, inside sericeous; tube $3-5 \times$ as long as the lobes, which are equal or subequal, triangular, about as long as wide, $1-2 \mathrm{~mm}$ long, acute, entire; sometimes once or twice 2 lobes coherent in a single flower. Corolla white, outside with minute glandular hairs at the base of the lobes and often also at the apex of the tube, inside pilose in the throat and with minute glandular hairs in the tube for its upper two-thirds or three-quarters; tube mostly slightly shorter, but sometimes slightly longer than the calyx; lobes oblong, $1.8-3 \times$ as long as wide, $2.2-3.2 \times 1-1.3 \mathrm{~mm}$, obtuse at the apex, in dry flowers sometimes suberect. Stamens: filaments glabrous, long, after the pollen is shed $3-7 \mathrm{~mm}$ long; anthers about 1 mm long. Pistil $8-12 \mathrm{~mm}$ long; ovary obcordoid, slightly laterally compressed, $1.4 \times 1$ $\times 0.6-2 \times 1.5 \times 1.2 \mathrm{~mm}$, appressed-pubescent at least in apical half, glabrous at the base; style glabrous, $6-10.5 \mathrm{~mm}$ long; stigma small, capitate or obscurely bilobed. Capsule about as long as the calyx, appressed-pubescent at least in upper half.

Distribution: Madagascar.
Ecology: On rocky riverbanks, often in the mountains; alt. $0-1200 \mathrm{~m}$.
Madagascar: Rousettes, Diégo-Suarez (fl. Nov.) Serv. For. 11007 (P, WAG); Sahafazy-Diégo-Suarez (fl. Nov.) Serv. For. 15274 (P,WAG); Mt. d'Ambre (fl. Oct.-Nov.) Homolle 101
(P), 437 (P); ibid. (fl. Nov.) Morat 1420 (P), 1425 (P); ibid. (fl. May) Capuron S. F. 29196 (P); Semiang Falls, Bernier 127 (P); Andohani-Mananivo-Vohémar (f. July) Serv. For. 14501 (P, WAG); Ambalamena, Androto R., Ramena R. tributary (fl. Sept.) Perrier de la Bâthie 8627 (P); Antsirabe, Decary 30 (P); Moramandia, Ambodiraphia (fl. Sept.) Decary 1015 (P); Moramandia, Sandrakote, Decary 1060 (P); Bejafo, Moramandia District, Decary 2215 (P); Biembahy R., Sambirano R. tributary (fl. Mar.) Capuron S. F. 3017 bis (P, WAG); Manangarivo Mts., Sambirano R. region (fl. June) Perrier de la Bâthie 8626 (P, WAG); Ankaizinana (fl. Apr.) Decary 1785 (P, type of N. involucrata f. grandiflora), 1793 (P, WAG, lectotype of N. involucrata f. brevibracteata); Doany Canton, Andapa District (fr. Oct.) Christophe Res. Nat. 8285 (P); between Doany and Anketselahy (f., fr. Feb.) Humbert 23197 (P); Ambodiara, Sambava (fl. Oct.) Serv. For. 1869 (P); Ambohitialana Canton, Antalaha District (fl. Aug.) Tata Res. Nat. 3349 (P), 4431 (P); Maroa, Mocquerys 26 (G, Z, type); Mahalevona R. basin, between Mahalevona and Fizono (fl. Dec.) Capuron S. F. 8725 (P, WAG); Anove R. (fi. Sept.) Perrier de la Bâthie 8608 (P); Soanierana-Ambahoabé (fl. Dec.) Lam \& Meeuse 5589 K, L, P); Maningory R. falls (fl. Dec.) Homolle 1856 (P); Sahatavy Canton (fl. Nov.) Rakotovao Res. Nat. 9619 (P); Onibe, Ambatondrazaka District (fl. Nov.) Cours 1026 (P); Ambodiriana Canton, Tamatave District (fl. Oct.) Razanaparany Res. Nat. 8168 (P); near Tamatave, Viguier \& Humbert 547 (P); Marovato, Tamatave Canton (fl. Oct.) Rakoto Res. Nat. 7702 (P); Ambodihintsina, Ampasimalaya Canton, Tamatave District (fl. Sept.) Botoalina Res. Nat. 3170 (P); Iles d'Ivondro, Goudot anno 1833 (G); between Didy and Brickaville, Cours 4818 (P, WAG); between Andriantately and Brickaville (fl. Oct.) Serv. For. 12618 (P); Fanovana (fl.) K. Afzelius 23 Oct. 1912 (NY, UPS); ibid. (fl. Oct.) Viguier \& Humbert 739 (B, P); SE. of Lohariandava (fl. Oct.) Viguier \& Humbert 676 (G, P); Mantana R. banks, near Lohariandava (fl. Oct.) Viguier \& Humbert 636 (P); Anosibé, S. of Moramanga (fl. Sept.) Decary 18289 (P, WAG), 18301 (P, WAG); lower Sakaleony R. (fl. Nov.) Perrier de la Bâthie 8617 (P); Mahajony Canton, Ambalavao District (fl. Oct.) Razafindrakoto Res. Nat. 3491 (P); Fort Carnot (fl. Oct.) Decary 5505 (P, S); upper Kienana R., Farafangana District, Decary 5585 (BM, K, P, PRE, US); between Ivohibe and Farafangana (fl. Nov.) Serv. For. 1488 (P); Ivongo Canton, Ivohibe District (fl. Oct.) Razafindrakoto Res. Nat. 10349 (P); ibid. (fl. Sept.) Rakotoniama Res. Nat. 12160 (P); Mahamavo, Behara Canton (fl. Nov.) Ramarokoto Res. Nat. 20 (P), 2677 (P, WAG); sin. loc., Baron 1450 (P), 6618 (P), 6628 (BM, P); herb. Brown s.n. (K); Chapelier s.n. (P, type of N. chapelieri), s.n., coast (MPU, P); Humblot 404 (K, P); Langley Kitching comm. May 1880 (K); J. V. Thompson 18 July 1829 (BM, MO).

Notes. The three forms distinguished in N.involucrata by Jovet in the present author's opinion cannot be maintained. The involucral bracts vary more in size in a single head than thought by him. These of Mocquerys 26, the type of f. typica, are $2-6 \mathrm{~mm}$ long and therefore cover the whole range of variation of the species. The corolla tube of the latter specimen equals the calyx, a character assigned to f. grandiflora. The corolla tube of Goudot anno 1833 even exceeds the calyx.

As in all Nuxia species, the length of the peduncle and its branches varies far more than was supposed by Jover. The inflorescence of the type of N.involucrata is $4-6 \times 7-8 \mathrm{~cm}$, that of Serv. For. 12618 is $4-7 \times 5-9 \mathrm{~cm}$, and that of the type of N.chapelieri $6.5-10 \times 5-9 \mathrm{~cm}$. The leaves of Serv. For. 12618 are of the same size as those of Chapelier s.n. The flowers of the latter specimen fall in all characters completely within the variation of N.involucrata and therefore the present author proposes to reduce $N$.chapelieri to a synonym of $N$. involucrata.


Fig. 8. Nuxia involucrata: 1. branch, $\frac{1}{2} \times ; 2-4$. leaves, $\frac{1}{2} \times$; 5 . flower buds, $5 \times ; 6$. flower, $5 \times$; 7. opened corolla, $5 \times ; 8$. pistil with corolla base, $5 \times ; 9$. fruiting calyx, $8 \times ; 10$. seed, $20 \times$ (1-2, 5-8. type; 3. Humblot 404; 4. Perrier de la Bâthie 8608; 9-10. Serv. For. 8285).
10. Nuxia isaloensis P. Jovet, Not. Syst. 13: 101. 1947; Bull. Hist. Nat. Toulouse 82: 11, pl. 2. 9-11. 1948.

Fig. 9, p. 53; Map 1, p. 8
Type: Madagascar: Isalo R., Sakamarekely and Sambalinieto Rs. gorges, Humbert 2840 (P, lectotype; isotypes: BM, BR, G, K, US, WAG).

Much branched shrub, 0.5-2 m high. Branches dark grey-brown, with finely fissured bark, with raised leaf-cushions; branchlets pale grey- or yellowishtomentose, glabrescent. Leaves small, opposite, shortly petiolate; petiole tomentose, $0.5-5 \mathrm{~mm}$ long; blade much paler and greyish or yellowish beneath, coriaceous when dry, oblong, narrowly oblong, or sometimes obovate, $1.5-4 \times$ as long as wide, $6-30 \times 2-14 \mathrm{~mm}$, obtuse, rounded, or sometimes subtruncate at the apex, cuneate at the base or decurrent into the petiole, entire or with a few obscure teeth near the apex, grey- or yellowish-tomentose on both sides, above glabrescent to completely glabrous; secondary veins inconspicuous. Inflorescence rather congested, $1.5 \times 1.5-3 \times 3 \mathrm{~cm}, 1-3 \times$ dichotomously branched. Peduncle and branches grey-tomentose. Flowers 3-10 together at the end of the last ramifications, subtended by some leafy bracts, which are narrowly oblong or nearly linear, $1.5-6 \mathrm{~mm}$ long, and grey-tomentose on both sides. Calyx 4-5 mm long, outside pale grey-tomentose, with both ordinary and capitate hairs, inside sericeous; lobes subequal, triangular, about as long as wide, $0.5 \times 0.5-1.2 \times 1.2 \mathrm{~mm}$, acute, entire, sometimes 2 halfway connate. Corolla white, outside with some minute glandular hairs at the apex of the tube and the base of the lobes, inside villose with recurved hairs in the throat and with minute glandular hairs in the tube (extreme base glabrous); tube as long as the calyx or slightly shorter; lobes oblong, $1.6-2 \times 0.8-1 \mathrm{~mm}$, obtuse or acute at the apex. Stamens: filaments glabrous, long, after the pollen is shed 2-3 mm long; anthers about 1 mm long. Pistil $5.5-7 \mathrm{~mm}$ long; ovary ovoid, slightly laterally compressed, $1.4-1.5 \times 0.9-1 \times 0.7-0.8 \mathrm{~mm}$, appressedpubescent, glabrous at the very base; style glabrous, $4-5.5 \mathrm{~mm}$ long; stigma small, capitate or bilobed. Capsule as long as the calyx.

## Distribution: Madagascar.

Ecology: On silicate rocks and on sand in open places; alt. $500-1000 \mathrm{~m}$.
Madagascar: Isalo Mts. (fl. July) Perrier de la Bâthie 8624 (P, WAG), (fl. Oct.) 16699 (C, G, P, S, WAG); ibid. (fl. Sept.) Poisson 542 (P); ibid., northern part, S. of Sahanafo (fr. Dec.) Humbert 19508 (P, WAG); Isalo Mts., W. of Ranohira (fl. July) Humbert \& Swingle 4982 (MO, P, WAG); Isalo Mts., Sakamarekely and Sambalinieto Rs. gorges (fl. Oct.) Humbert 2840 (BM, BR, G, K, P, US, WAG, lectotype), 2885 (G, K, L, NY, P, WAG).
11. Nuxia oppositifolia (Hochst.) Benth. in De Candolle, Prod. 10: 435. 1846; Sim, For. Fl. Port. E. Afr. 90, 127, t. 77, f. B. 1909; 0. Schwartz, Fl. Trop. Arab. 184. 1939; P. Jovet, Bull. Hist. Nat. Toulouse 82: 17. 1948; Bruce \& Lewis, Loganiaceae in Fl. Trop. E. Afr. 43, f. 8. 4-6. 1960; Dale \& Greenway, Kenya Trees \& Shrubs 252. 1961 ; F. White, For. Fl. N. Rhodesia 340. 1962; Verdoorn in Fl. S. Afr. 26: 153. 1963; Palmer \& Pitman, Trees S. Afr. 3: 1870. 1973 (with photograph).

Fig. 10, p. 55; Map 7, p. 57


Fig. 9. Nuxia isaloensis: 1. branch, $\frac{1}{2} \times$; 2. leaf, $1 \times ; 3-4$. leaves, $\frac{1}{2} \times$; 5. flower buds, $4 \times$; 6. flower, $6 \times ; 7$. stamen, $8 \times ; 8$. pistil with corolla base, $6 \times ; 9$. opened corolla, $8 \times ; 10$. fruit with corolla base, $4 \times 11$. longitudinal section of fruit, $4 \times(1-2,5-9$. Humbert $2885 ; 3$. Perrier de la Bâthie 8624; 4. type; 10-11. Humbert 19508).

Basionym: Lachnopylis oppositifolia Hochst., Flora 26: 77. 1843; De Candolle, Prod. 9: 23. 1845; C. A. Smith, Kew Bull. 1930: 17, 24. 1930; Eggeling \& Dale, Indig. Trees Uganda 166. 1952; Andrews, Flow. Pl. Sudan 2: 381. 1952.

Type: Ethiopia: Tigre: near Djeladjeranne, Schimper 1714 (P, holotype; isotypes: BM, BR, FI, G, GH, GOET, K, L, LE, M, MO, S, W, WAG).

Heterotypic synonyms: N.dentata R.Br. ex Benth., 1.c. p. 435 (in Salt, Abyss. Append. 63. 1814, nomen); A. Richard, Tent. Fl. Abyss. 2: 124. 1851; Engler, Hochgebirgsfl. Trop. Afr. in Abh. Preuss. Akad. Wiss. 1891: 335. 1892; Gilg in Engler, Pflanzenw. Ost-Afr. C: 312. 1895; Hiern, Cat. Welw. Afr. Pl. 1(3): 700. 1898; Gilg in Warburg, Kun.-Sambesi Exped. 331. 1903; Di Capua in Pirotta, Fl. Eritr. in Ann. Ist. Bot. Roma 8: 211. 1903; S. Moore, Journ. Bot. 41: 403. 1903, partly, excl. var. transvaalensis S. Moore; Baker in Fl. Trop. Afr. 4(1): 513. 1903; Di Capua in Pirotta, Fl. Erit. 2: 211. 1904; Burtt-Davy, Kew Bull. 1908: 162. 1908; Prain \& Cummins in Fl. Cap. 4(1): 1040. 1909; Fiori, Boschi E Piante Leg. Erit. in Agric. Col. 5. Suppl. 79, f. 145A. 1911 and 302. 1912; Eyles, Rec. Pl. S. Rhodesia, in Trans. Roy. Soc. S. Afr. 5(4): 442. 1916; Blatter, Fl. Arab. in Rec. Bot. Survey India 8(3): 305. 1921 ; Broun \& Massey, Fl. Sudan 241. 1929. Type: Ethiopia: sin. loc. Salt s.n. (BM, holotype).
N.dentata var. glutinosa Engl., Hochgebirgsfl. Trop. Afr. in Abh. Preuss. Akad. Wiss. 1891: 335. 1892. Type: Tanzania: Kilimanjaro, between Marangu and Madschame, Hans Meyer 326 (holotype not seen, destroyed in B; no isotype seen).
N.schlechteri Gilg in Engler, Bot. Jahrb. 32: 140. 1902. Type: S. Africa: Transvaal: Komatipoort, Schlechter 11738 (holotype not seen, destroyed in B; lectotype: G; other isotypes seen: BM, BOL, BR, COI, E, GRO, K, LE, P, Z).
N.autunesii Gilg in Thonner, Blütenpfl. Afr. t. 128. 1908, name and fig. only Type: Angola: Huila, between Umpupa and Ediva, Baum 29 (holotype no, seen, destroyed in $B$; lectotype: $G$; other isotypes seen: $B M, B R, C O I, E, K$, M, S, W, Z).
N. capitata var. tomentella Hochr., Ann. Conserv. et Jard. bot. Genève 1112: 83. 1908. Type: Madagascar: Imerina, near Marmarivo, Rusillon 64 (P, holotype; isotypes: G, K). Homotypic synonyms: N.tomentella (Hochr.) P. Jovet, Notul. Syst. 13: 99. 1947; Bull. Hist. Nat. Toulouse 82: 9, 16. 1948. N. tomentella var. typica P. Jovet, 1.c. and l.c. p. 16, pl. 1. 4-5.
N. tomentella var. meridionalis P. Jovet forma microphylla P. Jovet, l.c. and l.c. p. 16. Type: Madagascar: Mangoky R. valley, NW. of Beroroha, Humbert 11348 ( P , lectotype; isotype: K).
N.tomentella var. meridionalis forma farinosa P. Jovet, l.c. and l.c. Type: Madagascar: Isalo, Tapia, Perrier de la Bâthie 16696 ( P , lectotype; isotypes: BM, K, US).
N.tomentella var. meridionalis forma subdentata P. Jovet, 1.c. and l.c. p. 16, pl. 1. 6. Type: Madagascar: Upper Manambolo R. valley, tributary of Mandrare R., near Beaka, Humbert 13690 ( P , lectotype).

Evergreen shrub or small tree, $1-15(-20) \mathrm{m}$ high, often gnarled and willow-


Fig. 10. Nuxia oppositifolia: 1. flowering branch, $\frac{1}{2} \times ; 2$. branch in bud, $\frac{1}{2} \times ; 3$. flower bud, $5 \times$; 4. young flower, $5 \times$; 5 . opened corolla of young flower, $8 \times ; 6$. pistil with corolla base, $7 \times$; 7 . fruiting calyx, $7 \times ; 8$. seed, $7 \times ; 9$. seed, $20 \times ; 10-15$. leaves, $\frac{1}{2} \times(1-6$. Mendonça 3461; 7-9. Gossweiler 12636; 10. G. Adamson 42; 11. Leach 11298; 12. Schlechter 11738; 13. Torre 3701 ; 14. J. B. Smart 15 ; 15. Buchanan in coll. J. M. Wood 7097).
like, sometimes straggling. Trunk often rather fluted, $10-60 \mathrm{~cm}$ in diam. Bark reddish-brown, smooth or shallowly and longitudinally fissured; wood reddishyellow, close-grained. Branches brownish, with fissured bark; branchlets glabrous or sparingly and minutely puberulous, not lenticellate, slightly angular and often sulcate when dry. Leaves opposite, less often subopposite, or occasionally (in a few of the branchlets) alternate, often sticky when being dried, petiolate; petiole glabrous or hairy as the branchlets, $2-12 \mathrm{~mm}$ long; blade not much paler beneath and subcoriaceous or coriaceous when dry, narrowly to very narrowly elliptic, rarely (more often in Madagascan specimens) elliptic, $(2-) 4-8 \times$ as long as wide, $(1.5-) 3-13 \times 0.4-3(-5) \mathrm{cm}$, obtuse or rounded and often mucronulate at the apex, cuneate at the base or decurrent into the petiole, bluntly serrate to entire, glabrous or with minute glandular hairs on both sides; secondary veins not very conspicuous. Inflorescence rather congested, $1.5-7 \times 2-8 \mathrm{~cm}, 2-5 \times$ branched. Peduncle, branches, and pedicels glabrous or scarcely hairy. Lower bracts leafy; the others small, ovate or narrowly ovate, $1-1.5 \mathrm{~mm}$ long. Ultimate branches and pedicels very short or obsolete. Flower slightly fragrant, 1-3(-8) together. Calyx green, 3.5-5 $\times 1.2-2$ mm , minutely pubescent with glandular and often also ordinary hairs outside, when dry seemingly glabrous and often shining, inside sericeous; tube 4-8 $\times$ as long as the lobes; lobes triangular, about as long as wide or wider, 0.5-1.2 $(-1.4) \times 0.7-1.2 \mathrm{~mm}$, acute or subacute, entire, sometimes two coherent or partially united. Corolla white, creamy, or sometimes pale lilac, outside with some minute glandular hairs at the base of the lobes, inside with a villose ring of recurved hairs in the throat and with minute glandular hairs in the tube except for its glabrous base; tube slightly shorter or less often slightly longer than the calyx; lobes oblong, $1.5-3 \times$ as long as wide, $1.8-3 \times 0.8-1.2 \mathrm{~mm}$, obtuse or rounded at the apex. Stamens: filaments only at the very base villose at the level of the group of hairs on the corolla throat, $2.5-5 \mathrm{~mm}$ long; anthers about 1.2 mm long. Pistil 5-10 mm long; ovary obcordoid or ovoid, slightly laterally compressed, $1-1.6 \times 0.8-1.2 \times 0.7-1 \mathrm{~mm}$, appressed-pubescent, glabrous at the base; style glabrous, $4-8.5 \mathrm{~mm}$ long; stigma small, capitate or occasionally bilobed. Capsule about as long as the calyx, appressed-pubescent. Seeds 0.5$0.8 \times 0.15-0.2 \mathrm{~mm}$.

Distribution: Southern Arabia, eastern, southern central, and southern Africa, and Madagascar.

Ecology: Montane scrub on river banks or gallery forest; alt. $500-2400 \mathrm{~m}$; in Madagascar and in Natal at lower elevation, even at 50 m alt.

[^1]

Map 7. Nuxia oppositifolia.

Angola: Moçamedes: Tampa, Exell \& Mendonça 2407 (BM, LISC, LISJC); Camucuio (fl. Apr.) Abreu 92 (BM, COI); ibid. (fl. Sept.) Teixeira 510 (BM, GB, NLI, WAG); ibid. (fi. Sept.) Teixeira \& Andrade 4294 (NLI, SRGH, WAG); ibid. (fi. Nov.) Gossweiler 13097 (LISC); Bero R. bank (fl. June) Welwitsch 5766 (BM, C, COI, K, LE, LISU, P), 5767 (BM, LISU); Cainde, Cacuio R. (fl. June) Gossweiler 10984 (COI, LISJC). Huila: Leba R. falls, Exell \& Mendonça 2941 (BM, BR, LISJC); Leba R., Humpata (fl., fr. Sept.) Gossweiler 12636 (LISC), 12639 (LISC); Curoca, Chitado, Azancot de Menezes \& Henriques 53 (K, LISC, SRGH); between Umpupa and Ediva (fi. Aug.) Baum 29 (BM, BR, COI, E, G, K, M, $\mathbf{S}, \mathbf{W}, \mathbf{Z}$, type of $N$. autunesii).

Sudan: Erkowit, Broun 1200 (K); ibid. Sahni \& Kamil 686 (K); ibid. (fi. July) B.K.C. 246 (K); Kh. Agren, B.K.C. 255 (K); Khor Kolkola, Erkowit-Red Sea Hills, Aylmer 156 (BM, K); near Khor Hamrik, Red Sea Hills (fl. Apr.) J. K. Jackson 3970a (BR).

Ethiopia: Salt s.n. (BM, type of N. dentata). Eritrea: Mao R. valley, Habab (fl. May) Pappi 822 (1848) (FI); Keren, Schweinfurth 708 (M); Alibaret, Bogos (fl. Apr.) Pappi 6965 (FI); Anseba R., near Adi Saddi (fl. Feb.) Fiori 372 (FI); Filfil (fl. May) Baldrati A 56 (FI), 2409 (FI); near Ad Zien (fl.) A. Kaiser 20 Mar. 1894 (Z); below Ghinda, Massawa Road (fl. May) Mooney 8578 (FI, K, S); Farakaurot-Aba Maitan, Mensa, Pappi 2009 (FI); Cata-
laben Valley, Mensa, Pappi 1537 (FI); Acque Adakamet, Mensa, Pappi 1282 (FI); Agaro (fl. Jan.) Pappi 529 (FI); Sella Magasas-Mie Ira, Pappi 882 (FI); Belta, Pappi 963 (FI); Aba Maitan-Dedà, Pappi 2159 (FI); Dedà, Pappi 2122 (FI); near Acrour (fl. Apr.) Schweinfurth \& Riva 1690 (BO, BR, FI, G, K, LE, MPU, P, S, Z); Agametta Plateau, Assaorta, Pappi 3149 (FI); Aidereso R. (fl. May) Pappi 3668 (FI), 4221 (FI), 5106 (95) (BM, FI, G, K, LE, W, Z); ibid. (fl. May) Baldrati A 56 bis (FI), 4392 (FI); Ingal-Ceccaharot, Pappi 3687 (FI); Barasió R. valley (f. Mar.) Schweinfurth \& Riva 698 (G); Ceccaharot-Selet (fi. Mar.) Pappi 3747 (FI); Chenafena, Akelé-Guzay (fl. Mar.) Fiori 373 (FI); Abrascico-Adi Saddi (fr. May) Pappi 366 (1846) (Fl); Anseba, Abrascico (fl. Feb.) Fiori 371 (FI); Ghinda-Baresa, Fiori 369 (FI); Ghinda-Asmara, Pappi 154 (1847) (FI); Nefasit al Mahabar, Amasen, Fiori 370 (FI); Mai Merattel, Seraé (fl. Feb.) Bellini 151 (FI); Mareb R., Chiovenda 320 (FI); Massawa, Quartin Dillon \& Petit s.n. (BR, P). Tigre: Chiré, Quartin Dillon 95 (K, P, W); Gunnokle (fl. Feb.) Schimper 710 (BM, COI, E, K, NH, WU, Z); between Bircutan and Sefrà-hazei (bud, fl., fr. Feb.) Pappi 8967 (FI), 9011 (FI); near Mai-Zerambde, near Djeladjeranne (fl. Aug.) Schimper 1714 (BM, BR, FI, G, GH, GOET, K, L, LE, M, MO, P, S, W, WAG, type); upper Kolla R., near Djeladjeranne, Schimper 92 (FI); Bellagass (?), Schimper 1095 (BR, LE, P, WAG). Shoa: Rochet d'Héricourt 29 ( P ). Harrarghe: Gara Muletta Road (fl. May) IECAMA F-46 (K); km 60 Dire Dawa-Addis Ababa Road (fl. Apr.) Burger 2724 (K, S); km 42 Harar-Jijiga Road (fl. Oct.) J. de Wilde 5861 (WAG); km 22 of same road, Errer Valley (fl. Jan.) Burger 1440 (K, US). Arusi: Galla, near Awash R. (fl. July) Negri 1268 (FI). Gamu-Gofa: Ghìzo (fr. July) Corradi 7021 (FI); Afat (?) (fl. July) Corradi 6162 (FI); Seghidò (fl. Aug.) Corradi 7020 (FI); Di El Dire (fr. May) Corradi 7022 (FI). Borana: Cufodontis 44 (FI, W).

French Afars \& Issas: Randa, Chedeville 726 (FI); Ibnarraddi (?) (fl. June) Chedeville 294 (FI).

Somalia: Bija Suldan (fi. Dec.) Gillett 4693 (FI, K, P, S); Waggar Mt., Bally 10242 (EA, FI, K); Medishe Valley (fl. Jan.) Glover \& Gilliland 556 (BM, EA, FHO); Medishe, NE. of Erigavo, Hemming 2092 (EA, FI, K); ibid., McKinnon S/238 (K); Berara (fi. Aug.) Newbould 951 (K).

Uganda: U1: W. Kidepo R., N. Karamoja (fl. Feb.) Brasnett 141 (ENT, K); Nangeya Hills (fl. June) Dale U 285 (EA, K); Loyoru (fl. Nov.) A. S. Thomas 3155 (ENT, K); Lokitonyala, Karamoja (fl. Mar.) J. Wilson 798 (EA, K); Karamoja (fl. Dec.) Tweedie 244 (FI); Momita (fr. May) Philip 137 (ENT); Kanyangarang, W. Suk (fl. Feb.) Eggeling 2960 (BR, ENT, K); Mt. Debasien (Kadem) (bud, fr. Jan.) Eggeling 2634 (ENT, K); Amudat (fl. Jan.) Lind 2687 (EA); Lossom, 16 km SE. of Amudat, Philip 782 (EA). U3: Alalem R., NE. Sebei (fr. Dec.) Dale U 345 (EA).

Kenya: K1: Moyale (fi. July) Gillett 13575 (BM, BR, EA, FI, G, K, LISC, MO, P, PRE, S, W); S. Horr, Samburu District (fl. July) T. G. Adamson 25 (EA); ibid. (fl. Oct.) J. B. Smart 15 (EA); Mathews Range (fr. June) Kerfoot 1082 (EA, K, UPS), (fl. Dec.) 2594 (EA, K); Leroki ( = Lorogi) Plateau, Rammell 3338 (BR, EA, K); Lorogi, Garissia (fi. June) Kerfoot 1083 (EA). K2: Ortum, W. Suk (fl. Dec.) Tweedie 1780 (K); Suk Escarpment, Kapenguria District (fl. Oct.) Honoré K 3716 (BR, EA, K). K6: SW. of Magadi, Verdcourt 3761 B (K, WAG). K7: Mbololo Hill (fl. Sept.) Gardner For. Dept. 3001 (EA, K); Ndi Mt. (fi. Feb.) Hildebrandt 2576 (K). Sin. loc.: Powell 47 (K).

Tanzania: T2: Kilimanjaro Mt. (fl., fr. Nov.) Schlieben 4303 (BM, BR, G, Z); Bagayo R., Mbulu District, Greenway \& Kanuri 11823 (BR, EA, K); Kware R. (fl. Nov.) Uhlig 361 (EA); Lumi-Arusha Chini, Greenway 8573 (EA, FHO, K, PRE); Babati, Mbulu District (fl. June) Davies 1098 (EA, K). T4: Mugombasi R., 65 km S. of Kigoma (fl. Aug.) Harley 9464 (BR, EA, K); Mahali Mts., Silambula (f. Sept.) Newbould \& Jefford 2072 (BR, K).

Zambia: 65 km S. of Mwinilunga (fl. Aug.) Milne-Redhead 924 (BR, K, PRE, WAG); Musipazi (fl. Sept.) Mutimushi 1425 (K); ibid., Fort Jameson (fl., fr. Oct.) Mutimushi 2328 (K); bank of Mungomba Stream (fl. Aug.) Lees $\mathbf{3 0}$ (K); between Tangere and Lunsemfwa Rs., Burtt-Davy 20888 (FHO); Feira (fl. Oct.) Fanshawe 9379 (FHO, K); Lusaka, Fanshawe 4544 (FHO, K); Mt. Makulu, 18 km S. of Lusaka (fl. Aug.) Angus 1280 (BR, FHO, K), 1389 (BM, BR, EA, FHO, K, PRE); Chilanga (fl. Nov.) Rogers 8437 (K, S); ibid. (fl. Oct.) Coxe 110 (SRGH); Mazabuka (fl. Oct.) Milne-Redhead 1253 (BR, K, PRE); ibid., Rogers 26137 (PRE);
ibid., Trapnell CRS 418 (K); 32 km E. of Mazabuka, Stevenson $327 / 31$ (FHO); Mapanza (fl. Oct.) Robinson 355 (K); Sinazongwe R. banks, near bridge in Sinazongwe-Mwemba Road, Bainbridge 521 (FHO, NY); 13 km N. of Sinazezi, White 2628 (FHO, K); Livingstone (fl. Sept.) Lawton 1128 (FHO); ibid., Rogers 7515 (Z), 7523 (A); Victoria Falls, Greenway 6261 (EA, K, PRE), 6262 (EA, K); ibid., Brenan \& Greenway 7774 (FHO, K).

Malawi: Tanganyika Plateau, Whyte July 1896 (K); Manjawira, Mtemangokwe R. (fl. Oct.) G. Jackson 1370 (BM, BR, FHO, K); Kapeni Stream, Dzonze, Dedza District, Chapman 1354 (FHO, K, MO, SRGH); Ncheu District, Kapeni Stream (fl. June) Jeke 95 (K, SRGH); Namikokwe R. (fl. Sept.) Burtt-Davy 21681 (A, FHO); Zomba, Purves 50 (K); ibid., Sharpe 5 (K); ibid (fl.) Whyte Dec. 1896 (K); Zomba District, Clements 257 (FHO); ibid., Townsend 147 (FHO); Shire Highlands, G. Adamson 42 (E, K); ibid., Buchanan 270 (E, K); ibid., Blantyre, Buchanan 6(K), (fl.) 22 Sept. 1877 (E, LE), in coll. J. M. Wood 7097 (E, NH); ibid., Ntonda, Topham 462 (FHO), 463 (FHO); Soche Res., Topham 829 (FHO); Chisombezi R., Burtt-Davy 21945 (BR, FHO); Mjanje Mt. (fl. June) Chapman 375 (BR, FHO, K, PRE); ibid. (fl. Sept.) Humbert 17047 (P); Likhubula Forest, Mlanje District (fl. May) Salubeni 1633 (SRGH, WAG); Kwakwazi, Cholo, Hornby 2910 (K, PRE); Nswadzi R., Cholo District (fl. Sept.) Brass 17850 (BM, BR, K, MO, SRGH, US); Tangazi Valley, W. of Chiromo, Topham 690 (FHO); Chipakusa, Port Herald, Topham 519 (FHO); near Machipere R., 50 km S. of Port Herald (fi. July) Seagrief 3082 (K, SRGH); sin. loc., Buchanan 165 (BM, BR, COI, E, LISC, SRGH), 497 (BM, G, K), 820 (K, LE); Clements 341 (FHO), 493 (FHO).

Moçambique: Tete: Furancungo (fl. Sept.) Mendonça 550 (LISC); Marávia, Fingoè (fl. Sept.) Mendonça 391 (LISC); ibid. (fl. Aug.) Torre 3295 (LISC); Zóbuè (fl. June, Oct.) Torre 2878 (LISC), 3701 (LISC); Boroma (fl. June) Menyharth 738 (WU); Kabankangywe Kraal, Mazoe R. (fl. Sept.) H. Wild 2593 (BR, K, S, SRGH). Zambézia: Alto Chindio (fi. Sept.) Barbosa \& Carvalho 3990 (G); Manganja Hills (fl.) C. J. Meller Sept. 1861 (K, W); Lumba R. bank, along road to Morrumbala (fl. Oct.) Campos Andrada 1945 (COI, LISC); between Shibisa and Tshimuze (fl.) Kirk Sept. 1859 (K). Manica e Sofala: Inhacoró, Surcouf rec. 20 Sept. 1929 (BR, P); Cheringoma (fl. Nov.) Simão 295 (LISC); Domba, Simão 1084 (EA); Chimoio, Gondola, Simão 580 (LISC); lower Muswirizwi R., Swynnerton 1179 (BM, K); Matarara do Lucite, Gomes Pedro 4340 (K). Lourenço Marques: Moamba (fl. Dec.) Torre 6869 (LISC); Namaacha (fr. Mar.) Barbosa \& de Lemos 7528 (COI, LISC); Maputo, Goba (fl. Nov.-Dec.) Mendonça 3076 (LISC), 3461 (LISC).

Rhodesia: Kariba, Urungwe District (fi. Oct.) J. Allen 1 (PRE, SRGH); Msukwi R., S. of Rengwe R., Phipps 766 (BR, EA, P, PRE, SRGH); Rehomitjie R. Gorge (fl. Oct.) Bingham 1372 (BR, K, M, MO, P, SRGH); Gota gota Hill, Lovemore 298 (MO, PRE, SRGH); Mauora R., Urungwe District (fl. Feb.) Phipps 938 (LISC, SRGH); Umvukwes (fl. Oct.) Eyles 1136 (K), 5524 (SRGH); Darwin, Waller in herb. Eyles 3108 (K, SRGH); Umsengesi Camp, Darwin District, Whellan 904 (SRGH); Umzengedsi R., Walmough 104 (SRGH); Mt. Darwin (fl. Sept.) O. West 6789 (SRGH); Gwabula R., Binga (fl. Oct.) Lovemore 555 (K, SRGH); Mbelele R., Binga District (fl., fr. Dec.) Lovemore 222 (SRGH); Sitonka Valley, Sebungwe District (fl. Oct.) Davies 1593 (K, PRE, SRGH); near Siababa, Sebungwe District, Vincent 59 (SRGH); Masene Springs (ff. Oct.) Whellan 399 (K, SRGH); Highlands of Batoka Country, near Victoria Falls, J. Kirk July-Oct. 1860 (K); Wankie Nat. Park, Robins Camp area (fl. Dec.) D. H. M. Clark 466 (SRGH); E. of Mbala Lodge, Lukozi R. (fl. Oct.) Rushworth 1209 (K, SRGH); Mlibisi R. (fl. Oct.) Davies 1585 (BR, K, SRGH); Gokwe, Bumi R., near Goredema (fl. Oct.) Farrell 235 (EA, MO, SRGH); Gowe Pool, Umniati R., Whellan 80 (SRGH); Ganderowe Falls, Mpofu 21 (SRGH); Lomagundi (fl. Oct.) Eyles 2671 (A, K, NBG, PRE, SRGH), 2687 (FHO, K, NBG, SRGH); Sinoia (fl. Oct.) R. F. Rand 282 (BM); ibid., Shinyanga R. (fl. Dec.) Young 923 (BM); Mangula Area, Lomagundi District (fl. Sept.) Jacobsen 3955 (K); Great Dyke, Lusaka Road (fl. Oct.) Rutherford-Smith 305 (EA, MO, SRGH); Mtokoshanga (fl. Oct.) Leach 9500 (SRGH); ibid., Kelly-Edwards 9/37 (FHO, SRGH); Shamva (fl. June) Brain 10836 (SRGH); ibid. (fl. June) Eyles 3514 (BOL, K, NBG); ibid. (fl. July-Aug.) Moubray SRGH 87775 (K, LISC, SRGH); Mtoko, Mudsi R. (f. Oct.) Phelps 66 (K, LISC, PRE, S, SRGH); Hartley (fl. Oct.) Hornby 2463 (K, SRGH); Umsweswe R. banks, 19 km S . of Gatooma, Goldsmith 11/47 (FHO, SRGH); Marandellas (fi. Oct.)

Myres 662 (K); Gwelo District (fl. Oct.) Eyles 3465 (SRGH); Lalapanzi, Gwelo District (fl. Oct.) Walters 2439 (K, SRGH); Doddieburn Ranch (fl. Nov.) Henderson NBG 49667 (NBG); 15 km W. of Selukwe (fl. Dec.) Biegel 1551 (SRGH); Ferny Creek (fl. Dec.) Biegel 1512 (SRGH); Shabani Road, O. West 6160 (MO, SRGH); Tokwe R. bridge, Selukwe District (fl. Nov.) Loveridge 492 (SRGH); Shashi R., Matobo District, O. West 2389 (SRGH); Farm Besna Kobila (fl. Dec.-Jan.) O. B. Miller 1465 (SRGH), 2020 (SRGH); Tuli R., near Sizhubani, Gwanda District, Norris-Rogers 454 (SRGH); Simbala R., Gwanda District, B. R. Thompson 1/59 (LD, SRGH); Victoria District (fl. Apr.) Henkel in herb. Eyles 3780 (SRGH); ibid., Monro 497 (BM, SRGH), 505 (BM), 605 (BM, SRGH), 748 (BM, SRGH), 894(BM,SRGH), 1350(BM), 2239 (BM); ibid., Kapue R. Monro 1346 inherb. Rogers 8945 (Z); Ngesi R., Belingwe District (fl. Dec.) Leach 9718 (MO, SRGH); Ngobi Dip, Belingwe District, O. West 2774 (MO, SRGH); Insiza R., Guy 15/67 (K, SRGH); Chibi District, 1 km N. of Lundi R. bridge on Fort Victoria-Beitbridge Road (fl. Dec.) Leach 11298 (BR, K, LISC, M, MO, SRGH); Shashi R., Tuli Circle, Beitbridge District, O. West 4162 (MO, SRGH); Chigwa Pools, Norris-Rogers 197 (SRGH); Nyamakwarara Valley, Stapleford, Mavi 395 (K, SRGH); ibid. (fl. Dec.) T. Müller 527 (K, SRGH); Odzani R. valley, Umtali District, Teague 290 (BOL, K); Manika, near Odzani R. (fl. Dec.) Evelyn Cecil 235 (K); Wengesi R. (fl. Dec.) Chase 5363 (BM, BR, PRE, SRGH); Umvumvumu R. (fl. Dec.-Jan.) Chase 488 (BM, COI, K, LISC, PRE, SRGH), 1165 (BM, K, SRGH); Umtali-Melsetter Road, Swynnerton Oct. 1908 (BM); Melsetter District, R. W. Jack 6150 (SRGH); ibid., Tarka For. Res. (fl. Mar.) Armitage 11/55 (SRGH); Umvumvumu R., Melsetter District (fl. Dec.) Armitage 117/54 (SRGH); Chimanimani Mts. (fr. Feb.) A. V. Hall 512 (BM, SRGH); near Haroni and Lusitu Rs. confluence (fl. Nov.) Drummond 5005 (K, PRE, SRGH); ibid., Ngoni 23 (K, SRGH); Lusitu R., Melsetter (fl. Sept.) Swynnerton 1294 p.p. (BM, K, other part is N. foribunda); Changadzi R., 8 km E. of Birchenough Bridge (fl. Jan.) Obermeyer 2331 (BM, BOL, K, PRE, SRGH); Lundi R., Nuanetsi District (fl. Dec.) Davies 2266 (BR, K, PRE, SRGH); ibid., Rhino Hotel, Davies 1720 (BR, K, SRGH); Mabalanta Camp, Nuanetsi R. (fl. Dec.) Sherry 40/69 (SRGH); Cheche R., Chiredzi District, Armitage 96/55 (SRGH); Chipinda Pools (fl. Nov.) Goodier 675 (K, LISC, PRE, SRGH); ibid., Seward 86/51 (FHO, SRGH); Honde R., Chipinga District (fl. Nov.) Phelps 209 (BR, K, P, PRE, SRGH); sin. loc. Mundy (?) 1098 (K).
SW.Africa: Kaokofeld:von Koehnen $155(\mathrm{M}), 156(\mathrm{M}), 158(\mathrm{M})$;Otjitanga R.(fl.July)P.G. Meyer 1234 (M); Onganga, Merxmüller 1419 (M); 15 km W. of Oruwanje on road to Sanitatas (fl. June) Giess \& Leippert 7381 (W); 63 km from Ohopoho on road to Anabib, Orupembe, Story 5676 (K, PRE, SRGH); Otjitambi, Hondoto R., Giess 3148 (M).
Swaziland: Pigg's Peak, Compton 30692 (NBG); Komati Bridge (fl. Nov.) Compton 29663 (K, NBG, PRE, SRGH); Usutu R. banks (fl. Dec.) Pole-Evans 3414 (23) (A, K, LE, P, PRE, UPS); Mbuluzi Poort R., Stegi District (fl. Dec.) Compton 29596 (FHO, M, NBG, PRE); Mnyami (fl. Jan.) Compton 29729 (K, M, NBG, SRGH); Lebombo Mts., Tibilati Stream (fl. Feb.) Hornby 2810 (NY, SRGH); Bulunga Poort, Manzini District (fl. Dec.) Compton 31854 (K, NBG).
S. Africa: Transvaal: Messina (fl. Dec.) Rogers 20700 (A, K, PRE); Dongola Area, Limpopo R. banks (fl., fr. Dec.) Pole-Evans 4593 (SRGH); Nwanetzi R., E. of Tshipise (fl. Jan.) van der Schijff 5223 (K, PRE); Punda Maria (fl. Feb.) Lamont 2 (PRE); near Louis Trichardt, Gerstner 6097 (K); Kruger Nat. Park, 32 km W. of Shingwedzi Camp, Codd \& Dyer 4667 (K, PRE); Letaba Rest Camp, H. Lang TRV 27167 (BR, NH, PRE); Laauwaterbrug, Letaba, van der Schijff 549 (PRE); Harmony Block, Stillwater (fl. Jan.) Renny 88 (PRE); Sandrivier, Kruger Nat. Park (fl. Feb.) van der Schijff 2191 (PRE); Mbetane and Masetane (Shilouvane), Junod 1430 (K, Z); Ngwabitsi R., 13 km SW. of Leydsdorp, Pietersburg District (fl. Jan.) Story 5385 (K); Spruytskloof, Waterberg District (f. Dec.) Theron 2078 (FHO, K, M, PRE, SRGH, UPS, Z); Loskop Dam, Codd 10358 (K, PRE); ibid., Mogg 17244 (PRE); ibid. (f. Jan) Wells 2021 (K, PRE); 32 km NW. of Olifants R. gorge, Middelburg District, Mogg 22405 (K, PRE); Bundu Inn, Diana Nat. Res. (fl. Dec.) Mogg 35875 (SRGH); Nelspruit District (fl. Jan.) L. L. Britten 4797 (PRE); ibid., km 17 of Malelane-Skukuja Road (fi. Feb.) Codd 5221 (K, NY); 32 km N. of Crocodile Bridge, Sabie R. (fl. Jan.) Acocks 16732


Рнот. 7. Nuxia verticillata (Coode 4554, phot. Coode).
(PRE); Crocodile R. falls, Nelspruit (fl. June) Liebenberg 2790 (PRE); Komati Poort, Barberton District, Rogers 22191 (K, PRE); ibid. (fl. Dec.) Schlechter 11738 (BM, BOL, BR, COI, E, G, GRO, K, LE, P, Z, type of $N$. schlechteri). Natal: Zululand, W. T. Gerrard 620 (BM, K, MO, W); ibid. (fl. Dec.) Hangarth in coll. J. M. Wood 7299 (BM, BOL); ibid., Ndumu Game Res. (fl. Dec.) Tinley 803 (NH); Hluhluwe Game Res., Hlabisa District (fl. Dec.) Guy 42 (NH); ibid. (fr. Feb.) Hitchins 161 (NH); ibid. (fr. Feb.) Ross \& Moll 1771 (NH); ibid. (fl. Jan.) Ward 1970 (K, L, NH, PRE); 5 km N. of Hlabisa, Acocks 13053 (K, PRE); Black Umfolozi, Swynnerton 75 (K); 6 km N . of Mtubatuba (fl. Jan.) Strey 7385 (BR, K, M, NH, NY, PRE, S); Umhlatuze (fl. Dec.) Gerstner 3008 (K, NH, PRE); Utimona, Empangeni District, Gerstner 2741 (NH, PRE); Ngoye (fl. Jan.) Gerstner NH 22641 (NH); ibid. (fl. Feb.) Huntley 856 (NH, PRE); ibid., Venter 363 (NH); ibid. (fl.) E. H. Wilson Feb. 1922 (A); ibid. (fl. Mar.) J. M. Wood 10334 (NH); ibid. (fl. Apr.) Wylie in coll. J. M. Wood 7581 (PRE), 8470 (P, PRE); Ngoye Forest (fl., fr. Mar.) Moll 4955 (K, SRGH); 5 km from Mandeni, off Tugela Mouth Road, D. Edwards 1613 (K, PRE); W. Nonoti R. (fl. May) J. M. Wood 3878 (K, NH); sin. loc., W. T. Gerrard 716 (K).

Madagascar: Mt. des Français, Diégo-Suarez (fl. Dec.) Capuron S. F. 22998 (P, WAG); Soromaray-Soalala (fl. Aug.) Serv. For. 3989 (P); Andranomavo Canton, Soalala District (fl. Oct.) Rakotovao Res. Nat. 4608 (P), 4637 (P); ibid., Randiamiera Res. Nat. 7207 (P), 8010 (P); Bokarafa, E. of Bekodoka (fl. Sept.) Decary 8130 (P, W); Betsiboka R. bridge in Tananarive-Majunga Road (fl. Sept.) Bosser 8466 (P); ibid. (fl. Aug.) Peltier 3371 (P, WAG); Sitampihy, Ambato-Boeni, (fl. Nov.) Serv. For. 12753 (P, WAG); Ankarokaroka, AmbatoBoeni (fl. July) Serv. For. 14593 (P, WAG); between Ambato-Boeni and Maevatanana (fl. Aug.) Humbert \& Perrier de la Bâthie 2333 (G, P); Maevatanana, Decary 19215 (P); ibid. (fl. May) Perrier de la Bâthie 240 (P, WAG), 240 bis (L, P); between Tsimandoariva and Maevatanana, Serv. For. 3579 (P); near Morafenobe (fl. Oct.) Decary 2261 (P), 2330 (P), 2332 (P); near Fonguy, Ranobe R. basin (fi. July) Perrier de la Bâthie 8614 (P, WAG); Antanimbaribe-Morafenobe (fl. Aug.) Serv. For. 15139 (P, WAG); Maintirano (fl. Aug.) Decary 8230 (C, G, MO, NY, P); near Bekodoka (fl. Nov.) Decary 2256 (P); Beravina, Morafenobe District (fl. Aug.) Serv. For. 16350 (P); Honko Ampoza, Morondava, Serv. For. 10318 (P, WAG); Soahanina R. bank, N. of Antsalova, Léandri 279 (P); Antsingy, Antsalova District, Harico Res. Nat. 2667 (P); Antsalova (fl. May) Ramanon Res. Nat. 7234 (P); Befamanta-Antsalova (fl. Sept.) Serv. For. 11238 (P, WAG); Tsiroanomandidy District (fl. July) Decary 7971 (P, PRE, S); ibid., Capuron S. F. 6702 (P); ibid., Antsahatanteraka (fl. Sept.) Serv. For. 5682 (P, WAG); near Itasy Lake, Anonym. 33 (P); Parc Botanique Tsimbazaza (fl. Jan.) Ratoto Res. Nat. 1436 (P); Imérina, near Marmarivo, Rusillon 64 (G, K, P, type of N. capitata var. tomentella); Perinet (fl. Dec.) Serv. For. 2525 p.p. (P, other part is N. capitata); Bemaraha (fl. Aug.) Jard. Bot. Tananarive 6210 ( P ); Manambolo R. gorge, 9e Res. (fr. Oct.) Léandri 407 (BM, K, P, US); Ankilibé-Bekily, Serv. For. 11164 (P, WAG); Miandrivazo (fl. Oct.) Decary 15044 (P); Miandrivazo District, Hure rec. 28 Dec. 1897 (P); ibid., Dabolava, Decary 15234 (P); Analamitsivolana Forest, Miandrivazo, Serv. For. 7865 (P, WAG); km 100 Miandrivazo-Tananarive Road (fl. Oct.) Bosser 18129 (P, WAG); ibid. (fl. Oct.) Morat 95 (P, WAG); W. of Ambatofinandrahana, Decary 15113 (P); Vohitsaoka Canton, Ambalavao District (fl. Feb.) Rakotovao Res. Nat. 8101 (P); Beravi (fl. July) Hildebrandt 3097 (BM, K, LE, P); Isalo Mts., W. of Ranohira, Humbert \& Swingle 5002 (P, Jovet err. 5502); Tapia, Isalo (fl. Oct.) Perrier de la Bâthie 16592 (BM, P, PRE, US, paratype of N. tomentella var. meridionalis f. microphylla), 16696 (BM, K, P, US, lectotype of N. tomentella var. meridionalis f. farinosa); Isalo Mts., between Anakandrarza and Ampandrabe, Léandri \& Saboureau 3913 (P, WAG); Isalo Mts., Antsokaky, SW. of Ampatimdroko (fl. Oct.) Humbert 2817 (G, MO, NY, P); Sakamarekely and Sambalinieto Rs. gorges (fl. Oct.) Humbert 2839 (BM, BR, G, K, P, PRE, S, US); Isalo Mts., near Fanjahira (fl. Oct.) Humbert 2756 (C, G, P); between Ankaramena and Ifandana-Ihosy, Serv. For. 13725 (P, WAG); near Ifandava Mts., between Ambalavao and Ihosy (fi. Jan.) Capuron S. F. 11603 (P, WAG); Ihosy (fl. Jan.) Bosser 9180 (P); ibid., Ambalavao Road, Keraudren 294 (P); upper Menarahaka R., E. of Ihosy, Humbert 28543 (P, WAG); Andiamdampy Path, Horombe Mts., Morat 2592 (P); Ihosy-Betroka Road, S. of Horombe Mts. (fl. Feb.) Capuron S. F. 287 (P, WAG);


Рнот. 8. Nuxia verticillata: trunks with sucker shoots (Coode 27 Mar. 1974, phot. Coode).

Tulear, Grandidier s.n. (P); Analavelona-Tulear (fr. Nov.) Serv. For. 12138 (P, WAG); Belamoty, Tongobory, Serv. For. 9324 (P, WAG); Mangoky R. valley, NW. of Beroroha (fl. Oct.) Humbert 11348 (K, P); Ampandrandava (fl. Jan.) Herb. Jard. Bot. Tananarive 6001 (P); Ambatobi Forest, near Ampandrandava, Seyrig 57 (P); Maroakoho, W. of Tranoroa (fl. Jan.) Capuron S. F. 20659 (P, WAG); Analabe-Ambovombe (fr. Mar.) Serv. For. 14351 (P, WAG); Manavy, Ambovombe (fl. Dec.) Serv. For. 9585 (P); Ikonda R. valley, N. of Ambovombe (fl. Apr.) Decary 8871 (K, P); Manambolo R. valley, upper Mandrare R. basin (fi. Jan.) Humbert 6682 bis (P); ibid., near Beaka, Humbert 13690 (P, lectotype of N. tomentella var. meridionalis f. subdentata); ibid., near Isomono (fl. Dec.) Humbert 12877 (BM, C, G, K, P, PRE, S); SE. of Imonty, Mananara R. basin, tributary of Mandrare R. (fl. Jan.) Capuron S. F. 22453 (P); Behara Canton, Androy District (fl. Jan.) Rakotoniaina Res. Nat. 6225 (P, WAG); ibid., Imonty (fl. Feb.) Rakotoniaina Res. Nat. 6246 (P, WAG); Behara Canton, Amboasary District (fl. Oct.) Tsilizy Res. Nat. 8353 (P); Fort Dauphin, Scott Elliot, 2567 (K, P); Mandena-Fort-Dauphin, Serv. For. 7399 (P, WAG); Ranofotsy Bay, SW. of Fort-Dauphin (fl. Feb.) Humbert 29076 (P, WAG); ibid. (fl. Feb.) Capuron S. F. 11810 (P, WAG); Enaniliha Canton, Fort-Dauphin District (f. Dec.) Jaonamelo Res. Nat. 8575 (P, WAG); Imamou Province (not traced) Bojer s.n. (K, P); sin. loc., Baron 4406 (K, P), 6880 (K), 6884 (K); Commerson s.n. (G); Hodgkin \& Stansfield 172 (K).

Notes. The specimens from Madagascar cited in floral characters do not differ from those from continental Africa. Commerson's collection is in all details exactly like the type (Schimper 1714). Bojer's specimen is slightly more hairy than certain continental specimens, e.g. Adamson 42 from Malawi and Honoré 3716 from Kenya. The former two and the latter three specimens have about the same narrow leaves. Some Madagascan specimens have comparatively wider leaves by which they approach N.capitata. After an extensive analysis of the floral characters and comparison of the specimens cited the present author concluded that $N$.tomentella should be treated as a synonym of $N$.oppositifolia.
$N$.oppositifolia resembles $N$.capitata by the flowers and less so by the leaves. They can be distinguished as follows:

Leaves $2-3 \times$ as long as wide, cuneate at the base; petiole $6-15 \mathrm{~mm}$ long; flowers in cymules of 5-30, occasionally some solitary between the ultimate ramifications
N.capitata

Leaves (2-)4-8 $\times$ as long as wide, cuneate at the base or decurrent into the petiole; petiole $2-10 \mathrm{~mm}$ long; flowers solitary or in cymules of 3(-8)
N.oppositifolia
12. Nuxia pachyphylla Bak., Journ. Linn. Soc. 22: 506. 1887; P. Jovet, Not. Syst. 13: 104. 1947 and 14: 287. 1952; Bull. Hist. Nat. Toulouse 82: 13, pl. 4. 2. 1948; Durand \& Jackson, Ind. Kew. Suppl. 1:295. 1906 (as brachyphylla).

Fig. 11, p. 65; Map 8, p. 67
Type: Madagascar: sin. loc., Baron 4407 (K, lectotype; isotypes: BM, E, P). Homotypic synonym: Lachnopylis pachyphylla (Bak.) C.A. Smith, Kew Bull. 1930: 18. 1930.

Heterotypic synonyms: L.scytophylla C.A. Smith, Kew Bull. 1931: 39. 1931 (N.scytophylla Baker ex C.A. Smith, Kew Bull. 1930: 18. 1930, nomen). Type:


Fig. 11. Nuxia pachyphylla: 1. branch, $\frac{1}{2} \times ; 2-3$. leaves, $\frac{1}{2} \times$; 4. inflorescence, $\frac{1}{2} \times$; 5. flower, $4 \times ; 6$. opened corolla, $4 \times ; 7$. portion of calyx, $4 \times ; 8$. pistil, $4 \times ; 9$. fruiting calyx, $5 \times ; 10$. seed, $20 \times$; 11. hair, $40 \times(1,4-8$. Serv. For. $1441 ; 2,9-11$. Perrier de la Bâthie $4440 ; 3$. Perrier de la Bâthie 4504).

Madagascar: sin. loc., Baron 1326 (K, holotype; isotype: P, paratype of N.pachyphylla).
$N$. decaryi P. Jovet, 1.c. p. 105; 1.c. p. 13, pl. 4. 6. Type: Madagascar: between Vohemar and Ambilobe, Decary 14662 (P, holotype; isotype: K).
N.polycephala Boivin ex P. Jovet, 1.c. p. 107; 1.c. p. 13, pl. 4. 4. Type: Madagascar: Nosy Komba, Boivin 2100a (P, lectotype).

Shrub or tree, $2-25 \mathrm{~m}$ high. Petiole $3-3.5 \mathrm{~mm}$ long; blade pubescent to glabrous on both sides, $3.5-14 \times 1.5-6 \mathrm{~cm}$, mostly entire, occasionally some sinuate-dentate or serrate-dentate. Heads $10-18 \mathrm{~mm}$ in diam., with about $10-$ 30 flowers. Calyx 4-6 mm long; tube 2-4 $\times$ as long as the lobes; lobes $1-2$ mm long. Corolla white; tube inside with glandular hairs in upper three-quarters; lobes 2-3 $\times 1.2-2 \mathrm{~mm}$. Stamens: filaments $5-6 \mathrm{~mm}$ long. Pistil 7-11 mm long; ovary $2-2.5 \times 1.6-1.8 \times 1.2-1.5 \mathrm{~mm}$. Other characters as in $N$.sphaerocephala.

## Distribution: Madagascar.

Ecology: Light moist forest with mosses and lichens in mountains; alt. (400-)1200-2000 m.

Madagascar: Nosy Bé, Boivin 26 (P, paratype of N. polycephala); ibid., Pervillé anno 1853 (P, paratype of N. polycephala); Nosy Komba (fl. July) Boivin 2100a (P, lectotype of N. polycephala); ibid. (fl. July) Serv. For. 10440 (P, WAG); between Vohemar and Ambilobe (f. July) Decary 14662 (K, P, type of N. decaryi); Marovato Canton, Ambanja District (ff. Sept.) Res. Nat. 4266 (P); Tsaratanana Mts., Morat 2262 (P); ibid. (fl. Nov.) Capuron S. F. 24981 (P, WAG); near Andapa, Lokoho R. basin (fi. Nov.-Dec.) Humbert \& Capuron 21941 (P); N. of Maroambihy, Lokoho R. valley, Humbert 23425 p.p. ( P , other part is N. sphaerocephala); Manambolo R., N. of Antongil Bay (fl. Jan.) Capuron S. F. 8889 (P, WAG); Beanjada Mts. (bud, fr. Jan.) Capuron S. F. 8846 (P); Analamahitro Forest, between Bemarivo and Anjobony Rs. (fr. Aug.) Perrier de la Bâthie 4504 (P); Sainte Marie Island, Boivin 2 (BM, P, paratype of N. polycephala); Tampoketsa d'Ankazobe (fl. Feb.) Capuron S. F. 8426 (P, WAG); ibid., near Manankozo, Perrier de la Bâthie 10248 (P, WAG); Ambohitantely Forest (f. Oct.) Humbert 11069 (P); Ambohiby Mts. (fl. May) Capuron S. F. 29181 (P); Perinet, Serv. For. 12434 (P, WAG); Analamazaotra (fl. Dec.) Capuron S. F. 11537 (P, WAG); near Manarina, Moramanga District, Serv. For. 21872 (P); Tamatave District, Rakotoniaina Res. Nat. 3450 (P); Tampolo, Ampasina Canton, Fenerive District (fl. Feb.) Serv. For. 16542 (P, WAG); Tampolo-Fenerive (fi. Dec.) Serv. For. 12492 (P, WAG); Tampina-Ambila-Lemaito (fl. Dec.) Serv. For. 6471 (P); Itremo (f., fr. Sept.) Bosser 10009 (P); Ambatomenaloha Mts., near Itremo (fl., fr. Jan.) Capuron S. F. 11553 (P, WAG); Ambalavao District (fl. Aug.) Rakotoniaina Res. Nat. 11200 (P); Sendrisoa Canton, Ambalavao District, Razafindrakoto Res. Nat. 3095 (P); Ankaramena, Ambalavao, Serv. For. 1916 (P); Madiorano, Fort Carnot, Charlier Serv. For. 14648 (P); Isalo Mts., Humbert 2832 (G, P); ibid., between Anakondrareza and Ampandrabe Rs. (fl. Nov.) Léandri \& Saboureau 3926 (K, P, WAG); Isalo Mts., W. of Ranohira, Humbert 28634 (P, WAG), 29809 (P, WAG); ibid. (fr. Jan.) Capuron S. F. 11668 (P), (fl. Dec.) 20562 (P, WAG); Ranohira Canton, (fl. Nov.) Razafindrakoto Res. Nat. 11209 (P), 11213 (P); Andringitra Mts. (fl., fr. Sept.) Perrier de la Bâthie 4440 (BM, P); near Ivohibe R., Farafangana (fl. Nov.) Serv. For. 1441 (P); Antambohobe Canton, Ivohibe District (fi. June) Rakotoniaina Res. Nat. 10379 (P); Ivohibe Peak (f. Nov.) Humbert 3303 (P), 3304 (G, P); Ivakoany Mts. (fr. Dec.) Humbert 7004 (K, P, US), 12200 (P); sin. loc., Baron 1326 (K, P, paratype; type of Lachnopylis scytophylla), 3389 (K, P, paratype), 4056 (K, paratype), 4407 (BM, E, K, P, lectotype).


Map 8. Nuxia pachyphylla.


Рнот. 9. Nuxia verticillata: flowering branch (Cadet 4723, phot. Cadet).

Notes: Nuxia pachyphylla is closely allied to N.coriacea and N.sphaerocephala (q.v.).

After comparing the types of N.pachyphylla, N.decaryi, and N.polycephala and the other specimens cited the present author concluded that they all belong to a single species. There is absolutely no correlation between the number of ramifications of the inflorescenses and the sizes of the heads. The latter especially became more evident when the specimens collected after publication of Jovet's papers on Nuxia were included in the study.
13. Nuxia pseudodentata Gilg, Notizbl. Bot. Gart. Berlin 1: 74. 1895; P. Jovet, Notul. Syst. 13: 97. 1947; Bull. Hist. Nat. Toulouse 82: 9. 1948.

Fig. 12, p. 69; Map 5, p. 41
Type: Grande Comore: Me Birei (?) Forest, Humblot 44 (holotype not seen, destroyed in B; lectotype: P; other isotypes seen: BM, K, LE, W).

Heterotypic synonym: N.neurophylla Gilg, l.c. p. 75. Type: Anjouan: Humblot 1569 (holotype not seen, destroyed in B; lectotype: P; other isotypes seen: BM, LE, P).

Shrub or small tree, 4-12 m high; trunk $25-30 \mathrm{~cm}$ in diam. or less; bark whitish. Branches pale grey-brown, with finely and longitudinally fissured bark which peels slightly off, with somewhat raised leaf cushions; branchlets minutely pubescent or glabrous, sulcate. Leaves decussate, distinctly petiolate; petiole $10-25 \mathrm{~mm}$ long, minutely pubescent or glabrous; blade coriaceous or subcoriaceous when dry, elliptic, $2-3(-3.3) \times$ as long as wide, $4-13 \times 1.2-5 \mathrm{~cm}$, acute, obtuse, or less often acuminate at the apex, cuneate at the base or less often decurrent into the petiole, crenate-serrate or entire, glabrous on both sides or minutely pubescent on the main veins beneath; venation rather conspicuous. Inflorescence large, lax, except for the last ramifications, 4.5-13 $\times$ $5-18 \mathrm{~cm}, 3-6 \times$ branched. Branches minutely pubescent or glabrous, dichotomously branched. Lower bracts leafy; the others very small, triangular or nearly so. Flowers sessile in clusters of 3-7, subtended by several minute bracts which are about $0.5-1 \mathrm{~mm}$ long and triangular. Calyx $3-3.8 \mathrm{~mm}$ long, pubescent with glandular hairs outside, inside appressed-pubescent; tube about 3-6 $\times$ as long as the lobes which are equal or unequal, triangular or broadly triangular, often wider than long, $0.5-1.2 \times 0.8-1.2 \mathrm{~mm}$, acute, entire; once or twice two lobes coherent or partly united in a single flower (only in some flowers in every inflorescence). Corolla white, outside with few glandular hairs at the apex of the tube and at the base of the lobes, inside with a ring of recurved hairs in the throat and mostly pubescent with glandular hairs in the tube (extreme base glabrous); tube slightly shorter than or sometimes as long as the calyx, lobes oblong, $1.5-2.2 \times$ as long as wide, $1.5-2 \times 0.9-1.2 \mathrm{~mm}$, rounded at the apex. Stamens: filaments not or obscurely kneed and pilose at the base, after the pollen is shed $2-3 \mathrm{~mm}$ long; anthers about $0.6-0.7 \mathrm{~mm}$ long. Pistil $4-6.5$ mm long; ovary subglobose, slightly or conspicuously laterally compressed,


Fig. 12. Nuxia pseudodentata: 1. inflorescence, $\frac{1}{2} \times ; 2$. flower, $5 \times$; 3 . opened corolla, $7 \times$; 4. opened calyx inside, $7 \times ; 5$. pistil, $7 \times ; 6$ fruit, $7 \times ; 7$. longitudinal section of fruit, $7 \times(1-4$. Pobéguin 87; 5-7. Serv. For. 16650).
$1-1.2 \times 0.8-1.1 \times 0.7-1 \mathrm{~mm}$, appressed-pubescent at the apex only, otherwise glabrous; style glabrous, $2.8-5.4 \mathrm{~mm}$ long, stigma small, capitate. Capsule about as long as the persisting calyx which is torn at one side, $2.2 \times 1.6 \times 1.6$ mm (only seen in a calyx of 3 mm ), apically pubescent.

## Distribution: Comoro Islands.

Ecology: Montane forest; alt. about 700 m .
Vernacular names: 'Moiha', 'Moaha', 'Moanga', 'Moinga', 'Moina' (Mahorais).

Comoro Islands: Humblot 63 (P), 341 (BM, K, P); Serv. For. 12321 (P). Grand Comore: Ivembeni-Diboini Road (fl. May) Bosser 17986 (P); near Kouhani (fl. Nov.) Bernardi 11615 (G); Boboni (fl. Aug.) Serv. For. 5431 (P); W. of Kombani, Karthala Mts., Canaby 1 (BM, K, P, US); Kombani Pass, Serv. For. 11214 (P); Bejamoudou Forest (fr. Oct.) Serv. For. 5997 (P); Me Birei (?) Forest (fi. Apr.) Humblot 44 (BM, K, LE, P, W, type); sin. loc. (fl.) Boivin May 1850 (P). Mohely: Boivin anno 1854 (BM). Anjouan: Bougueni, Sima Canton (fr. Mar.) Serv. For. 16650 (K, P, WAG); Moya Mts., Rakotozafy 1139 bis (P); Dziani, Lavanchie 8 (P), 17 (P); sin. loc. (f.) Boivin May 1850 (P); Humblot 1569 (BM, LE, P, type of N. neurophylla). Mayotte: Inaby (fl. June) Boivin 3254 (G, P, W); Tsinikoura, Serv. For. 16767 (P); Dzoumogni, Pobéguin 87 (P, WAG); Choungui, Bandeli Canton, Serv. For. 17991 (P); sin. loc. (ft. July) Waterlot 870 (P).

Notes: Nuxia pseudodentata and N.floribunda are so similar in habit, leaves inflorescence, and flowers, that they are easily confused. The two species differ from each other as follows:

Leaves ternate or less often opposite or decussate; flowers mostly pedicellate, solitary or in clusters of 3 ; ovary glabrous; corolla inside with a ring of slightly recurved rather thick hairs at the base of the lobes; filaments kneed and there pilose-pubescent and with glandular hairs at the extreme base which is situated within the zone of glandular hairs of the innerside of the corolla; capsule mostly conspicuously longer than the calyx, glabrous. Continental East and South Africa . . . . . . . . . . . N.floribunda
Leaves decussate; flowers sessile, in clusters of 3-7; ovary at the apex appres-sed-pubescent; corolla inside with a ring of clearly recurved hairs in the throat; filaments not or obscurely kneed and pilose at the base; capsule about as long as the calyx, appressed-pubescent at the apex. Comoro Islands N. pseudodentata

Furthermore N.pseudodentata resembles very much $N$.ambrensis which has ternate or opposite, more obtuse leaves.
14. Nuxia sphaerocephala (Bak.) Bak., Journ. Linn. Soc. 22: 505. 1887; P. Jovet, Not. Syst. 13: 106. 1947 and 14: 287. 1952; Bull. Hist. Nat. Toulouse 82: 13, pl. 4.3. 1948.

Fig. 13, p. 71; Map 9, p. 73
Basionym: Buddleja sphaerocephala Bak. in op. cit. $21: 425.1885$ (as Buddleia). Type: Central Madagascar: sin. loc., Baron 3111 (K, lectotype; isotypes:


Fig. 13. Nuxia sphaerocephala: 1. branch, $\frac{1}{2} \times ; 2$. branch, $\frac{1}{4} \times$; 3. leaf, $\frac{1}{2} \times ; 4$. flower, $8 \times$;
5. opened corolla, $8 \times ; 6$. pistil with corolla base, $8 \times ; 7$. fruiting calyx, $8 \times ; 8$. seed, $20 \times$ (1, 4-6. Decary 5682; 2. Perrjer de la Bâthie 2069; 3. Baron 3738; 7-8. Schlieben 8084).

E, P). Homotypic synonym: Lachnopylis sphaerocephala (Bak.) C.A. Smith, Kew Bull. 1930: 18. 1930.

Heterotypic synonyms: N.terminalioides Bak. in op. cit. 22: 505. 1887; P. Jovet, l.c. p. 104 and l.c. p. 287; 1.c. p. 13, pl. 4.1. Type: Madagascar: E. of Imerina, Baron 3629 (K, holotype; isotype: P). Homotypic synonym: Lachnopylis terminalioides (Bak.) C.A. Smith, l.c.
N.sambiranensis P. Jovet, 1.c. p. 106 and l.c. p. 286; 1.c. p. 13, pl. 4. 5. Type: Madagascar: Upper Sambirano R., Perrier de la Bâthie 2069 (P, lectotype).
N.humberti P. Jovet, Not. Syst. 14: 285, pl. 8. 1952. Type: Madagascar: Lokoho R. valley, N. of Naroambihy, Humbert 23425 p.p., fruits only (P, holotype; the leaves are of N.pachyphylla).

Shrub or tree, 2-20 m high, evergreen. Trunk distinctly fluted. Branches with dark grey bark, somewhat splitting and peeling off in long scales, often blackened by bushfire, with raised leaf-cushions; branchlets minutely to manifestly pubescent, often with stellate hairs, glabrescent, with 6 or 8 raised lines. Leaves ternate or 4-nate, petiolate; petiole minutely to manifestly pubescent, $1-3 \mathrm{~cm}$ long; blade thickly coriaceous when dry, oblong or narrowly obovate, $2-4 \times$ as long as wide, $3.5-18 \times 1.5-7 \mathrm{~cm}$, obtuse, acute, or less often rounded or acuminate at the apex, cuneate or occasionally nearly rounded at the base, minutely dentate to distinctly serrate-dentate, glabrous or pubescent above, more or less distinctly pubescent beneath, often with stellate hairs; 6-12 pairs of secondary veins; tertiary venation inconspicuous. Inflorescence repeatedly dichotomously branched if more than once branched, then a $1-6 \times$ branched thyrsus of globose heads placed at the apices of each ramification. Peduncle and branches pubescent like branchlets, long. Lower bracts leafy, the others small, linear. Heads $5-18 \mathrm{~mm}$ in diam., with many (mostly more than 50 ) flowers. Flowers subtended by some linear bracts which are often slightly longer than the calyx, 3-6 mm long, pubescent beneath, and glabrous above. Calyx 2-4 mm long, pubescent and often in upper half only pilose with glandular and often also ordinary hairs outside, inside sericeous; tube usually covered by the neighbouring flowers, 3-4 $\times$ as long as the lobes, which are subequal, triangular, about as long as wide, $0.5-1.2 \mathrm{~mm}$ long, acute, entire; sometimes 2 lobes coherent at the apex or one-third connate at the base, occasionnally the lobes coherent at the apex in two opposite pairs (flowers with coherent and/or connate calyx lobes always accompanied by flowers with not coherent or not connate calyx lobes). Corolla creamy, outside with minute glandular hairs at the base of the lobes and apex of tube, inside pilose in the throat and with minute glandular hairs in the tube for its upper half or two-thirds (base of tube always glabrous); tube as long as the calyx; lobes oblong, $1.5-2 \times$ as long as wide, obtuse at the apex. Stamens: filaments glabrous, long, after the pollen is shed $1.5-2.5 \mathrm{~mm}$ long; anthers about 1 mm long. Pistil $4-6 \mathrm{~mm}$ long; ovary obcordoid, slightly laterally compressed, $1-2 \times 0.7-1.2 \times 0.5-1 \mathrm{~mm}$, appressedpubescent; style glabrous, $3-4 \mathrm{~mm}$ long; stigma small, capitate or obscurely bilobed. Capsule about as long as the calyx, appressed-pubescent at least in


Map 9. - Nuxia sphaerocephala, 4 N. verticillata.
the upper half, lower half usually subglabrous.
Distribution: Madagascar.
Ecology: Light moist forest with mosses and lichens in the mountains; alt. $500-1500 \mathrm{~m}$.

Madagascar: Tsaratanana-Ambanja Road (fl. June) Serv. For. 7444 (P, WAG); Bema-nasy-Ambanja (fl. Oct.) Serv. For. 3896 (P); Marovato Canton, Ambanja District, Alphonse Res. Nat. 8669 (P); upper Sambirano R. (fl. Dec.-Jan.) Perrier de la Bâthie 2069 (P, lectotype of N. sambiranensis), 4592 (P), 15215 (P, US), 15239 (BM, P); Bekolosy Mts. (fl. Nov.) Capuron S. F. 11440 (P); Besanatribe Forest, upper Sambirano R. basin (f. Nov.-Dec.) Humbert 18697 (K, P); Mt. Beondroka, Lokoho R. valley (dry fr. Mar.) Humbert 23425 p.p. (P, type of $N$. humberti; other part is N. pachyphylla); between Mandritsara and Andilamena (fl., fr. Nov.) Humbert 17998 (P); Ambatondrazaka, Serv. For. 2551 (P); Andromba, Ambatondrazaka District (fi. Nov.) Duran Res. Nat. 2336 (P, WAG); Andranamalara, Botoalina Res. Nat. 3178 (P); Manaka E. Andavaka (fl. Dec.) Rakotovao Res. Nat. 10569 (P); Ambehitresena, Ambatondrazaka District, Cours 506 (G, P); Alaotra Lake, Herb. Inst. Scie. Madag. 27834 (P); ibid., Morarano (fr. Dec.) Bosser 7493 (P), 7494 (P); Mt. Ankaroka, SE. of Alaotra Lake, Humbert \& Cours 17464 (P), 17516 (P); Belambo, Andilanatoby Canton, Harmelin Serv. For. 12-R-44 (P); Manankazo, Ankazobe District, Serv. For. 16827 (P); Ambohitantely, NNE. of Ankazobe (fl. Oct.) Bernardi 11084 (BR, G, NY); Ambohitantely Forest, Tampoketsa d'Ankazobe (fl., fr. Oct.) Capuron S. F. 27815 (P, WAG); Andreba, N. of Anjozorobe (fr. Nov.) Bernardi 11126 (G); Mandanivatsy (fr.) Acad. Malgache Nov. 1905 (P); Analabe Forest, W. of Ambohidray (fl. Oct.) Capuron S. F. 28365 (P, WAG); Angavokely, 30 km E. of Tananarive (fr. Jan.) Capuron S. F. 117 (P); Mandraka (fl., fr. Aug.) d'Alleizette 7014 (LY, P); Antsahambava-Manjakandriana, Serv. For. 15878 (P); Moramanga (f.) K. Afzelius 18 Sept. 1912 (K, S, UPS); ibid., Meller 10 Aug. 1862 (K); ibid. (fr. Nov.) Schlieben 8084 (BM, BR, G, K, M, PRE, Z); Analamazaotra-Perinet, Serv. For. 4405 (P); Antsahatsaka-Beravina-Perinet (fl. Aug.) Serv. For. 4364 (P); W. of Antanandava, km 45 Moramanga-

Anosibe Road (fl. Nov.) Capuron S. F. 28468 (P, WAG); Anosibe, S. of Moramanga (fr. Sept.) Decary 18364 (P); Anosibe Canton (fr. Nov.) Serv. For. 4867 (P); ibid., Ankazomanitra (fl. Nov.) Serv. For. 26824 (P); between Sandrangato and Anosibe (fr. Nov.) Léandri \& Capuron 1691 (P, WAG); Samalahaza, Dequaire 27834 (P); Mangoro R. (fi. Aug.) Perrier de la Bâthie 3899 (P); Betamba, Ifanadiana District, Serv. For. 16121 (P); Sakaleony R. valley, Decary 14350 (P); Sahanana R., Sakaleony R. (fl. Nov.) Perrier de la Bâthie 2109 (P); Ambohimiera, Ifanadiana District, Serv. For. 9970 (P, WAG); Sambalabe-Fandrandava-Fiandrantsoa (fl. Oct.) Serv. For. 13521 (P); S. of Tasararivotra, Mananjary District (f. Nov.) Serv. For. 19302 (P); Sihanaka (fr. Aug.) Jard. Bot. Tananarive 1793 (P); Ambodivanana-Folongoi-na-Fort Carnot (fl. Oct.) Serv. For. 7120 (P); Fort Carnot, Farafangana (fl. Oct.) Decary 5628 (BM, P, PRE), 5682 (P, S, US), 5746 (C, K, P); sin. loc., Baron 2239 (BM, K), 3111 (E, K, P, lectotype), 3629 (K, P, type of $N$. terminalioides), 3738 (K, P); Campenon s.n. (P); Homolle 2030 (P); Humblot 576 (K, P); Louvel 201 (P).

Notes. After comparing the types of N.sphaerocephala, N.terminalioides, and N.sambiranensis and the other specimens cited the present author concluded that they belong to a single species. Jovet distinguished between them by the ramification of the inflorescence and the size of the heads and flowers. The type of $N$.sphaerocephala has once branched inflorescences with heads $10-11 \mathrm{~mm}$ in diam. and calyces $3.5-4 \mathrm{~mm}$ long. The type of $N$.sambiranensis has $5 \times$ branched inflorescences with heads $5-7 \mathrm{~mm}$ in diam. and calyces $2-2.2 \mathrm{~mm}$ long. A great many of the other specimens examined are intermediate in these characters. Bosser 7494: infl. 1-2 $\times$ branched, heads $6-10 \mathrm{~mm}$ in diam., calyx $2.5-$ 3 mm long; Serv. For. 13521 : infl. $2-3 \times$ branched, heads $7-10 \mathrm{~mm}$ in diam., calyx $3.5-4 \mathrm{~mm}$ long like the type of $N$.terminalioides. Humbert 17998: infl. $1-2 \times$ branched, heads $8-14 \mathrm{~mm}$ in diam., calyx 3.5 mm long; Perrier de la Bâthie 4592: infl. 3-4 $\times$ branched, heads 5-6 mm in diam., calyx $2-2.2 \mathrm{~mm}$ long; Humbert 18967: infl. 4-5 $\times$ branched, heads $5-8 \mathrm{~mm}$ in diam., calyx $2-2.2 \mathrm{~mm}$ long; Serv. For. 3896: infl. $4-5 \times$ branched, heads $5-7 \mathrm{~mm}$ in diam., calyx $2.5-3 \mathrm{~mm}$ long. The fruit is always about as long as the calyx.
N.sphaerocephala is closely allied to N.pachyphylla by the habit, leaves, inflorescences, flowers, and fruits. They differ as follows:

Calyx tube visible in dried inflorescences; heads several-flowered, not strictly globose by being rather lax; corolla tube inside for three-quarters covered by glandular hairs in a zone with a wavy lower edge; leaves mostly entire, occasionally some sinuate-dentate or serrate-dentate . . . . N.pachyphylla
Calyx tube not visible in dried inflorescences, covered by the neighbouring flowers; heads globose like those of Nauclea spp.; corolla tube inside for onehalf to two-thirds covered by glandular hairs in a zone with a straight lower edge; leaves minutely dentate to distinctly serrate-dentate .N. sphaerocephala
15. Nuxia verticillata Lam., Illustr. 1: 295, t. 71. 1791; Poiret in Lamarck, Enc. 4: 506.1797 (excl. syn. Manabea); Persoon, Syn. 1: 132. 1805; Jaume St. Hilaire, Expos. 2: 344. 1805; Roemer \& Schultes, Syst. Veg. 3: 103. 1818; Sprengel, Syst. 1: 421. 1825; Breon, Cat. Pl. Cult. Bourbon 28. 1825; Bentham in Hooker, Comp. Bot. Mag. 2: 59. 1836 and in De Candolle, Prod. 10: 434. 1846; Walpers, Rep. 3: 331. 1845; Baker, Fl. Maurit. \& Seych. 235. 1877; Cordemoy,


Pнot. 10. Nuxia verticillata: flowers (Cadet 4723, phot. Cadet).

Fl. Réunion 466. 1895; C. A. Smith, Kew Bull. 1930: 14. 1930; P. Jovet, Bull. Hist. Nat. Toulouse 82: 1. 1948.

Fig. 14, p. 77; Phot. 7, p. 61; 8, p. 63; 9, p. 67; 10, p. 75; Map 9, p. 73
Type: Mauritius or Réunion: sin. loc., Commerson s.n. (P-LA, holotype). Homotypic synonym: Aegiphila Nuxia Willd., Sp. Pl. 1: 616. 1797.

Tree or less often shrub 4-25 m high. Trunk $10-80 \mathrm{~cm}$ in diam., fluted, often branched from low down; bark grey, rather soft, flaking off in vertical elongate pieces, inner layers pale fawn or orange-brownish, not detaching; inner bark creamy; wood pale orange. Branches pale grey-brown, with finely fissured bark, with slightly raised leaf cushions; branchlets minutely pubescent with glandular hairs or glabrous, often sulcate when dry. Leaves ternate or quaternate, often rather long-petiolate; petiole $0.5-3 \mathrm{~cm}$ long, minutely pubescent or glabrous; blade coriaceous when dry, ovate, elliptic, or narrowly elliptic, 1.5-3 $\times$ as long as wide, $5-12 \times 1.7-7.5 \mathrm{~cm}$ (or sometimes some smaller), obtuse or sometimes
rounded at the apex, cuneate or rounded at the base or decurrent into the petiole, entire; venation rather conspicuous, slightly prominent on both sides. Inflorescence paniculate, large, lax, $11-25 \times 7-25 \mathrm{~cm}, 3-4 \times$ branched; first ramifications ternate or quaternate, other alternate. Peduncle and its branches with the same indumentum as the branchlets. Flowers in clusters apically and laterally on the branches, sessile or shortly pedicellate, subtended by few small bracts. Bracts triangular, about 1 mm long, acute. Calyx campanulate, 2.5-4 mm long, outside pubescent with glandular hairs, inside glabrous or with few small appressed hairs on the lobes; tube 2.5-3.3 $\times$ as long as the lobes, which are equal or subequal, triangular, about as long as wide, $0.8-1.5 \mathrm{~mm}$ long, acute, entire, and not coherent nor united. Corolla white, mauve, or white with mauve lobes, outside glabrous, inside pilose in the throat with recurved hairs and pubescent in the tube with glandular hairs except for the glabrous base; tube cylindrical or slightly ventricose above the middle and then contracted at the throat; slightly shorter to conspicuously longer than the calyx, $2.3-6 \mathrm{~mm}$ long; lobes oblong to triangular, $1-1.3 \times$ as long as wide, $1-1.3 \times 0.8-1.2 \mathrm{~mm}$, obtuse or rounded at the apex. Stamens: filaments glabrous or with a few recurved hairs at the extreme base, after the pollen is shed $1-1.2(-1.8) \mathrm{mm}$ long; anthers about $0.5-0.6 \mathrm{~mm}$ long. Pistil about as long as the corolla tube, 2-5 mm long; ovary subglobose, mostly slightly laterally compressed, $1.2-2 \times 1-$ $1.6 \times 0.8-1.2 \mathrm{~mm}$, appressed-pubescent, only at the extreme base glabrous; style included, only exserted from the calyx when the corolla is shed, $1-3 \mathrm{~mm}$ long; stigma small, capitate. Capsule slightly to conspicuously longer than the calyx, 3.5-4 $\times 2.4-2.5 \times 2.2 \mathrm{~mm}$, obovoid to ellipsoid, slightly laterally compressed, appressed-pubescent, subtruncate to emarginate at the apex. Seeds longitudinally striate.

Distribution: Common on Mascarene Islands: Réunion and Mauritius.
Ecology: Montane forest; altitude 700-2000 m.
Vernacular name: ‘Bois maigre’.
Mascarene Islands: Mauritius or Réunion: Commerson s.n. (P-LA, holotype). Réunion: St. Dénis R., Boivin 9 Apr. 1847 (P); Brulé St. Dénis (fl.) Pierre Rivière Feb. 1957 (P); ibid. (fl. May) Bosser 11742 (MAU, P); Dos d'Ane (fl. Dec.) Friedmann 863 (P), (fl. May) 1226 (P); Plaine d’Affouches (fl. Sept.) Cadet 3776 (K); ibid. (fl. Mar.) Coode 4602 (WAG), 27 Mar. 1974 (WAG); ibid. (fl.) Staub 31 May 1964 (MAU); Hauts de Petite France (fl. May) Cadet 1369 (K); Plaine de Chicots (fl.) Lalle (?) Dec. 1956 (P); Rempart de Belouve, Bosser 9359 (P); Plaine de Belouve, Lam \& Meeuse 5248 (L, P); Hell-Bourg (fl. Mar.) de l'Isle 116 (GH, K, P); above Grand Matarum, Cirque de Cilaos, Coode 4569 (WAG); Joseph Cilaos, Lebon \& Nativel s.n. (P); between Cilaos and Col du Taibit, Cirque de Cilaos, Coode 4554 (WAG); Forêt de Bébour (fl. June) Cadet 4723 (WAG); Piton Hyacinthe (fl.) Staub 28 May 1964 (MAU); Col de Belle, Friedmann 471 (P); ibid. herb. Dursay (?), rec. from Rousson in Jan. 1898 (P); near Plaine des Palmistes, Vaughan 11 Nov. 1952 (MAU); St. Philippe, Mare-Longue, Maillot 4 (P); near Duljot (?) (fl.) Commerson May 1771 (P-JU); sin. loc., Balfour rec. Oct. 1875 (E, K); Boivin 1263 (G, LE, P, UPS); Boivin (?) 133 in herb. Fischer (LE), 398 (L, LE); Bréon s.n. (P); Commerson anno 1768 (FI, P); herb. de Cordemoy s.n. (P); Delessert anno 1836 (G, W); herb. Desvaux 128 (P); Herb. Du Petit Thouars s.n. (L, P); herb. Gaudichaud July 1837 (P); Gruyot anno 1834 (BREM); Potier s.n. (P); herb. Richard 148 (P), s.n. (K); herb. de Ventenat s.n. (G).


Fig. 14. Nuxia verticillata: 1. branch, $\frac{1}{2} \times ; 2-3$. flower buds, $6 \times$; 4. flower, $6 \times$; 5. pistil with corolla base, $12 \times ; 6$. stamen, $12 \times ; 7$. opened corolia, $9 \times ; 8$. fruiting calyx, $8 \times ; 9$. seed, $25 \times ; 10-11$. leaves, $\frac{1}{2} \times$ (1. de l'Isle 116; 2. Sieber $85 ; 3-7,10$. H. H. Johnston 3 June 1889; 8-9. herb. de Ventenat s.n.; 11. Néraud s.n.).

Mauritius: Pouce Mt. (fl.) Ayres May 1860 (GH); ibid., Boivin Oct. 1849 (P); ibid., Bouton anno 1831 (CGE, K, P); ibid. (fl.) Victor \& Guého 11 June 1962 (MAU); ibid. (fl.) Vinson 30 June 1945 (MAU); Moka (fl.) Bijoux Nov. 1923 (MAU); Kanaka, Delord 27 June 1910 (MAU); Parc aux Cerfs, For. Dept. s.n. (FHO); Curepipe, Bijoux anno 1907 (FHO, L); ibid. (fl. and fr.) H. H. Johnston 3 June and 10 Oct. 1889 (E); path from Plateau Colophane down Black R. gorges (fr.) Julien 3 Aug. 1971 (MAU); sin. loc., Aublet s.n. (BM, P-JU); Ayres 28 July 1860 (MO); Belanger s.n. (W); Blackburn rec. 17 July 1863 (GH, K, NY); Boivin anno 1854 (P); Bojer anno 1830 (K, W); herb. Brown s.n. (K, P); herb. Cambessèdes s.n. (MPU); Chapelier s.n. (MPU); Commerson s.n. (BM, G, K, P, W, isotypes (?)), Aug. 1769 (P); Delessert anno 1822 (G); herb. Desvaux s.n. (P); Dice s.n. (CGE); Grey anno 1858 (K); Hardwick 57 (BM, G); herb. Horn. s.n. $(=$ seq.?) (C); Horneman 837 (LE); Martin s.n. (G); Néraud s.n. (G); herb. Pamplemousses Jan. 1912 (MAU); herb. Richard s.n. (P); Rochecouste 286 (MAU); herb. Rottler s.n. (K); Selfair s.n. (NY); Sieber 85 (HAL, M, MO, OXF), II 366 (E, G, HAL, L, P); Vesco anno 1850 (P); M. Webb anno 1838 (G).

## Excluded species

N.brachyscypha Bak., Journ. Linn. Soc. 25: 334. 1890. = Cassinopsis madagascariensis Baill., Icacinaceae (P. Jovet, Notul. Syst. 9: 88-93. 1940).
N.corrugata Benth. in Hooker, Comp. Bot. Mag. 2: 60. 1836. = Buddleja corrugata (Benth.) Phillips $(1946)=$ B.loricata Leeuwenberg, Acta Bot. Neerl. 24: 83. 1975, not B. corrugata Jones (1933).
N.dysophylla Benth., l.c. $=$ Buddleja dysophylla (Benth.) Radlk.
N.elata (Swartz) Pers., Syn. 1: 132. 1805. = Aegiphila elata Swartz, Verbenaceae.
N. lobulata Benth., l.c. p. 59. = Buddleja glomerata WendI. f.
N. saligna (Willd.) Benth., l.c. p. $59 .=$ Buddleja saligna Willd.
N.sphaerocalyx Bak. ex P. Jovet, Not. Syst. 13: 108. 1947; Bull. Hist. Nat.

Toulouse 82: 18. 1948. =- Buddleja sphaerocalyx Bak.

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Rondeletia L. 1
Rubiaceae 1
Sanango Bunting et Duke 2
Scrophulariaceae 1, 2
Solanaceae 2
Sphaerocephalae C. A. Smith 5
Strychnos L.
madagascariensis Poir. 35
Verbenaceae 1


[^0]:    Zaïre: Kivu: R. Lume, Osmaston 2066 (BM); Lusilube R., Ruwenzori (fl. Sept.) J. de Wilde 479 (BR, WAG, Z); Mt. Kasongolere (fl. Aug.) Heine 393 (BR); Mweso (fr. Aug.) Gutzwiller 1954 (BR, WAG); Nat. Albert Park, Donis 3936 (BR, WAG); Nyamulagira Vulcano (fr. Jan.) Germain 1425 (BR, WAG); between Nyamulagira and Gitebe (fl. Feb.) Germain 3527 (BR, WAG); Mt. Nyamunone, A. Léonard 3289 (BR, WAG); km 44 BukavuWalikale Road (bud, fr. Apr.) Pierlot 2858 (BR, WAG); Musisi R. swamp, km 23 KavumuWalikale Road, Pierlot 2046 (BM, BR); Mt. Kahuzi (fl. May, fr. July) Hendrickx 211 (BR), 3232 (BR, EA, PRE); ibid., A. Léonard 4820 (BR, WAG); ibid. (fi. June) Michelson 7 (BR); Nyamunyunie (fl. Oct.) Pierlot 431 (BR, M, PRE); near Fendula (fl. June) Christiaensen 2294 (BR); ibid., Scaetta 681 (BR, WAG), 1422 (BR, WAG); Mt. Biéga (fr. Jan.) Hendrickx 3854 (BR, EA); Kabare-Nakalonge Road (fi. July) Tondeur 110 (BR); Mushwere (fi. June) Lebrun 5529 (BM, BR); Kisheke R., Liégeois 172 (BR); Ndolere, A. Léonard 3674 (BR, WAG, Z); km 75 Bukavu-Kamituga Road (fr. May) Gilbert Difor 2404 (BR); Kalama Road Kamituga (fr. Sept.) Hendrickx 4172 (BR, EA); Mulenge, Michelson 623 (BR).

    Rwanda: Cyangugu Territory (fr. Aug.) Michel 5582 (BR); near Uwinka (fr. Sept.) Troupin 2656 (BR), 9859 (BR, EA), (fl. June) 10428 (BR, EA), 11983 (BR), (fl. May) 12263 (BR), (fr. July) 12437 (BR); Rutovu, Reynders 127 (BR).

[^1]:    Saoudi Arabia: Thoqaif Highland (fr. Dec.) Vesey-FitzGerald MEALU 16568 (BM, WAG); Bani Khatham (fl.) Thesinger 12 June 1946 (BM); Alaya (fl. June) Popov 72/167 (BM), 72/178 (BM, WAG); Abha S., Hedjaz (fl. May) Khattab 622 (BM).

    Yemen: Okeber, Gebel Abelhan, Schweinfurth 831 (G); Uossil (?), Schweinfurth 1331 (G, K, LE, P).

    Zaïre: Katanga: Upemba Nat. Park, Ganza (fi. June) W. Adam in herb. de Witte 6758 (BR, EA, SRGH, WAG); Kolwezi-Luena Road (fl. Dec.) Schmitz 5782 (BR); Lubudi (bud, fr. Aug.) Lukesa 27 (BR); Lufira R. (fl.) Herb. Brux. 3 Sept. 1893 (BR).

