

CENSUS OF MYRISTICA (MYRISTICACEAE) IN NEW GUINEA ANNO 1994

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SUMMARY

In this paper an account is given of all names in the genus *Myristica* Gronov. for New Guinea, including 71 new species, subspecies or varieties and 4 new names either by new combination or new rank. Sinclair (1968) accepted 40 species names with 7 varieties, Foreman (1974, 1978) admitted 45 names (38 species and 8 varieties). In the present census I have 95 species and 31 taxa of infra-specific rank, reflecting a more refined species definition as well as the intensified field collecting of the last decades. A key is given, based on male and female flowering and fruiting specimens.

INTRODUCTION

Since the monographic treatment of *Myristica* by Sinclair (1968) and the family treatment of Myristicaceae (excluding *Horsfieldia*) for New Guinea by Foreman (1978) the genus *Myristica* was among the best known in that area. With the preparation of the family Myristicaceae for Flora Malesiana, however, a part of the recent collections of *Myristica* could not be placed satisfactorily, and closer study made it clear that – with the use of some additional character criterions – quite a number of new species had to be distinguished. The date mentioned in the title refers to the supposition that several more new species may be discovered when still more material from undercollected areas becomes available.

Among the various characters valuable for species delimitation, also to be used in keys to the species, are the following:

Vegetative characters:

- 1) The size class of the leafy fertile twig, i.e. twig slender, diameter towards the top 1–2 mm, with leaves 15 cm long or less, versus twig 3–5 mm diameter or more, and leaves larger.
- 2) Shape of apical portion of twigs, namely whether (sub)terete, angular, ridged, or winged, and the drying colour of the twigs.
- 3) The specific occurrence of myrmecophily, i.e. the presence or absence of perforated ant-swollings in the twigs.
- 4) The nature of the indumentum of the sterile terminal leaf bud, either with hairs very short, 0.1–0.2 mm long or less, or, by contrast, (much) longer.
- 5) The texture of the leaves and the drying colour (irrespective of whether the material was treated with alcohol or not before drying), and number, visibility, and other features of lateral nerves and tertiary veins.

- 6) Whether scattered non-traumatic dark brown dots are present or absent on the lower leaf surface [similarly as used with good results in *Knema* (De Wilde, 1979) and *Horsfieldia* (De Wilde, 1984, 1985, 1986)].
- 7) Whether the lower leaf surface is distinctly papillose, not papillose, or papillose but not readily recognized as such.
- 8) The absence or presence of tomentum on the lower leaf surface, and the nature of the tomentum.

Generative characters:

- 9) *Inflorescences*: All sorts of specific features, but in the first place the distinction between the two general classes of inflorescences, viz. that of section *Fatua* (see Sinclair, 1968: 128), a short, woody, scar-covered, persistent tubercle, simple or forked, without or with only a short, smooth peduncle, similar to the inflorescences as found in the genus *Knema*, versus that of sect. *Myristica*, generally paniculate, mostly of larger size, of short duration, and always with a distinct, smooth, sometimes flattened peduncle.

In several cases the inflorescences are of a rather intermediary form, with a more or less conspicuous peduncle ending in simple, forked, or branched woody scar-covered portions, with the flowers in clusters at the ends; such inflorescences can be regarded as reduced forms derived from the paniculate ones, and are regarded in species descriptions and in the keys to the species as 'peduncled'. For an explanation of the morphology of the inflorescences in *Myristica*, see De Wilde (1992).

The presence of a peduncle is best seen in male inflorescences, but it is also quite apparent and specific in female inflorescences and infructescences.

- 10) Characters of the *flowers*, particularly male flowers: the shape and size of the mature male perianth in bud, the length of the perianth lobes in proportion to the length of the whole perianth, the highly distinctive qualities of the androecium, and various other peculiarities as hairiness, the exact position of the bracteole on the pedicel, whether the bracteole is persistent or caducous, etc.
- 11) Characters taken from the *fruit*: its size, shape, thickness of the (dry) pericarp, and characteristics of the indumentum.

The alphabetically arranged list of taxa presented here accounts for the names of the genus *Myristica* in New Guinea as accepted by Sinclair (1968) and by Foreman (1978), with in addition the new species here proposed and described, as well as new combinations pertaining to taxa in that area, regarded by me necessary for the forthcoming treatment in Flora Malesiana. For convenience's sake reference is made to only the page number in Sinclair (1968) and Foreman (1974, 1978) (see the References on page 344), and in case I hold a different opinion or give a different circumscription of the taxon brief comments are added. In this list accepted names are printed in bold, synonyms in *italics*.

KEY TO THE SPECIES OF MYRISTICA OF NEW GUINEA
(based on male flowering, female flowering, and fruiting specimens)

(The new species names are printed in bold italics)

- 1a. Lower leaf side punctate or dotted, i.e. with scattered brown or blackish non-traumatic dashes or dots, well to be seen with a lens ($\times 60$) 2
- b. Lower leaf side not dotted (including all specimens with lower leaf surface covered with dense tomentum) 22
- 2a. Male flower before anthesis with hooded bracteole, 8–9 mm long, enveloping the perianth, then caducous (compare also *M. brassii*). [Female flowers not known.] — Altitude (250–)800–1000 m ***M. cucullata***
- b. Bracteole much smaller, caducous or not, sometimes enveloping the perianth in very immature stages only; bracteole not seen in some species 3
- 3a. Twigs and leaves of medium or large size class; twigs at apex (2–)3–5 mm diam. or more; majority of leaf blades 15 cm long or more 4
- b. Twigs slender, 1–2(–3) mm diam.; most leaves of a specimen 15(–20) cm long or less 9
- 4a. Non-traumatic punctation on both upper and lower leaf surface; this sometimes apparent only towards the margin of the blade; lower leaf surface generally with subsistent short and dense tomentum of scales 0.1 mm or less. Inflorescences (infructescences) short peduncled.¹ — Montane and submontane area in West New Guinea, but not known from Vogelkop Peninsula . . . ***M. duplopunctata***
- b. Leaves punctate or dotted on lower surface only; lower leaf surface with minute tomentum, glabrous or glabrescent. Inflorescences sessile or peduncled . . . 5
- 5a. Inflorescences (best to be seen in male flowering specimens) sessile, i.e. without peduncle 6
- b. Inflorescences with peduncle 5 mm long or more. Leaves membranous, chartaceous, or coriaceous 7
- 6a. Leaves chartaceous or subcoriaceous; nerves 20–30 per side, faint below. Male flower: bracteole large, cucullate, caducous; androphore glabrous. — Papua New Guinea; (250–)800–1000 m ***M. cucullata***
- b. Leaves coriaceous; nerves c. 15 per side, distinct and contrasting below. Male flower: bracteole not seen; androphore conspicuously pubescent in the lower half. [Fruit not seen.] — West New Guinea, SW of Bernhard Camp on the Idenburg R., at c. 1700 m ***M. brassii***
- 7a. Twigs and leaves of medium size class; twigs towards apex (2–)3 mm diam.; leaf blades 15–23 cm long, membranous; nerves c. 20 per side, on lower leaf surface contrasting in colour and well visible. Infructescences short-peduncled; fruit 4.5–5 cm long. [Flowers not known.] — N Vogelkop Peninsula: Tamrau Range, at 500–800 m ***M. tamrauensis***
- b. Twigs stout, towards the apex 5–7 mm diam.; leaves larger, blade 20–40 cm, chartaceous or coriaceous; nerves 20–40 per side 8

1) The peduncle is the non scar-covered stalk bearing a scar-covered portion with flowers, the latter sometimes much reduced and few-flowered, especially in female specimens.

- 8a. Leaf blades chartaceous or thinly coriaceous, drying dull with minutely wrinkled surface; lateral nerves thin but well-visible below. Fruit 5.5–6 cm long. [Flowers not known.] — Montane area of Central New Guinea; 1400–1600 m *M. millepunctata*
- b. Leaf blades (thinly) coriaceous, drying smooth; lateral nerves faint below. Male flowers: androphore completely pubescent. Mature fruit not known. — Lowland area of Vogelkop Peninsula *M. neglecta*
- 9a. Specimen with female flowers and/or fruit 10
- b. Specimen with male flowers. [Male flowers not known in *M. leptophylla*.] 17
- 10a. At least some of the female inflorescences (or infructescences²) with a peduncle of 3 mm long or more. [Male inflorescences always distinctly peduncled.] 11
- b. All inflorescences and infructescences sessile, like those in most of the genus *Knema*: a short, simple or forked, scar-covered brachyblast (producing flowers usually several seasons) without a smooth peduncle or this up to 3 mm long 13
- 11a. Perianth of female (and male) flowers c. 10 mm long. Fruit 4.5–6.5 cm long, often with persistent style. — Lowland and submontane forest, up to 1000 m *M. cornutiflora*
- b. Perianth of female flowers (not seen in *M. arfakensis*) less than 10 mm long. Fruit 3–4.5 cm long, without persistent style. Montane species, at 1000 m or more 12
- 12a. Dots on lower leaf surface well visible with a lens only. Fruit (including pseudostalk) 3.5–4(–4.5) cm long *M. pachyphylla*
- b. Dots visible with the naked eye. Fruit c. 3 cm long. — Vogelkop Peninsula *M. arfakensis*
- 13a. Fruit 1.5–2.5 cm long (not known in *M. flavovirens*). Nerves on lower leaf surface generally faint. — Lowland, 0–700 m, in Vogelkop Peninsula to 1200 m altitude 14
- b. Fruit 3.5–4.5 cm long. Nerves well visible below. — Montane area, at 1400–2000 m altitude 16
- 14a. Leaves drying greenish. — Vogelkop Peninsula 15
- b. Leaves drying brown or dark brown. Twigs at apex 2–3 mm diam. Fruit rounded at base. — New Guinea, except Vogelkop Peninsula *M. scripta*
- 15a. Twigs slender, at apex 1(–2) mm diam. Fruit at base contracted into a c. 3 mm long pseudostalk *M. conspersa*
- b. Twigs 2–3 mm diam., drying blackish. Leaves below drying yellowish. [Fruit not known.] — Vogelkop Peninsula *M. flavovirens*
- 16a. Leaf blades (4–)6–14 cm long, (sub)coriaceous. Fruiting pedicel (1–)2 mm thick *M. pachyphylla*
- b. Leaves 10–20 cm long, membranous or (thinly) chartaceous. Fruiting pedicel 4(–5) mm thick *M. leptophylla*

2) The stalk of the fruit in single-fruited infructescences usually is thickened and woody; it is essentially composed of two parts, 1) the peduncle of the inflorescence (infructescence) and 2) the pedicel of the female flower (or fruiting pedicel); the demarcation between these two parts may have become obscured with age.

- 17a. Inflorescences (best to be seen in male specimens, but obvious in the majority of the inflorescences of female plants) with a smooth, non scar-covered, often \pm flattened peduncle (1–)3 mm long or more 20
- b. Inflorescences similar to those in *Knema*, i.e. (sub)sessile, simple or forked, short, scar-covered, (\pm woody) brachyblasts producing flowers at the top, lasting several seasons; peduncle absent or up to 3 mm long. [Including *M. leptophylla* of which male inflorescences and flowers are not known.] 18
- 18a. Twigs at apex slender, 1(–2) mm diam. Leaves drying greenish. Mature male perianth in bud small, c. 3.5 by 1.5 mm; bracteole small, persistent. Inflorescence sessile or 1(–2) mm peduncled. — Vogelkop Peninsula, lowlands up to 900 m *M. conspersa*
- b. Twigs generally stouter, at apex 2–3 mm diam. Mature male perianth in bud 3.5–5 mm long. — If buds small then not in Vogelkop Peninsula. Whole of New Guinea 19
- 19a. Twigs drying dull brown or blackish brown; leaves drying (dark) brown above, lower surface pale brown, not conspicuously papillose (seen with a strong lens!). Male inflorescences sessile. Male flowers: pedicel slender, 2–4 by 0.7 mm, bracteole caducous, mature perianth in bud 3.5–5 by 2–2.5 mm. — Whole of New Guinea, lowlands up to 600 m altitude *M. scripta*
- b. Twigs drying blackish; upper surface of leaves drying greenish, lower surface yellowish, densely papillose. Male inflorescences 1(–2) mm stalked. Male flowers more stoutish: pedicel 4 by 1(–1.5) mm, bracteole minute, c. 1 mm long, persistent, perianth in bud c. 5 by 2.5 mm. — Vogelkop Peninsula, at c. 1200 m altitude *M. flavovirens*
- 20a. Perianth of male (and female) flowers 10 mm long or more *M. cornutiflora*
- b. Perianth 8(–10) mm long or less 21
- 21a. Non-traumatic dots on lower leaf surface mostly only clearly visible with a lens. Male perianth elongate, 6–7(–8?) mm long. [Fruit including pseudostalk 3.5–4 (–4.5) cm long] *M. pachyphylla*
- b. Dots visible with the naked eye. Male perianth comparatively shorter, broader, 3.5–4 mm long. [Fruit c. 3 cm long.] — Vogelkop Peninsula *M. arfakensis*
- 22a. Twigs medium or stout, conspicuously hollow and \pm angular by distinct raised lines or wings up to 2 mm high, running at both sides of the twig in-between the bases of the petioles; perforated ant-swellings present (sometimes these not collected). Wings indistinct in *M. ingrata* subsp. *velata* 23
- b. Twigs slender, or medium, or stout, generally solid or narrowly hollow, (sub)terete or \pm angular, without raised lines or wings (stem sometimes ridged but not conspicuously hollow in *M. hollrungii*); ant-swellings absent 27
- 23a. Male perianth in anthesis split by the lobes to over halfway; flower buds in one inflorescence of various sizes (i.e. of various stages of development according to age). Male bracteole either small, 2–3 mm, or large, (5–)7–8 mm long. Leaves with the lines of interarching of the lateral veins and the tertiary veins distinct. [Fruit not known with certainty.] — Lowland of northern New Guinea *M. fissiflora*
- b. Male perianth split for 1/3 or less; bracteole 2–3 mm long 24

- 24a. Mature male perianth in bud ovoid or ellipsoid, or ellipsoid-oblong, at anthesis split into lobes for 1/3–1/4. Top of synandrium blunt, without or with short sterile apex to 0.2 mm long only. Fruit smallish, up to 4 cm long 26
- b. Male perianth in bud oblong or oblong-lanceolate (tubiform), lobes 1–1.5 mm, splitting the perianth at anthesis for 1/6–1/8. Sterile apex of synandrium acute, 0.5–1 mm long. Flower buds in one inflorescence either all of ± the same stage, or of different stages according to age. Fruit small or large, 1.5–7 cm long. 25
- 25a. Bracteole caducous. Fruit smallish, subglobose, or ovoid, or ellipsoid, with acute apex, 1.5–2.5(–3) cm long, generally with persistent, short tomentum; fruiting pedicel 2–10 mm long. Lower leaf surface glabrous or minutely pubescent, the tertiary veins generally faint. — Whole of New Guinea, incl. Aru Is., not in the Bismarck Archipelago; 0–2100 m *M. subalulata*
- b. Bracteole persistent in anthesis. Fruit 5–7 cm long, (late) glabrescent. Tertiary veins faint or rather distinct. — Bismarck Archipelago; lowlands *M. bialata*
- 26a. Flower buds before anthesis in one inflorescence generally of different sizes according to age. Bracteole persistent. Female flower pedicel 2–5(–6) mm. Fruit ovoid-ellipsoid, c. 2.5 cm long, top narrowly or broadly rounded (with minute apiculum); fruiting pedicel stoutish, 3–10 mm long. Lower leaf surface with marginal arching of nerves and tertiary veins generally faint. [Fruiting specimens may be confused with *M. subalulata*.] — Montane and lowland area of northern and southern New Guinea *M. ingrata*
- b. Flower buds in one inflorescence all of about the same size (same stage of development). Bracteole caducous. Female flower pedicel c. 10 mm long. Fruit (2.5–)3–3.5 cm long, ovoid-oblong, gradually narrowed into acute apex; fruiting pedicel 10–15 mm. Lower leaf surface with lines of interarching of lateral nerves and tertiary veins generally distinct. — Lowland area of Upper Sepik R. (West Sepik), Papua New Guinea *M. fasciculata*
- 27a. Twigs towards apex lined, or sharply angular, or faintly angular. — Mountainous, collected at 1500–2000 m altitude or more in Central New Guinea . . . 28
- b. Twigs at apex lined, or ridged, or terete. Plant from lowland or from mountainous area, but in the latter case twigs neither lined, nor angular, nor ridged. . . 30
- 28a. [Flowers not known.] Twig stoutish. Fruit subglobose, c. 6 cm diam., pericarp c. 2 cm thick. Mt Dayman (Milne Bay Prov., Papua New Guinea), at c. 1500 m altitude *M. pachycarpidia*
- b. Fruit (much) smaller, ± ellipsoid. 29
- 29a. Male perianth 6 mm or 9 mm long; bracteole persistent. Fruit c. 2.5 cm long. Twigs of medium stoutness *M. velutina*
- b. Male perianth 10–14 mm long; bracteole caducous. Fruit c. 2 cm long. — Mt Hagen and vicinity (Western Highlands Prov., Papua New Guinea), at c. 2000 m altitude *M. subalulata* var. *hagensis*
- c. Male perianth 7–9 mm long, inside at base verrucose; bracteole caducous. Fruit 3.5–5.5 cm long. Twigs slender or medium *M. crassipes*
- 30a. Leafy twig of small habit: twigs slender, at apex 1–3 mm diam., most leaf blades of fertile twigs 15(–17) cm long or less (occasional specimens of *M. inutilis*, *M. subcordata*, and *M. sphaerosperma* may have rather small leaves, but these species have only been entered in the alternative lead) 31

- b. Twigs and leaves of medium or stout size-class: twigs at apex (2-)3-5 mm diam. or more, generally most leaf blades of a specimen 15 cm long or more . . . 141
- 31a. Specimen with female flowers or fruit. [Female flowers and fruit not known of several species, including *M. schlechteri*.] 32
- b. Specimen with male flowers. [Male flowers not known in several species.] 86
- 32a. At least some of the inflorescences or infructescences with a non scar-covered peduncle³ of 2 mm long or more (male inflorescences always distinctly peduncled) 33
- b. All inflorescences sessile, like those of most of the genus *Knema*: a short, simple or forked, scar-covered brachyblast, sessile or with a smooth peduncle up to 2 mm long 50
- 33a. Leaves lanceolate-ensiform, parallel-sided, 12-22 cm long. An understorey near-tree of c. 1.5 m. — Western Prov. of Papua New Guinea; at c. 80 m altitude; once found *M. ensifolia*
- b. Leaves elliptic, oblong, or oblong-lanceolate. Trees generally larger 34
- 34a. Hairs of terminal leaf bud for the majority (0.2-)0.5 mm long or more 35
- b. Hairs of leaf bud all short, 0.1-0.2(-0.3) mm long or less 40
- 35a. Lower leaf surface with persistent dense tomentum, sometimes late glabrescent (compare also *M. mediovibex*). — Montane area, at 1000-1500 m *M. sinclairii*
- b. Lower leaf surface early (sometimes late-)glabrescent or glabrous (or with persistent tomentum in *M. mediovibex*, partly) 36
- 36a. Lower leaf surface papillose (strong lens!) 37
- b. Lower leaf surface not papillose (or not readily recognized as such) 38
- 37a. Fruit (when dry) 3-4 cm long, with rather coarse tomentum with hairs 0.5-0.8 mm long. — Moluccas and Vogelkop Peninsula *M. bifurcata* subsp. *bifurcata*
- b. Fruit 4-4.5 cm long, with tomentum of hairs c. 0.1 mm. — Papua New Guinea: Morobe, Northern, and Southern Highlands Prov., and New Britain *M. clemensii*
- 38a. Bracteole caducous, its scar situated about halfway the pedicel. Mature fruit (including pseudostalk) c. 4 cm long. Lower leaf surface late glabrescent or with persistent tomentum. — Northern part of West New Guinea *M. mediovibex*
- b. Bracteole (or its scar) situated at or towards the top of the pedicel 39
- 39a. Peduncle of inflorescence (and infructescence) slender, c. 2 cm long. Fruit (including pseudostalk) 5-5.5 cm long *M. pilosella*
- b. Fruiting peduncle c. 10 cm long. Fruit including pseudostalk 2-2.5 cm long. [Male flowers with synandrium composed of 3 anthers only] . *M. trianthera*
- c. Peduncle of infructescence 3-4 mm long, fruiting pedicel 2-4 mm; fruit without pseudostalk, 2.5 cm long. [Male and female flowers not known.] — Papua New Guinea: Morobe Prov., at c. 100 m *M. pygmaea*
- 40a. Lower leaf surface seemingly glabrous, but actually with dense, very short tomentum (seen with a lens × 60). 41

3) See the footnote with lead 10.

- b. Leaves below glabrous or glabrescent, or with a more lax tomentum with almost scattered, minute, scale-like hairs only. Female perianth generally less than 8 mm long 43
- 41a. Lower leaf surface silvery by short cobweb-like tomentum; leaf base cuneate. Older twigs rugose by conspicuous wart-like lenticels. Female perianth large, 8–10 by 5–5.5 mm. Fruit early glabrescent, when dry c. 7 cm long, wrinkled **M. argentea**
- b. Tomentum of lower leaf surface largely grey-brown or rust-coloured, very short. Bark of twigs not coarsely warty-lenticellate. [Flowers not seen.] Fruit very shortly rusty pubescent, surface drying not wrinkled 42
- 42a. Fruit c. 7 cm long. Petiole proportionally long, 2–3 cm long; blade base broadly rounded or ± cordate **M. archboldiana**
- b. Fruit 2.5–3.5 cm long. Petiole shorter, c. 1.5 cm; blade base cuneate **M. mediovibex** var. **kosteriana**
- 43a. Lower leaf surface papillose (strong lens!). Peduncle conspicuously flattened. Fruit (not known in *M. rosseleensis*) ellipsoid or oblong, 2–3.5 cm long, glabrescent except at the ends 44
- b. Leaves not papillose beneath. Peduncle somewhat flattened or terete. Fruit with minute scurfy (scaly) tomentum 45
- 44a. Leaves narrow, oblong-lanceolate, base (sub)acute; lateral nerves c. 20 per side; with lateral nerves and tertiary veins faint. — Louisiade Archipelago **M. rosseleensis**
- b. Leaves generally proportionally broader; lateral nerves 8–15 per side; lateral nerves and tertiary veins more distinct. — Mostly in coastal areas; Northern Papua New Guinea, Bismarck Archipelago, E to the Solomon Islands **M. schleinitzii**
- 45a. Lower leaf surface grey-white, glabrous. Inflorescences (infructescences) conspicuously supra-axillary. [Flowers not known.] Fruit without pseudostalk, ellipsoid-oblong, c. 2.7 cm long. — Known from the type collection only; Papua New Guinea, Madang Prov., at low altitude **M. cylindrocarpa**
- b. Leaves somewhat whitish, or not whitish below. Inflorescences axillary or but shortly supra-axillary. Fruit 4 cm long or more, including pseudostalk (mature fruit not known in *M. olivacea*). 46
- 46a. Leaves drying conspicuously greenish. Inflorescences slender, in female the peduncle c. 3 cm long; female pedicel long, 18–20 mm, longer than the perianth, bracteole persistent **M. olivacea**
- b. Leaves drying olivaceous-brown or brown. Peduncle of infructescence much shorter 47
- 47a. [Female flowers and fruit not known.] Leaves drying conspicuously blackish brown. [Male perianth c. 4 mm long; bracteole persistent.] — A lowland species from the Ingembit area, on the S border of West Irian and Papua New Guinea **M. atrescens**
- b. Leaves drying olivaceous, brown, or dark brown. [Male perianth larger; bracteole in male and female flowers caducous.] 48
- 48a. Lateral nerves on the lower leaf surface slightly raised, brown, rather contrasting 49

- b. Lateral nerves on lower leaf surface flat or \pm sunken, almost concolorous. — A montane species, generally with inflorescences without peduncle *M. laevifolia*
- 49a. Fruit (including pseudostalk) 4.5–6 cm long. [Male perianth c. 10 mm long.] — A local endemic of hill rain forest at 500–700 m in Central Prov., Papua New Guinea (including a deviating fruiting specimen from montane forest at 1300 m in Central West New Guinea) *M. longipes*
- b. Fruit c. 4 cm long. [Male perianth 6–6.5 mm long.] Montane forest at (400–) 1200–1600 m in Central and Madang Prov., Papua New Guinea . . . *M. fugax*
- 50a. Fruit narrow, slender, (when dry) c. 8 by 1.5–2 cm. — SW Irian Jaya. Lowlands or montane *M. fusiformis*
- b. Fruit proportionally less slender, or shorter 51
- 51a. Lower leaf surface glabrous (i.e. early glabrescent or covered with very minute, scattered, pale, cobweb-like hairs less than 0.1 mm only) and papillose, with the papillae \pm uniform and regularly set (lens!) 52
- Notes:* 1) consequently, some species with the lower leaf surface very densely papillose with the papillae closely contiguous, or, alternatively, with the papillae irregular of shape and size, e.g. as in *M. mediterranea* (with the bark of twigs corky), are included in both leads or in the alternative lead; 2) specimens of *M. insipida* and *M. lancifolia* may be rather indistinctly papillose.
- b. Lower leaf surface glabrous, or glabrescent, or pubescent, not or but faintly papillose, or papillae not readily recognized as such (all specimens with leaves with dense persistent tomentum included in this lead) 55
- 52a. Fruit stipe long, 15–20 mm. Nerves at an angle of c. 45° from the midrib *M. papillatifolia*
- b. Fruit stipe 5 mm long or less. Nerves more patent, angle to the midrib 60° or more 53
- 53a. Lateral nerves 8–20 per side, rather dense, not much contrasting and faint below; tertiary veins generally indistinct. Fruit small, ellipsoid, 1.3–1.6 cm long, tomentum with hairs c. 0.1 mm. — Moluccas and W and E New Guinea *M. lancifolia* subsp. *lancifolia*
- b. Nerves 6–14 per side, contrasting or not below, comparatively more spaced; tertiary veins usually not much contrasting, indistinct or not 54
- 54a. Fruit small, 1.5–2.5 cm long, including the short pseudostalk; with tomentum of hairs 0.1–0.3 mm. — E Papua New Guinea *M. concinna*
- b. Fruit 2.5–3.5(–3.8) cm long, with hairs 0.3–1 mm long. — [S Moluccas and N Australia] and S New Guinea *M. insipida*
- c. Fruit sessile, \pm ellipsoid, c. 3 cm long, with short tomentum of hairs 0.1 (–0.2) mm. — A local endemic of S Papua New Guinea: Central Prov.; at sea level *M. brachypoda*
- 55a. [Flowers not known.] Lateral nerves c. 25 per side, faint. Fruit large and egg-shaped, c. 7 by 5 cm, early glabrescent (a few light brown, scattered, hair-like appendages, early falling off, seen in K-specimens). — Rossel I.; at 200 m . . . *M. ovicarpa*
- b. Lateral nerves c. 20 pairs or less. Fruit generally less than 7 cm 56
- 56a. Flowers glabrous or almost so. Fruit minutely pubescent, or in *M. tubiflora* and *M. laevifolia* glabrescent 57

- b. Flowers pubescent; hairs may be minute and dense, rendering the perianth as if glabrous (lens!); perianth sometimes partly late glabrescent. Fruit pubescent, hairs minute or larger. [Flowers not seen in *M. firmipes*, *M. brevistipes*, *M. lasiocarpa*; fruit glabrescent in *M. crassipes*.] 59
- 57a. Fruit glabrescent, elongated; stalk (i.e. fruiting pedicel) short, 2–7 mm. — Plant from lowland area, 0–250 m ***M. tubiflora***
- b. Fruit stalk (fruiting pedicel) 10 mm long or more 58
- 58a. Fruiting pedicel long and slender, (20–)25–30 mm long; fruit minutely pubescent, with long pseudostalk. — E Papua New Guinea (Lae Subprov.); 0–15 m ***M. filipes***
- b. Fruit stalk stouter (thicker), 10–20 mm long; fruit glabrescent, with short pseudostalk. — Montane area, Papua New Guinea; 1000–1800 m ***M. laevifolia***
- 59a. Leaves below either (sometimes rather late) glabrescent, or with extremely minute tomentum of scale-like, \pm spaced, not densely interwoven hairs 60
- b. Leaves below with persistent or subpersistent tomentum, with hairs densely set, long or short; or late glabrescent; hairs may be extremely short and scale-like 80
- 60a. Innovations and flowers conspicuously densely clothed in rusty tomentum with hairs 0.5–1 mm long. — Two species, for differences see elsewhere in this key ***M. chrysophylla* & *M. schlechteri***
- b. Hairs much shorter 61
- 61a. Fruiting pedicel short and comparatively slender, c. 2 mm long; fruit 2.5–3 cm long, ellipsoid-oblong. [Flowers not known.] 62
- b. Fruiting pedicel usually more than 2 mm long, slender or thick; fruit various, usually comparatively broader: globose or short-ellipsoid, or \pm pear-shaped 64
- 62a. Leaves very pale below, nerves thin and faint on both surfaces. Bark of older twigs \pm corky. — A local endemic of South Central New Guinea, in the frontier area of West Irian and Papua New Guinea; c. 150 m ***M. mediterranea***
- b. Leaves brown-green, not pale below, nerves stronger; twigs not corky 63
- 63a. Tomentum of fruit conspicuously woolly. Lower leaf surface faintly papillose ***M. insipida***
- b. Tomentum short-woolly. Leaves not papillose. — A local endemic of Papua New Guinea in Central Prov.; lowland. [Check also *M. concinna* & *M. brachypoda*.] ***M. brevistipes***
- 64a. Twigs in apical portion \pm 2-lined or 2-angled (not often distinctly so in *M. crassipes*). [Male perianth comparatively narrow, \pm parallel-sided, \pm tubiform, c. 8 mm long or more.] 65
- b. Twigs not or only faintly angular in consequence of the drying; incl. *M. atrocorticata*, a species with \pm angular twigs but distinct by the flaking bark of older twigs. [Male perianth elongate or not, rather ellipsoid or ellipsoid-oblong, less than 7 mm long.] 71
- 65a. Lower leaf surface drying (pale) brownish, with the nerves comparatively faint, yellow- or orange-brown, not much contrasting. Fruit stalk \pm stout, rather long; seed attached above the base of the pericarp and hence \pm transversely placed in the fruit; fruit 2.5–4 cm long. [Male perianth tubiform, 9–14 mm long, sometimes late glabrescent, perianth smooth inside.] ***M. warburgii***

- b. Lower leaf surface drying pale, greyish or not, with midrib and nerves brown, and these generally contrasting. Fruit various. Perianth minutely thinly pubescent (the hairs may be extremely small, rendering the perianth as if glabrous). [Male perianth inside at base with warty surface in *M. pumila*, *M. flosculosa*, *M. crassipes*.] 66
- 66a. Twigs slender, towards apex c. 1 mm diam. 67
- b. Twigs thickish, nearly of medium size, towards the apex (1.5–)2–3 mm diam. Fruit without or with pseudostalk; true fruit stalk short or long 68
- 67a. Fruit in lower half contracted into a long pseudostalk, the true fruit stalk (= fruiting pedicel) comparatively very long and slender, c. 20 mm long, c. 0.5 mm thick *M. pumila*
- b. Fruit \pm similar; fruiting pedicel 3–4 mm long. — Sogeri area (Central Prov., Papua New Guinea) *M. sogeriensis*
- 68a. Lowland species (up to 500 m) 69
- b. Montane species (growing at 500 m or higher) 70
- 69a. Fruit with long pedicel, and with distinct pseudostalk *M. flosculosa*
- b. Fruiting pedicel 3–10 mm long, (3–)4–5 mm thick, without or with short pseudostalk (A species mostly with leaves more than 15 cm long.) *M. sulcata*
- 70a. Fruiting pedicel (fruit stalk) 4–10(–12) mm long, thick, 3–5(–6) mm thick *M. crassipes*
- b. Fruiting pedicel of medium thickness, longer, 10–15 mm long *M. warburgii* subsp. *hybrida*
- c. Fruiting pedicel long and slender, 25–30 mm long, c. 1 mm thick. — West Irian, at 500 m *M. gracilipes*
- 71a. Small tree, 1.5–8 m tall. Fruit solitary, with long and slender peduncle, the fruit itself with distinct pseudostalk, c. 10 mm long *M. nana*
- b. Tree small or large. Fruit of various sizes, single or 2–4 together per infructescence; stipe stronger and proportionally shorter; fruit without or with much shorter pseudostalk 72
- 72a. Leaves coriaceous or membranous. — Plant from montane area, (300?–)1600–1800 m 73
- b. Leaves subcoriaceous or membranous. Fruit globose, or \pm ellipsoid, or \pm pear-shaped, stipe short or medium. — Plant generally from lowland area, 0–1000 (–1500) m 74
- 73a. Fruit ellipsoid or \pm fusiform, c. 3 cm long, long-stiped. — West Irian, near Wissel Lakes, at c. 1800 m (species resembling *M. laevifolia*, but nerves contrasting below) *M. vinkeana*
- b. Fruit globose, 2.5–3 cm diam., (dry) pericarp c. 7 mm thick, stipe (fruiting pedicel) 5–7 mm long. — Papuan Islands: Goodenough I., possibly Sudest I. (Tagula I.); 1600 m (and 300? m; see note 3 under the species) *M. polyantha*
- 74a. [Male and female flowers not known.] Fruit \pm pear-shaped, 6–7 cm long, pericarp thick, woody, c. 10 mm thick; peduncle (= fruiting pedicel) short and thick, usually broader than long *M. firmipes*
- b. Fruit globose or \pm ellipsoid, usually smaller, pericarp thinner, peduncle (fruiting pedicel) proportionally more slender 75

- 75a. Leaves below generally (i.e. not always!) pale, grey-glaucous, with brownish contrasting nerves and coarsely reticulate contrasting tertiary veins. Fruit variable in size and shape, (short-)ellipsoid or subglobose, 1.5–3.2(–4) cm long, with persistent *short* tomentum, hairs 0.1–0.5(–0.8) mm. — Wide-spread; altitude 0–600(–1500) m ***M. globosa***
- b. Both leaf surfaces generally rather concolorous, reticulation more faint 76
- 76a. Twigs of medium size-class, towards apex 2–2.5 mm diam., drying somewhat angular 77
- b. Twigs slender, subterete, 1–2 mm diam.; bark of older twigs striate, ± flaking or not. Petiole long and slender (but proportionally shorter than in *M. atrocorticata* and *M. inundata*), 10–20(–23) mm. Leaves glabrous (early glabrescent) below. Tomentum of fruit with short hairs, 0.1(–0.2) mm long only 79
- 77a. Bark of older twigs blackish, longitudinally cracking, or flaking. Petiole proportionally long, c. 20 mm long. Leaves below late glabrescent from minute scale-like hairs 78
- b. Twigs brown, bark not flaking (but sometimes transversely cracked). Petiole 10–13 mm long ***M. buchneriana***
- 78a. Leaves oblong-lanceolate. Bracteole much shorter than the perianth. [Fruit not known.] ***M. atrocorticata***
- b. Leaves elliptic-oblong or oblong. Bracteole (in male flowers) about as long as the perianth ***M. inundata***
- 79a. Fruit subglobose or ellipsoid, 2.5–3.5 cm long. [Male perianth 5–6 mm long.] — Moluccas and West and East New Guinea ***M. tristis***
- b. Fruit ± ellipsoid-oblong, 2–3 cm long. [Male perianth 3(–4) mm long.] — Moluccas and West New Guinea (Vogelkop Peninsula). [Check also *M. concinna*, with fruit ellipsoid, 1.5–2.5 cm long, and leaves usually papillose below.] ***M. lepidota* subsp. *montanoides***
- [c. Fruit ellipsoid, 4.5–5 cm long. — Southern Solomon Islands ***M. guadalcanalensis***]
- 80a. Twigs slender. Leaves 4–14 cm long. — Moluccas and West New Guinea ***M. lepidota* subsp. *lepidota***
- b. Twigs more stoutish, towards apex diam. 2 mm or more; leaves generally 10 cm long or more 81
- 81a. Leaves underneath with silky, very short, (sub)persistent tomentum; tertiary veins ± trabeculate. [Male flowers not known.] — A montane species of Northern Prov., Papua New Guinea ***M. byssacea***
- b. Tomentum rather more scaly or felty, short or longer; tertiary veins reticulate, or hardly visible 82
- 82a. Fruit c. 2 cm long; fruiting pedicel rather slender, c. 1.5 cm long. [Male flowers not known.] — Madang Prov., Papua New Guinea; lowland ***M. pedicellata***
- b. Fruit larger, fruiting pedicel (peduncle) comparatively shorter and thicker . . 83
- 83a. Tomentum of flowers and fruit, and of lower leaf surface short, with hairs 0.3(–0.5) mm, usually much shorter 84
- b. Tomentum of flowers and fruit, and usually of lower leaf surface longer, shaggy 85

- 84a. Tomentum of lower leaf surface composed of very short scales (0.1 mm) only. — Papuan Islands ***M. tenuivenia***
- b. Tomentum of lower leaf surface dense, short, composed of small \pm stellate hairs of rather mixed sizes. — Widespread ***M. inutilis***
- c. Tomentum of lower leaf surface densely minutely scaly. [Female flowers and fruit not known.] — Lowland forest, periodically inundated; Western Prov., Papua New Guinea ***M. inundata***
- d. Tomentum of lower leaf surface densely short-felty. — Telefomin Subdistrict (Sepik) or Morobe Prov. (Kuper Range), Papua New Guinea; at c. 2000 m ***M. coacta***
- 85a. Fruit sessile. — Lowland area ***M. chrysophylla***
- b. Fruiting pedicel (5–)10 mm long. [Flowers not known.] — Montane area of Kuper Range, Morobe Prov., Papua New Guinea; at 1600–2000 m ***M. lasiocarpa***
- 86a. Inflorescences (best to be seen in male specimens, but also obvious in the majority of the inflorescences of female plants) peduncled, i.e. with a smooth, non scar-covered, often \pm flattened stalk (1–)2 mm long or more; inflorescences lasting one or several seasons 87
- b. Inflorescences similar as in the genus *Knema*; i.e. consisting of a (sub)sessile simple or forked scar-covered woody brachyblast producing flowers at the top(s), mostly lasting several flowering seasons; in some species (e.g. *M. leptodota*) with a peduncle to 2 mm long, in *M. insipida* peduncle occasionally up to 4 mm long; inflorescences sometimes delicate with only a few flowers . . . 107
- 87a. Leaves narrow, ensiform, 12–22 cm long. An understorey near-tree of 1.5 m. — Western Prov., Papua New Guinea; at c. 80 m ***M. ensifolia***
- b. Leaves elliptic, oblong, or oblong-lanceolate. Trees or shrubs, generally larger 88
- 88a. Tomentum of sterile terminal bud (and generally also that of young twig apices, inflorescences, and flowers) of a flossy appearance, composed of hairs of which the majority reach lengths of (0.2–)0.5 mm or more 89
- b. Tomentum short, with hairs 0.1–0.2(–0.3) mm long or less 95
- 89a. Mature male perianth elongate, c. 7 mm long or more. [Male flowers not known in *M. mediovibex* and *M. pilosella*.] 90
- b. Mature male perianth rather ellipsoid or ellipsoid-oblong, c. 5 mm long or less 93
- 90a. Lower leaf surface with persistent \pm dense tomentum, sometimes late-glabrescent. Peduncle of male inflorescence short, up to 3 mm long 91
- b. Leaves early glabrescent or glabrous below. Peduncle longer 92
- 91a. Plant from montane area ***M. sinclairii***
- b. Plant from lowland area. [Male flowers not known.] ***M. pygmaea***
- 92a. Bracteole (seen only in female flowers) caducous, leaving its scar about half-way the pedicel ***M. mediovibex***
- b. Bracteole persistent, inserted at the top of the pedicel, at the transition to the perianth ***M. pilosella***
- 93a. Lower leaf surface papillose (strong lens!). Mature male perianth in bud \pm ellipsoid; anthers 6–8 94

- b. Lower leaf surface not papillose. Male perianth proportionally narrower, ellipsoid-oblong; anthers 3 *M. trianthera*
- 94a. Leaves ovate-oblong or oblong-lanceolate. Apical portion of mature male perianth in bud in cross section rounded, not angular. [Dry fruit 3–4 cm long.] — Moluccas and Vogelkop Peninsula (West New Guinea) *M. bifurcata*
- b. Leaves oblong-lanceolate. Apical portion of mature male perianth in bud \pm triangular in transverse section (sometimes not apparent). [Dry fruit 4–5.5 cm long.] — Papua New Guinea: Morobe, Northern, S Highlands Prov. & New Britain *M. clemensii*
- 95a. Leaves below seemingly glabrous, but lower surface actually with very short and dense tomentum (lens!) 96
- b. Leaves below glabrous, or glabrescent (or late glabrescent) or with small but scattered hairs only. Male perianth either less than 12 mm long, or if c. 12 mm long than perianth proportionally narrow, 2–3 mm wide (here also included *M. cylindrocarpa* of which the flowers are unknown) 98
- 96a. Leaves below 'silvery' by short cobweb-like tomentum. Older twigs rugose by coarse wart-like lenticels. Mature male perianth ovoid-oblong, 11–12 by 5–5.5 mm *M. argentea*
- b. Tomentum rust-coloured. Older twigs not with wart-like lenticels. [Flowers not known.] 97
- 97a. Petiole proportionally long, 2–3 cm; base of leaf blade broadly rounded or \pm cordate *M. archboldiana*
- b. Petiole c. 1.5 cm long; base of blade cuneate *M. mediovibex* var. *kosteriana*
- 98a. Lower leaf surface papillose (strong lens, $\times 60!$). Peduncle of inflorescence conspicuously flattened. Male perianth in bud ovoid-ellipsoid-oblong, c. 6 mm long or less 99
- b. Lower leaf surface not papillose. Peduncle flattened or not. Male perianth mostly more elongate, oblong-lanceolate, 6 mm long or more. [Flowers not known in *M. cylindrocarpa*, male perianth c. 4 mm in *M. atrescens*.] 100
- 99a. Leaves narrow, nerves and tertiary veins faint. Male inflorescences with flattened peduncle, at the apex with lateral sessile flower-bearing brachyblasts; the male perianth c. 5.5 mm long or less. — Louisiade Archipelago *M. rosselensis*
- b. Leaves generally proportionally broader, lateral nerves and tertiary veins more distinct. Male inflorescence with stalked side-branches; male perianth 5.5–6.5 mm long. — Most frequent in coastal area of Northern Papua New Guinea, Bismarck Archipelago, E to Solomon Islands *M. schleinitzii*
- 100a. Leaves below glabrous, rather whitish (grey-white). Infructescence (inflorescence) conspicuously supra-axillary, i.e. for a considerable distance concaulescent with the twig-axis. [Flowers not known.] [Fruit ellipsoid-oblong, c. 2.7 cm long, no pseudostalk.] — Papua New Guinea: Madang Prov., once collected at Josephstaal, at low altitude *M. cylindrocarpa*
- b. Leaves below less pale, grey, or green, or brown; not whitish. Inflorescences axillary or but shortly (up to 6 mm) supra-axillary. [Fruit 3.5 cm long or more; with or without pseudostalk.] 101

- 101a. Leaves drying conspicuously greenish above. Inflorescences slender, with long slender peduncle, in male 3–5 cm long. Mature male perianth 11–13 mm long; pedicel long, slender, 10–12 mm long; bracteole persistent . . . *M. olivacea*
- b. Leaves drying brown or olivaceous-brown. Peduncle of male inflorescences much shorter, 1.5 cm long or less. Male perianth shorter, bracteole persistent or caducous 102
- 102a. Leaves drying conspicuously blackish brown. Male perianth c. 4 mm long, bracteole persistent *M. atrescens*
- b. Leaves drying either olivaceous, or brown, or dark brown. Male perianth 6 mm long or more; bracteole (late) caducous 103
- 103a. Mature male perianth c. 10 mm long, c. 3 mm wide, inner surface smooth; pedicel 5–6 mm long. [Fruit 4.5–6 cm long.] — A local endemic of hill rain forest at 500–700 m in Central Prov., Papua New Guinea [including a fruiting specimen at 1300 m in Central West New Guinea (Irian Jaya).] *M. longipes*
- b. Male perianth 6–9 mm long, 1.5–2(–3) mm wide. Plant from lowland or montane 104
- 104a. Male perianth inside smooth. Lateral nerves on lower leaf surface flat or sunken, rather concolorous with the main colour of the lower leaf surface. [A species generally with sessile non-peduncled inflorescences.] see *M. laevifolia*
- b. Male perianth inside in the lower half with verrucose ridges; pedicel 3.5–6 mm long. [Fruit 3–4 cm long.] [Check also *M. pumila*, a species from low areas, generally with completely sessile inflorescences.] 105
- 105a. Twigs at apex c. 2–3 mm diam. *M. crassipes*
- b. Twigs at apex 1–2 mm diam. 106
- 106a. Nerves on lower leaf side much contrasting in colour. Male perianth c. 7 mm long, acute; verrucose ridges at inside of perianth rather faint; bracteole persistent. — Sogeri area, Central Prov., Papua New Guinea; at c. 400 m *M. sogeriensis*
- b. Nerves less contrasting. Male perianth bluntish, 4–6 mm long; verrucose ridges distinct; bracteole caducous. — Foothill and montane forest at 300–1600 m in Gulf, Central, East Sepik, and Madang Prov., Papua New Guinea *M. fugax*
- 107a. Lower leaf surface glabrous (or early glabrescent, or with scattered, very minute, pale hairs less than 0.1 mm), with distinct uniformly and *equable shaped papillation* (papillation maybe less prominent in *M. insipida* and *M. lancifolia*) 108
- b. Lower leaf surface glabrous, or glabrescent, or pubescent; surface *not or but faintly papillose* (papillation either absent, or papillae present but extremely small, or surface apparently strongly papillose but this not apparent because the papillae are very closely set and mutually appressed, or papillae extremely irregular in shape and size) 111
- 108a. [Male flowers not known.] Nerves making a comparatively sharp angle with the midrib, c. 45°. [Fruit stipe long and slender, 15–20 mm; fruit broadly fusiform.] — South Central New Guinea *M. papillatifolia*
- b. Nerves more patent. [Fruit stipe shorter, c. 5 mm long or less.] 109

- 109a. Male perianth narrow, 4–4.5 mm long, pubescent with hairs 0.1 mm, the pedicel about as long as the perianth or somewhat shorter; androphore glabrous; anthers 5 or 6. Lateral nerves on lower leaf surface faint, comparatively dense, parallel. [Fruit ellipsoid, small, 1.3–1.6 cm long, with hairs c. 0.1 mm.] — West and East New Guinea: Vogelkop Peninsula, N Irian Jaya, in N Papua New Guinea E to Madang Prov.; also Moluccas ***M. lancifolia***
- b. Male perianth slender or not, the pedicel considerably shorter than the perianth; androphore glabrous or pubescent in the lower half 110
- 110a. Twigs delicate, towards the apex 1–1.5 mm diam. Lateral nerves on lower leaf surface faint, comparatively dense. Male perianth ± slender, 3.5–5 mm long, with hairs c. 0.1 mm; androphore pubescent in the lower half; anthers 3 (or 4). [Fruit ellipsoid, 1.5–2.5 cm long, tomentum with hairs 0.1–0.3 mm long.] — Papua New Guinea ***M. concinna***
- b. Twigs 1–2 mm diam. towards the apex. Nerves rather wide apart, usually distinct below. Male perianth broader, ± ellipsoid-oblong, 4.5–6 mm long, with pubescence of hairs (0.1–)0.2–0.4 mm long; androphore glabrous or pubescent towards the base; anthers 6–8. [Fruit ellipsoid, 2.5–3.5(–3.8) cm long, with tomentum of hairs 0.3–1 mm long.] — S New Guinea; also S Moluccas and N Australia ***M. insipida***
- c. Twigs delicate, at apex 1–1.5 mm diam.; nerves rather wide apart, distinct below. [Fruit c. 3 cm long, subsessile, tomentum very short, with hairs c. 0.1 mm long.] — A local endemic of Southern Papua New Guinea ***M. brachypoda***
- 111a. [Male flowers not known.] Fruit large, egg-shaped, c. 7 by 5 cm, early glabrescent. Leaves with c. 25 nerves per side, faint and closely set. — Rossel I. ***M. ovicarpa***
- b. [Male flowers not known.] Lateral nerves of leaves c. 10 per side. Fruit long and slender, c. 8 by 1.5 cm, with long and slender pseudostalk; tomentum of fruit short, of a mealy appearance. — Lowland; SW Irian Jaya) ***M. fusiformis***
- c. Lateral nerves c. 20 per side or less. Fruit large or small; generally pubescent with hairs short or long 112
- 112a. [Male flowers not known.] Fruit large, ± pear-shaped, 6–7 cm long, with thick woody pericarp, c. 1 cm thick. Peduncle (fruiting pedicel) short and thick, often wider than long, 6–9(–10) mm wide ***M. firmipes***
- b. Fruit generally (much) smaller, with less thick pericarp, and usually proportionally more slender peduncle. [Fruit not known in *M. schlechteri*.] . . . 113
- 113a. Lower leaf surface with (sub)persistent, mostly dense tomentum 114
- b. Leaves below glabrous or glabrescent, or late glabrescent from scale-like hairs 0.1 mm or less only; tertiary veins (sometimes faint) reticulate. Twigs angular or not 118
- 114a. Leaves 4–14 cm long. Male perianth c. 3 mm long. — Moluccas and West New Guinea ***M. lepidota* subsp. *lepidota***
- b. Leaves generally larger, 10 cm long or more. Male perianth larger, c. 5 mm long or more (male flowers not known in several species) 115

- 115a. Indumentum of lower leaf surface subpersistent, silky by appressed hairs; tertiary veins \pm trabeculate. Twigs towards apex \pm angular, with two sharp edges. [Male flowers not seen.] — E Papua New Guinea: Northern Prov.; montane forest at 1600 m *M. byssacea*
 b. Indumentum rather more scaly or felty; venation reticulate or hardly visible 116
- 116a. Male perianth c. 5 mm long. Indumentum of lower leaf surface rather felty, composed of short \pm stellate hairs of mixed sizes (check also *M. chrysophylla* and *M. lasiocarpa*) ... small-leaved forms of *M. inutilis* and *M. subcordata* (For differences see elsewhere in this key.)
 b. [Male flowers not known.] — Telefomin Subdist., West Sepik Prov., Papua New Guinea; at c. 2000 m *M. coacta*
 c. [Male flowers not known.] Indumentum of lower leaf surface with densely set very minute scales only 117
- 117a. Fruit c. 2 cm long, fruiting pedicel comparatively slender, c. 1.5 cm long. — Papua New Guinea: Madang Prov. *M. pedicellata*
 b. Fruit larger, fruiting pedicel (peduncle) shorter. — Papuan Islands *M. tenuivenia*
- 118a. [Male flowers not known.] Leaves membranous, lateral nerves thin and faint on both surfaces, tertiary veins almost invisible; lower surface grey-white. Bark of older twigs corky, longitudinally fissured. [Fruit ellipsoid-oblong, c. 2.5 cm long, stalk short, only 2 mm.] — A local endemic of the border area in Central South New Guinea; at c. 150 m *M. mediterranea*
 b. Leaves various, nerves below generally stouter. Bark of older twigs either smooth or striate, or flaking, but not corky. [Fruit various.] 119
- 119a. [Male flowers not known] Fruit subsessile. Leaves drying greenish. Small tree, c. 5 m tall. — A local endemic of Central Prov., Papua New Guinea; at low altitude. Compare also *M. insipida* *M. brevistipes*
 b. Fruit stalk (fruiting pedicel) longer or thicker (fruit not known in some species) 120
- 120a. Male perianth much elongated, oblong or \pm tubiform (cylindrical), slender, (6–)7 mm long or more, index c. 3 or more 121
 b. Male perianth various in shape, ovoid or (narrowly) ellipsoid, including nearly tubiform, c. 7 mm long or less, index c. 3 or less 130
- 121a. Flowers glabrous or almost so; androphore glabrous 122
 b. Flowers sparsely or densely pubescent, sometimes very minutely so and appearing glabrous, occasionally with a few scale-like hairs towards the top of the perianth only; androphore wholly or partly pubescent (lens!) 123
- 122a. Male perianth 8.5–11 mm long; bracteole persistent. [Fruit elongate, the stalk comparatively short.] — West New Guinea (Irian Jaya), and Western part of Papua New Guinea; lowland, up to 250 m *M. tubiflora*
 b. Male perianth c. 7 mm long, bracteole caducous. [Fruit with long pseudostalk and long, slender stalk.] — Eastern Papua New Guinea: a local endemic of Lae Subprov.; 0–15 m altitude *M. filipes*
- 123a. Lower leaf surface with tertiary veins (much) contrasting in colour 124

- b. Nerves not much contrasting in colour; reticulation of tertiary veins usually inconspicuous. Mature male perianth in bud narrowed at the apex, acutish, perianth inside not warty **M. warburgii**
- 124a. Male flowers not known, but presumably perianth inside the basal part not minutely warty 125
- b. Male perianth inside the basal part with a thickened and minutely warty sur face 126
- 125a. Fruiting pedicel 10–15 mm long **M. warburgii** subsp. *hybrida*
- b. Fruiting pedicel slender, c. 1 mm thick, 25–30 mm long. — West New Guinea (West Irian); at c. 500 m **M. gracilipes**
- 126a. Twigs at apex slender, c. 1 mm diam. Male flower pedicel 6–10 mm long, slender 127
- b. Twigs at apex medium, 2–3 mm diam. Male flower pedicel 5–7 mm long 129
- 127a. Flowers thick-woolly; androecium subsessile. — Foothill forest in the Waria-region, Morobe Prov., Papua New Guinea; at c. 350 m . . . **M. schlechteri**
- b. Flowers with minute tomentum; synandrium long-stalked 128
- 128a. Male perianth 7–10 mm long, pedicel 7–10 mm long; the bracteole caducous. [Fruit at base narrowed into a long pseudostalk; stalk slender, filiform.] — Foothill forest; c. 150–400 m **M. pumila**
- b. Male perianth c. 7 mm, slender, acute, pedicel c. 6 mm long, bracteole persistent. [Fruiting pedicel short, 3–4 mm.] **M. sogerensis**
- 129a. Lowland and foothill area, up to c. 300 m. [Fruiting pedicel long.] **M. flosculosa**
- b. Plant from montane area; 600–2000 m. [Fruit without or with a short pseudostalk, fruiting pedicel short or medium.] **M. crassipes**
- 130a. Male perianth c. 3.5–4.5 by 1 mm, comparatively narrow 131
- b. Male perianth larger (5–7 mm long), narrow or not. Trees of various size 133
- 131a. Small tree or shrub, 1.5–8 m tall. Anthers 3. — E Papua New Guinea **M. nana**
- b. Tree 10–35 m 132
- 132a. Anthers c. 5. — (Moluccas and) West New Guinea **M. lepidota** subsp. *montanoides*
- b. Anthers 6–9. A species generally with leaves more than 15 cm long; stem of ultimate twigs \pm angular **M. sulcata**
- 133a. Leaves generally (thickly) chartaceous or coriaceous; tree of montane area, found at c. 1000 m or more 134
- b. Leaves generally membranous or (thinly) coriaceous; tree of lowland or submontane area, up to 1000(–1500) m. Bracteole (of male flower) small, caducous or not. Androphore pubescent, often only in the lower half, or subglabrous 136
- 134a. Flowers short pubescent 135
- b. Flowers almost glabrous; bracteole small, caducous, the scar situated up to 3 mm below the perianth; androphore glabrous or with extremely small hairs towards the base, appearing glabrous. Leaves pale brown beneath, glabrous, nerves flat or sunken, not contrasting. [Fruit ellipsoid or fusiform.] **M. laevifolia**

- 135a. Bracteole (of male flower) (*Eyma* 4283) large, nearly half as long as the perianth, persistent, situated at the transition of pedicel and perianth; androphore almost completely pubescent. Leaves pale beneath, indumentum with minute scales, late glabrescent; nerves distinct, contrasting in colour. [Fruit ellipsoid.] *M. vinkeana*
- b. Bracteole (of male flowers) large, caducous, its scar situated at the transition of pedicel and perianth; androphore with scattered, extremely minute hairs less than 0.1 mm, or glabrous. Nerves on lower leaf surface contrasting in colour or not. [Fruit globose, with thick pericarp.] *M. polyantha*
- 136a. Leaves beneath generally pale, grey-glaucous with darker contrasting nerves and coarsely reticulate tertiary veins. Male perianth at anthesis opening for 1/4–1/2. [Fruit with persistent short tomentum, with hairs 0.1–0.5(–0.8) mm.] — Widespread *M. globosa*
- b. Leaves beneath pale or not; venation not much contrasting. Male perianth at anthesis splitting open for c. 1/6–1/2 137
- 137a. Male pedicel short, 1–3 mm 138
- b. Male pedicel long; bracteole persistent. Fruit short-haired 139
- 138a. Indumentum of flowers short; bracteole caducous. Fruit rough-haired
- b. Indumentum of flowers conspicuously long-haired, and woolly. Fruit similarly pubescent as flowers *M. buchneriana*
- 139a. Petiole relatively long, c. 20 mm. Bark of older twigs blackish, conspicuously cracking. Lower leaf surface with minute indumentum, late glabrescent. Androphore subglabrous 140
- b. Petiole generally relatively short. Bark of older twigs striate, rarely cracking. Lower leaf surface glabrous (early glabrescent). Androphore ± wholly or partially pubescent. [Fruit ± globose, 2.5–3 cm long.] — Moluccas and W and E New Guinea, E to Sepik Prov., Papua New Guinea, and Louisiade Archipelago *M. tristis*
- 140a. Leaves oblong-lanceolate; lateral nerves rather faint below. Bracteole (in male flower) small, much shorter than the perianth *M. atrocorticata*
- b. Leaves elliptic-oblong or oblong; nerves rather distinct below. Bracteole about as long as the perianth, c. 4 mm long in male flowers *M. inundata*
- 141a. Inflorescences (best to be seen in male flowering specimens) with a distinct, smooth, non scar-covered peduncle, ± flattened or not, in male specimens 5 mm long or more; inflorescence branched or not 142
- b. Inflorescences (sub)sessile, of the *Knema*-type, i.e. a wart-like or worm-like, simple or forked, scar-covered brachyblast, sessile or subsessile, or up to 5 mm peduncled (e.g. in *M. sphaerosperma*, p.p.) 152
- 142a. Mature leaves glabrous or glabrescent below, or with sparse scale-like minute hairs not touching each other, not forming a dense felt-like layer (flossy hairs 1–2 mm long remaining on lower midrib in *M. uncinata*) 143
- b. Mature leaves with persistent tomentum below, or late glabrescent, but some (short, dense) tomentum usually remaining on and near midrib 150
- 143a. Leaves papillose below (lens!) 144
- b. Leaves not papillose 145

- 144a. [Flowers not known.] Peduncle of infructescence stout, 5–10 mm long; fruit 5–6 cm long. — Lowland inland forest, Western Prov., Papua New Guinea
..... *M. ornata*
- b. Peduncle slender, ± flattened; fruit 2–3.5 cm long, glabrescent. Mature perianth in bud in the apical portion not or but faintly angular. — Widespread; mainly coastal *M. schleinitzii*
- 145a. Apical portion of mature perianth in bud (in male and in female flowers) not angular in transverse section. Fruit various 146
- b. Apical portion of mature perianth in bud angular. Fruit 4.5–6 cm long, with minute tomentum, glabrescent. Whole plant (leafy twig) early glabrescent. Veins of leaf conspicuously faint. — Northern West Irian *M. garciniifolia*
- 146a. Leaves whitish beneath, glabrescent except lower midrib. Terminal leaf bud often uncinatate, densely pilose with hairs 1–1.5 mm long. Fruit 6–7 cm long, top often uncinatate; tomentum dark brown, persistent, with hairs 1–1.5 mm. [Male flowers not known.] — Papua New Guinea, Central Prov., near Boridi; at 1300–1400 m *M. uncinata*
- b. Leaves glabrous below, whitish or brownish. Tomentum of terminal leaf bud and of fruit shorter. — Lowland species of Papua New Guinea 147
- 147a. Leaves conspicuously pale below; leaves (thinly) chartaceous; nerves flat and faint above, tertiary veins obscure on both surfaces. Hairs of terminal leaf bud c. 0.5 mm. Male perianth c. 7 mm long, obtuse; anthers c. 15. Fruit ± ellipsoid, 5–7 by (3–)4–4.5 cm, with rusty tomentum with hairs 0.5–1 mm long. — Papua New Guinea: Morobe Prov., Northern Prov. *M. umbrosa*
- b. Leaves on lower surface palish, grey-brown, not whitish 148
- 148a. Mature male perianth in bud with acute top. Leaves membranous; the lateral nerves and tertiary veins moderately distinct above; hairs of terminal leaf bud 0.3–0.5 mm. Male perianth in bud 8–10 mm long, with acute apex; anthers 12–14. Fruit oblong, ± fusiform, 4–4.5(–5) by 1.5–2 cm; sub(persistent) rusty tomentum with hairs (0.2–)0.5 mm. — SE Morobe Prov., Northern Prov. of Papua New Guinea *M. carrii*
- b. Male perianth in bud with rounded top. Fruit different 149
- 149a. Mature male perianth in bud ellipsoid, 9–14(–16) mm long; anthers 12–20. Leaves membranous; lateral nerves and tertiary veins on lower leaf surface obscure; hairs of terminal leaf bud 0.5–1 mm. Fruit 6–8 cm long, with minute brown indumentum, glabrescent. — Papua New Guinea: Morobe, Northern, Central, Milne Bay Prov., incl. Normanby I. *M. hooglandii*
- b. Mature male perianth in bud ovoid-ellipsoid, c. 7 mm long, obtuse; anthers 8 or 9. Leaves thinly chartaceous; veins netted, contrasting below. Hairs of terminal leaf bud 0.1(–0.3) mm. Fruit 5–5.5 cm, glabrous, green. — Manus I. *M. psilocarpa*
- 150a. Upper surface of leaves drying blackish brown, the lower surface with pale, whitish brown, floccose tomentum. Male perianth ellipsoid or obovoid, 7–9 by 5–8 mm, pedicel 7–12 mm long. Fruit subglobose or ellipsoid, 3–5.5 cm long, dry pericarp 4–9 mm thick; tomentum with hairs (0.5–)1–1.5(–3) mm. Inflorescences sometimes grouped into synflorescences. — Eastern Papua New Guinea *M. markgraviana*

- b. Leaves drying brown or olivaceous-brown, lower surface brown-pubescent or glabrescent. Male perianth ellipsoid-oblong, 8–10 mm long, pedicel 3–5 mm. Fruit generally smaller. — Papuan Islands 151
- 151a. Leaf blade subcordate at base; lower leaf surface with dense subpersistent tomentum. Synandrium at apex with sterile portion consisting of small tubercles, c. 0.1 mm long only, in number corresponding with the anthers. Dry fruit 2–2.5 cm long, pericarp 1(–2) mm thick. — Rossel I. *M. incredibilis*
- b. Leaves glabrescent, at base rounded, not cordate. Sterile apex of synandrium comparatively long, acutish, c. 1 mm long. (Immature, dry) fruit c. 3 by 2.5 cm, pericarp 5–6 mm thick. — Sudest I. *M. inopinata*
- 152a. Leaves below either with persistent short-felty tomentum (hairs ‘scale-like’, lens!), or with persistent tomentum of conspicuous hairs; old leaves may have become glabrous. Fruit variously pubescent 153
- b. Leaves below glabrous or glabrescent, or with ± open tomentum with minute scattered hairs, readily appearing glabrous. Fruit pubescent or glabrescent. [Leaves sometimes densely scaly, late glabrescent, in *M. holhrungii*.] . . . 165
- 153a. Leaves below papillose; this visible only with a lens between the spaced up to 1.5 mm long dark brown hairs. Fruit oblong, 6–7 cm long, dry pericarp 4–5 mm thick, tomentum with hairs 1–1.5 mm long *M. fusca*
- b. Leaves either not or but indistinctly or irregularly papillose below; tomentum generally closer set, or with much smaller hairs 154
- 154a. Tomentum of lower leaf surface composed of a dense layer of short, matted, felt-like hairs 0.1–0.2 mm, *intmixed* with numerous emergent hairs of various sizes, the longest 1 mm long or more, or indumentum only composed of hairs 1 mm long or more 155
- b. Tomentum either dense, short, felt-like, or more open, or flocculose by longer emergent hairs less than 1 mm long, or without emergent hairs 158
- 155a. Fruit acorn-like, depressed, c. 2 cm diam. Leaves not bullate. [Flowers not known.] *M. quercicarpa*
- b. Fruit not as above, not depressed at base (when dry). Leaves with nerves sunken on upper surface, and therefore often somewhat bullate 156
- 156a. Indumentum of flowers and of fruit composed of hairs 1 mm long or more. — Submontane or lowland area *M. chrysophylla*
- b. Indumentum of flowers and fruit with hairs 1 mm long or less. Tree generally of montane area 157
- 157a. Fruit large, globose, 6–9 cm diam.; fruit stipe short, 3–5 mm. Indumentum of leaves with long hairs, 0.1–1(–2) mm. [Male flowers not known.] — Montane forest at 800–2300 m *M. womersleyi*
- b. Fruit large, more elongate, 6–8 cm long; fruit stipe longer, 7–15 mm. Indumentum of leaves below with hairs shorter, 0.1–0.2(–1) mm long. — Submontane and montane forest, at (300–)800–1800 m *M. sphaerosperma*
- 158a. Indumentum of the lower leaf surface inconspicuous, consisting of a silvery-brown dense layer of very short, adpressed scales, sometimes late glabrescent (lens!). Fruit 2.5–3.5 cm long, with very short, mealy, grey-brown or yellowish brown tomentum with hairs 0.1 mm or less, glabrescent. Bark of older twigs blackish, often flaking *M. undulatifolia*

- b. Indumentum more conspicuous, hairs either minute, dense, or larger and densely set or scattered 159
- 159a. Leafy twig stout. Male flowers large, firmly carnosose or leathery, perianth c. 8 by 5 mm. Fruit large, c. 9–12 by 7–8.5 cm, with pericarp c. 2 cm thick; aril small, the laciniae covering only the basal portion of the seed. — Montane forest; at 1200–1800 m; Central Papua New Guinea *M. ingens*
- b. Flowers and fruit not as above. — Tree of lowland, foothill, or lower montane areas; at 0–1200(–1400) m (*M. subcordata* var. *gigacarpa* at 1200–1800 m) 160
- 160a. Fruit large, 6–8 cm long, dry pericarp 5–12 mm thick *M. sphaerosperma*
- b. Fruit generally smaller, dry pericarp thinner (fruit not known in *M. simulans*) 161
- 161a. Male perianth at anthesis split by the lobes to (nearly) halfway. Androphore distinctly shorter than the synandrium; anthers 6–10. Fruit 4–7 cm long. — Moluccas and (?) West New Guinea *M. fatua*
- b. Male perianth cleft by the lobes to 1/4–1/3 (or less). — New Guinea . . . 162
- 162a. Leaves below with weak indumentum, largely glabrescent; tertiary veins on lower leaf surface indistinct. Male perianth 5–6 mm long; androphore much shorter than the synandrium; anthers 7 or 8. Fruit 3–4.5(–6) cm long, tomentum rough, with hairs c. 1 mm long *M. buchneriana*
- b. Leaves below with indumentum of densely interwoven hairs (hairs scale-like or not); reticulation of lower leaf surface faint or invisible because of hair-covering 163
- 163a. Male perianth 8(–10) mm long; androphore much shorter than the synandrium, glabrous; anthers 7 or 8. Indumentum of flowers with hairs c. 1 mm long. [Fruit not known.] — Endemic of Modewa I., E Papua New Guinea *M. simulans*
- b. Male perianth c. 8 mm long or less, with indumentum of hairs 0.1–0.5 mm; androphore about as long as or nearly (at most half as long) as long as the synandrium, mostly (partly) pubescent; anthers (3–)5 (or 6). Fruit various 164
- 164a. Leaves of medium size, i.e. 12–24 cm long. Mature male perianth in bud ellipsoid-oblong, 3–4.5 mm long; bracteole persistent. Fruit variable in size, 2.5–5 cm long; fruiting pedicel 1–3 mm long . . . *M. inutilis* (subsp. *papuana*)
- b. Leaves medium or large, 12–35 cm long. Mature male perianth in bud ± narrow, almost tubiform, (6.5–)7–8(–10) mm long; bracteole caducous. Fruit (3.5–)4–5.5 cm long, fruiting pedicel 3–10 mm long (fruiting specimens can be confused with *M. inutilis*) *M. subcordata*
- 165a. Leaves papillose below. Bark of older twigs blackish brown, flaking *M. kalkmanii*
- b. Leaves not or indistinctly papillose below. Bark of older twigs not or inconspicuously flaking 166
- 166a. Male flowers with short pedicel, 3 mm long or less. Fruit with conspicuous tomentum, with hairs 0.5 mm long or more 167
- b. Male flower pedicel more than 3 mm long. Tomentum of fruit with hairs much shorter, persistent or glabrescent 168

- 167a. Male flower pedicel 2–3 mm long; tomentum of flowers with hairs 0.2–0.3 mm long. Fruit 3–4.5(–6) cm long, tomentum with hairs 0.5–1 mm long ***M. buchneriana***
- b. Male flower pedicel 1–2 mm long; tomentum of flowers with hairs 0.5–1.5 mm long. Fruit 2.5–4.5 cm long, with tomentum of hairs 1.5–3 mm long ***M. chrysophylla* subsp. *entrecasteauxensis***
- 168a. Twigs (at least at apex) angular, at apex 2–4 mm diam. Leaves usually drying dark brown. Flowers small, male perianth c. 4 mm long. Fruit subglobose or broadly ellipsoid, (3–)3.5–4 cm diam. ***M. sulcata***
- b. Twigs subterete, often lined (often ± hollow and somewhat lined, rarely faintly winged, not angular, no ant-swollings present), at apex 2–5(–10) mm diam. Leaves drying ± olivaceous. Male perianth (mature bud) 4–6(–6.5) mm long. Fruit subglobose or (globose-)ellipsoid, 2.5–4.5(–5) cm long, often smallish pointed at the apex ***M. hollrungii***
- c. Twigs ± angled or winged (no ant-swollings present); at and towards the apex 4–8(–15) mm diam. Leaves drying olivaceous-brown. Male perianth 10–13 mm long. Fruit ± fusiform or ellipsoid, 5–7 cm long, short-woolly, (late) glabrescent. — Bismarck Archipelago ***M. bialata***

ALPHABETICAL NAME LIST OF MYRISTICA IN NEW GUINEA

Myristica albertisii Warb., Monogr. Myrist. (1897) 532, t. 19, 1–2 = ***Myristica hollrungii*** Warb.

Myristica anceps Warb., Monogr. Myrist. (1897) 528 = ***Myristica sulcata*** Warb.

Myristica archboldiana A.C. Smith, J. Arnold Arbor. 22 (1941) 73; Sinclair 329, f. 47; Foreman 186.

Myristica arfakensis W.J. de Wilde, *spec. nov.*

Myristica pachyphyllae similis, sed differt perianthio flores masculi brevior, c. 4 mm longo, fructu minore c. 3 cm longo, foliisque subtus punctis crassiusculis brunneo-atrescentibus indutis. — Typus: *Kostermans 2440* (L).

Tree 6–10 m. *Twigs* slender, towards the top 1–1.5(–2) mm diam., slightly angular, at first with hairs 0.1 mm or less; bark of twigs lower down dark grey-brown or blackish, striate, not cracking nor flaking; lenticels not apparent. *Leaves* chartaceous to subcoriaceous (but brittle), blades ± ovate(-elliptic)-oblong, broadest at or somewhat above or below the middle, 5–12 by 1.5–5 cm, base (short-)attenuate, top acute-acuminate; upper surface drying (dark) brown, lower surface bright brown, early glabrescent, not papillose; dots present and distinct; midrib slender, raised above; nerves 10–15 pairs, generally interspaced by lesser ones, slender, sunken above, little raised or flattish beneath, at an angle of 60–70° to the midrib, lines of interarching generally

indistinct; tertiary veins indistinct or invisible at both surfaces; petiole 8–15 by 1–1.5 mm; terminal leaf bud small, slender, acute, 5–10 by 1–1.5 mm, with brown-grey tomentum with scale-like hairs less than 0.1 mm. *Inflorescences* axillary or up to 4 mm supra-axillary, at first with minute tomentum, early glabrescent, of a reduced paniculate type, i.e. with a slightly flattened peduncle 5–8(–10) mm long, 1–1.5 mm thick, ending in a short scar-covered brachyblast; bracts minute, minutely pubescent, deciduous; brachyblast in male up to 13 mm long, with 1–4 flower buds of various age and size, in female only 1 or 2 (or 3) flowers present; perianth sparsely brown-grey pubescent with hairs 0.1 mm or less, bracteole caducous, leaving its scar at the transition of pedicel and perianth. *Male flowers*: pedicel slender, c. 3–4 by 0.5 mm, bracteole c. 0.5 mm long, caducous; mature perianth in bud \pm ellipsoid-oblong, 3.5–4 by (1.5–)2 mm, somewhat tubiform or faintly narrowed in the middle, base broadly rounded, top bluntish, not angular in transverse section, lobes c. 1.5 mm long, i.e. splitting perianth at anthesis for c. 1/4–1/3; androecium 3–3.5 mm long; androphore 1.5–2 by 0.5–0.6 mm, glabrous, synandrium ellipsoid-oblong, c. 1.5 by 0.7(–0.8) mm, anthers 5 or 6, mutually not very tightly appressed, sterile apex subtruncate, c. 0.2 mm long. *Female flowers* not seen. *Fruit* generally solitary, stalk 1–1.5 cm long, slender, the pedicellar part showing the scar of the bracteole 2–3 mm below the perianth-scar; fruit ellipsoid-oblong, c. 3 by 1.5 cm, top acute, base contracted into an up to 5 mm long pseudostalk; dry pericarp 1(–2) mm thick, minutely dull-brown scurfy-pubescent with scale-like hairs less than 0.1 mm; seed ellipsoid-oblong, c. 2.3 cm long.

Distribution — West New Guinea, known only from the Arfak mountains in NE Vogelkop Peninsula: *Ch. Koster BW 13961*; *Kostermans 2440*.

Habitat & Ecology — Mountain forest at 1000–1800 m altitude; fl. Oct.; fr. May. Flowers whitish.

Notes — 1. Related to *M. pachyphylla*, with which it has the brown-black dots on the lower leaf surface in common. It also resembles that species in general habit, but in *M. pachyphylla* the dots are smaller; in our present species the dots are easily visible with the naked eye. Furthermore *Myristica pachyphylla* differs by larger, more elongate male flowers, and larger fruit (c. 4 cm long). Also close to *M. scripta* and *M. conspersa*, with almost unstalked inflorescences.

2. The two collections belonging to the present species were formerly identified as *M. tubiflora*, a lowland species with sessile (*Knema*-like) inflorescences (i.e. without a common peduncle) and longer, tubiform, male flowers.

Myristica argentea Warb., Bot. Jahrb. 13 (1891) 311; Sinclair 235, f. 20; Foreman 187.

Synonym: *Myristica fmschii* Warb.

Myristica atrescens W.J. de Wilde, *spec. nov.*

Arbor media. Folia parva, lamina 7–12 cm longa, in statu sicco atrescenti-brunnea. Inflorescentiae masculi c. 7 mm longe pedunculatae. Flores masculi minute pubescentes, perianthio c. 4 mm longo, pedicello c. 4 mm longo infra perianthium bracteola persistente instructo. Androphorum synandrium longitudine subaequans, glaber, in statu sicco superficie irregulariter verrucosa instructum. — Typus: *Soegeng Reksodihardjo 424* (L).

Tree 20 m. *Twigs* moderately slender, subterete, towards the apex 1.5–2(–2.5) mm diam., at first with hairs c. 0.1 mm, bark of older twigs blackish brown, coarsely striate with a faint tendency of longitudinally cracking, not flaking; lenticels present but indistinct; terminal leaf bud slender, acute, c. 8–10 by 1.5 mm, densely yellow-brown appressed pubescent with hairs 0.2(–0.3) mm. *Leaves* thinly chartaceous; blade elliptic-oblong, broadest at about the middle, 7–12 by 3–5.5 cm, base short-attenuate or broadly rounded, top broadly acute(-acuminate) with blunt tip; upper surface drying (dark olivaceous or) blackish brown, lower surface drying dark brown, glabrous, without blackish dots, not papillose; midrib slender, somewhat raised above; nerves 10–13 pairs, at an angle of c. 60° to the midrib, slender, flat and faint above, slightly raised, concolorous below, lines of interarching indistinct; tertiary veins indistinct; petioles 12–15 by 1.5 mm. *Inflorescences* axillary to the leaves, at first with mid-brown tomentum, hairs 0.1–0.2 mm, glabrescent, peduncled; male inflorescences: peduncle 5–7 mm long, ending in a short scar-covered brachyblast c. 1 mm long, bearing 2 or 3 flower buds of varying size and age; bracts minute, caducous. *Male flowers*: minutely thinly pubescent with greyish hairs c. 0.1 mm; pedicel c. 4 by 0.3–0.4 mm; bracteole ovate-ellipsoid, c. 1 mm long, persistent, situated at the transition to the perianth; mature perianth in bud ovoid-oblong, 4–4.2 by 2–2.2 mm, top bluntish, not angular in transverse section, base broadly rounded, lobes 3 (or 4), c. 1 mm long, ± out-curved at anthesis; androecium slender, cylindrical, c. 4 mm long, synandrium cylindrical, c. 2 by 0.5 mm, sterile apex bluntish, 0.2(–0.3) mm long, anthers 6 (or 7, i.e. with c. 12 thecae), contiguous, androphore slender, c. 1.5 by 0.4 mm, glabrous but drying with an irregularly warty surface. *Female flowers* and *fruit* not seen.

Distribution — Known only from the type collection found in SE West New Guinea, in the border area with Papua New Guinea, at Ingembit, road to Opka, c. 5° 42' S, 141° 01' E.

Habitat & Ecology — In lowland forest; fl. June.

Notes — 1. Fieldnotes: Bark smooth, dark brown, living bark light brown with meagre red sap. Flowers pale green.

2. Distinct because of a number of unique features: small leaves with faint nerves, blade glabrous below, without dots, not papillose, the inflorescence peduncled, the perianth smallish, only c.4 mm long. The leaves are conspicuously dark after drying, of a blackish brown colour. Superficially the plant resembles *M. tristis*, which is distinct by sessile inflorescences, larger male perianth and (partly) pubescent androphore. The androphore in *M. atrescens*, as seen in resuscitated flowers of the dried specimen, has a peculiar warty-bullate surface, which may be an artifact.

Myristica atrocorticata W.J. de Wilde, *spec. nov.*

Arbor magna, vetustiorum ramorum cortice atrescente et squamoso. Folia parva; lamina oblongo-lanceolata, 6–13 cm longa, subtus initio tomento minuto e pilis quasi squamosis 0.1 mm longis (vel brevioribus) induta, demum glabrescentia. Inflorescentia sessilis, ea *Knema* generis correspondens. — Typus: NGF 33391 (L).

Tree 25–30 m. *Twigs* in apical portion 1.5–3 mm diam., rather 2- or 3-angled, at first with hairs 0.1 mm or less; bark of older twigs coarsely longitudinally cracking

and flaking, blackish brown; lenticels few but conspicuous, or inconspicuous, or absent. *Leaves* chartaceous (or thinly coriaceous); blades oblong-lanceolate, broadest at or somewhat below the middle, 6–15 by 1.5–3.5 cm, base broadly attenuate or rounded, apical portion gradually narrowed into the acute top; upper surface drying olivaceous or dark brown, lower surface grey-brown or light brown, at first with (rather) dense very short brownish tomentum, scales or stellate hairs c. 0.1 mm or less (lens!), early or late glabrescent; lower leaf surface not distinctly papillose, non-traumatic dots absent; midrib slender, flattish above; nerves 16–21 pairs, flat and very faint above, faint beneath, at an angle of 60–70° to the midrib; lines of inter-arching and tertiary veins faint or invisible; petiole proportionally long, stoutish, (13–)15–22 by 1.5–2 mm; terminal leaf bud acute, 10–15 by 1.5–2 mm, densely grey(-brown) minutely appressed-pubescent with hairs c. 0.1 mm or less. *Inflorescences* axillary to the lower leaves and below the leaves, sometimes on the older wood; of the *Knema*-type, i.e. a sessile, short, simple wart-like brachyblast, up to 3 mm long, densely rusty pubescent, in both sexes with at the end a loose cluster of 5–15 well-pedicelled flower (buds) of about equal size and age; flowers densely minutely dark brown pubescent with hairs c. 0.1 mm, the bracteole (seen only in submature flowers) persistent, ovate, c. 1 mm long, inserted at or nearly at the top of the pedicel. *Male flowers* (only known in submature stage of *Brass 7079*; *BW 12295*): pedicel somewhat longer than the perianth, 3–5 mm, bracteole c. 1 mm long, rounded, inserted at the transition to the perianth, persistent; perianth (in immature bud) ovoid to broadly ellipsoid, rounded at base and top, c. 3 by 2–2.2 mm, the apical part not angular in transverse section, perianth firm-fleshy, lobes c. 1 mm, splitting the perianth to c. 1/3; androecium broad-cylindrical, c. 2 mm long; synandrium c. 1.7 by 0.7–0.8(–1) mm, anthers 7 or 8 (or 12?) (c. 15 thecae), contiguous, sterile apex minute, bluntish or truncate, c. 0.1–0.2 mm, androphore cylindrical c. 0.3 by 0.6 mm (most likely lengthened to c. 1 mm long at anthesis), almost glabrous, except for a few scattered pale hairs less than 0.1 mm. *Female flowers* (*NGF 33391*): pedicel straight, (4–)5 mm long, c. 1 mm thick, bracteole ovate, nearly 1 mm long, inserted c. 0.5 mm below the perianth; perianth ovoid, base broadly rounded, the apical part narrowed into a bluntish top, c. 4 by 3 mm, lobes c. 1.4 mm long (splitting perianth for c. 1/3), ovary long-ovoid, c. 2.2–2.5 by 1.8 mm, densely golden-brown appressed pubescent with hairs 0.2–0.3 mm, stigma c. 0.3 mm. *Fruit* and *seed* not seen (infructescence probably several-fruited as judged from the many-flowered female inflorescences).

Distribution — West New Guinea (War Samson River valley, E of Sorong, Vogelkop Peninsula) and Papua New Guinea (Upper Fly River area in Western Prov.): *Schram BW 12295*; *Brass 7079*; (*Ridsdale, Henty, Galore*) *NGF 31774*; (*Ridsdale, Galore*) *NGF 33391*.

Habitat & Ecology — Lowland forest either on well-drained flat land, on low ridges, or in valley swamp forest, or forest inundated in the wet season; humic sandy clay soil or podsol; 30–160 m altitude; fl. June, July.

Notes — 1. Fieldnotes: Occasional or locally common tall forest tree, 30 m or more. Trunk recorded as raised on short prop-roots, or 'without buttresses'. Bark hard, blackish, scaly or longitudinally fissured, or not-fissured but strongly peeling; underbark olive or light brown; inner bark red with red sap; sapwood white, or pink, or

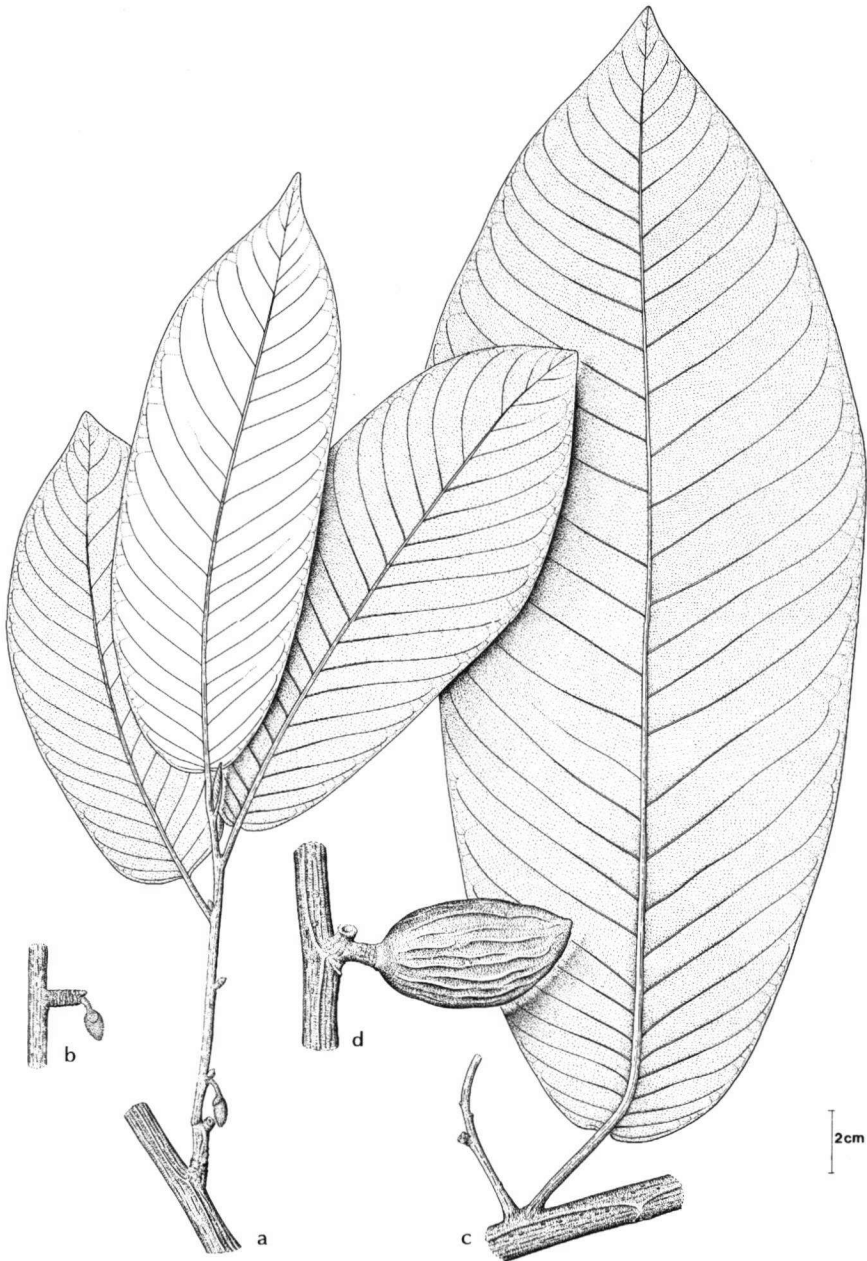


Fig. 1. *Myristica bialata* Warb. var. *bialata*. a. Lateral twig with young male inflorescence bearing one mature male flower; b. ditto with old male inflorescence with one mature flower; c. portion of shoot with full-grown leaf, axillary with lateral twig with a flowerless inflorescence; d. portion of older twig with infructescence with mature fruit; all $\times 0.5$ (a, b: *Henty NGF 29400*; c, d: *Croft & Lelean LAE 65435*).

orange-brown, 4 cm, heartwood reddish brown. Leaves yellow green above, rusty below. Flowers yellow.

2. This new species is known only from a female flowering specimen and male flowering specimens with immature flowers; fruit is unknown. It is related to the variable and widespread *M. tristis* but readily distinct by the conspicuously cracking blackish bark of the older twigs, the comparatively long petioles, the faint nervation, and (with magnification) the late glabrescent undersurface of the leaves, with an inconspicuous tomentum of minute scaly hairs, especially densely so in *Brass 7079*. Superficially the present species may be confused with *M. firmipes*.

3. *Myristica inundata* also is closely related to *M. atrocorticata*; for differences see under that species.

Myristica avis paradisiacae Warb., Monogr. Myrist. (1897) 528, t. 19; Markgraf, Bot. Jahrb. 67 (1935) 169; Sinclair 480 = doubtful species.

Myristica bäuerlenii Warb., Monogr. Myrist. (1897) 541, t. 19, 1–3 = *Myristica globosa* Warb. subsp. *chalmersii* (Warb.) W.J. de Wilde.

Myristica bialata Warb., Bot. Jahrb. 13 (1891) 308.

By Sinclair and Foreman included in *M. subalulata* Miq.

var. *bialata* — Fig. 1, 2a

var. *brevipila* W.J. de Wilde, var. *nov.* — Fig. 2b

A var. *typica* florum fructuumque tomento brevissimo differt, pilis quam 0.1 mm brevioribus. Inflorescentiae masculi sessiles vel pedunculo usque ad 10 mm longo instructae. — Typus: (*Henty*) NGF 27188 (L).

Twigs at apex 5–12(–15) mm diam.; leaf blades to 52 by 22 cm. Inflorescences sessile or (in male) with smooth, non scar-covered peduncle to 10 mm long. Tomentum of flowers with hairs less than 0.1 mm long. Female flowers: mature perianth in bud ± flask-shaped, narrowed in the upper half, c. 9 by 4 mm, tomentum with hairs less than 0.1 mm long; ovary (ovoid-)oblong, c. 6 by 2.5 mm, densely covered with scale-like hairs much less than 0.1 mm. Fruit 2–6 per infructescence, when immature densely pubescent with hairs 0.1 mm long or less; mature fruit not seen.

Distribution — Only known from the Kandrian Subdistrict, West New Britain: (*Gillison*) NGF 22471, 22472; (*Frodin*) NGF 26582; (*Henty*) NGF 27188.

Habitat & Ecology — Riverside forest; (red soil on) limestone; 0–200 m altitude; fl. March, April; fr. Oct.

Note — Fieldnotes: Once recorded as stiltrooted. Branches drooping. Bark brown, shallowly fissured or grey mottled, blaze pinkish, with or without red exudate. Wood straw or white. Leaves very pale, silvery-grey below. Flowers greenish white. Immature fruit rufous brown.

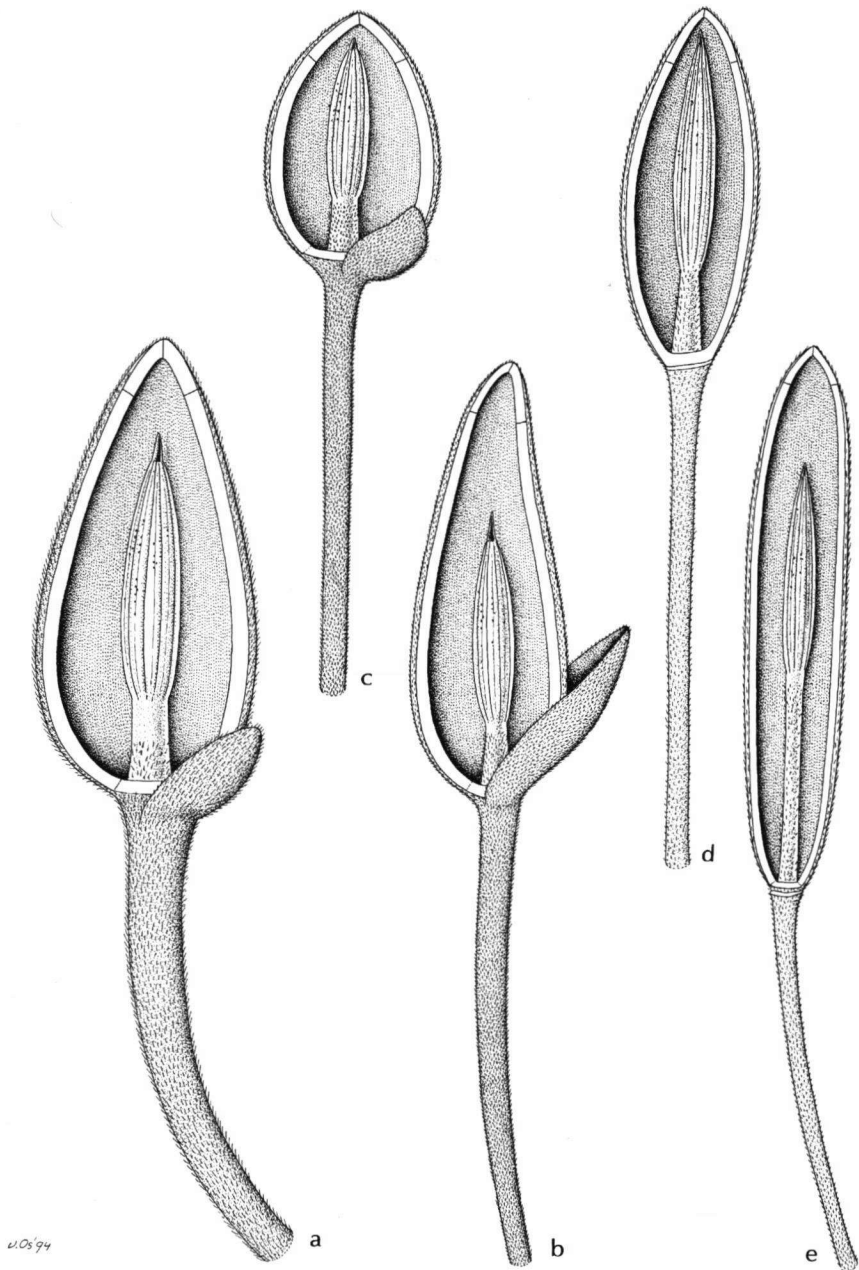


Fig. 2. Analytical drawings of longitudinal sections through mature perianths of male flowers of *Myristica bialata* Warb. and resembling taxa; all $\times 5$. — a. *M. bialata* Warb. var. *bialata* (Henty NGF 29400); b. *M. bialata* var. *brevipila* W.J. de Wilde (Gillison NGF 22472). — c. *Myristica ingrata* W.J. de Wilde (Weinland s.n., ULM, iso L). — d. *Myristica subalulata* Miq. var. *subalulata* (Hartley TGH 11419); e. *M. subalulata* Miq. var. *pedunculata* W.J. de Wilde (Sands c.s. 1481).

Myristica bifurcata (Sinclair) W.J. de Wilde, *Blumea* 35 (1990) 239, f. 1 (2).

Basionym: *Myristica lancifolia* Poir. var. *bifurcata* Sinclair.

subsp. ***bifurcata***

Note — A second subspecies, subsp. *sulaica* W.J. de Wilde, is endemic to the Sula Islands, Moluccas.

Myristica brachypoda W.J. de Wilde, *spec. nov.* — Fig. 3a

Species cum foliis parvis, affinis *Myristicae insipidae* et aliarum in foliis papillosis infra, venis lateralibus multum contrariis infra, fructu solitario c. 3 cm longo subsessile, glabrescente a tomento pilorum c. 0.1 mm longorum differt. — Typus: (*Gray, Floyd & Middleton*) NGF 8079 (L).

Tree 8–10 m. *Twigs* slender, subterete, towards the apex (1–)1.5 mm diam., brown-yellow, at first with extremely minute greyish tomentum, hairs less than 0.1 mm, early glabrescent, bark of twigs lower down brown-blackish, striate and fissured, and thinly flaking, with small inconspicuous lenticels. *Leaves* membranous or thinly chartaceous; blades elliptic-oblong, 10–13 by 3.5–4 cm, base cuneate, top acute-acuminate; upper surface drying light brown (cinnamon-)olivaceous, lower surface pale greyish cinnamon, papillose, non-traumatic dark brown dots absent; midrib slender, raised above, nerves 14–16 per side, flat or sunken above, bright brown and rather contrasting below, at an angle of 70–80° to the midrib, lines of interarching distinct; tertiary veins fine, rather faint; petiole brown-yellowish, 10–14 by 1 (–1.5) mm; terminal leaf bud small, slender, acute, 6–7 by 1 mm, with inconspicuous brown-grey tomentum with appressed hairs less than c. 1 mm. *Inflorescences* (infructescences) situated on the twigs just below the leaves, axillary; of the *Knema*-type, i.e. in female (according to the infructescences) a minute sessile knob, bearing 1 (or 2) flowers. *Male inflorescences, male and female flowers* not seen. *Fruit* solitary, axillary to a leaf-scar just below the leaves; peduncle absent, fruiting pedicel 1–2 mm long, c. 2 mm broad, glabrescent, cracked and flaking; fruit ovoid or ± ellipsoid-fusiform when dry, base and top narrowly rounded or ± tapered, c. 3 by 1.7 cm, (dry) pericarp yellowish brown, c. 2 (?) mm thick, with thin, felty, inconspicuous tomentum of interwoven scale-like hairs 0.1(–0.2) mm, partly glabrescent; mature seed not seen.

Distribution — Only known from the type, collected 20-vii-1955 in a logging area at the Seribi River, near Middletown, Gulf. Prov., Kikori Subprov., Papua New Guinea, 7° 30' S, 144° 30' E.

Habitat & Ecology — (Logged) forest at sea level; fr. July.

Notes — 1. Fieldnotes: tree, 30 ft high, dbh 10 inches. Leaves dark green above, glaucous below. Fruit ovoid, axillary, shortly pedicellate, with fawn close tomentum.

2. Readily keyed out beside *M. insipida*, but distinct in details of the general habit, especially the leaves, and by the subsessile, very short-haired fruit. The seemingly glabrous (glabrescent) fruit is reminiscent of that of *M. tubiflora*, and the specimen on which the present new species is based was named as such by Sinclair (1968: 342). The leaves are in general appearance strongly reminiscent of *M. pumila*, but the fruits of that species are completely different.

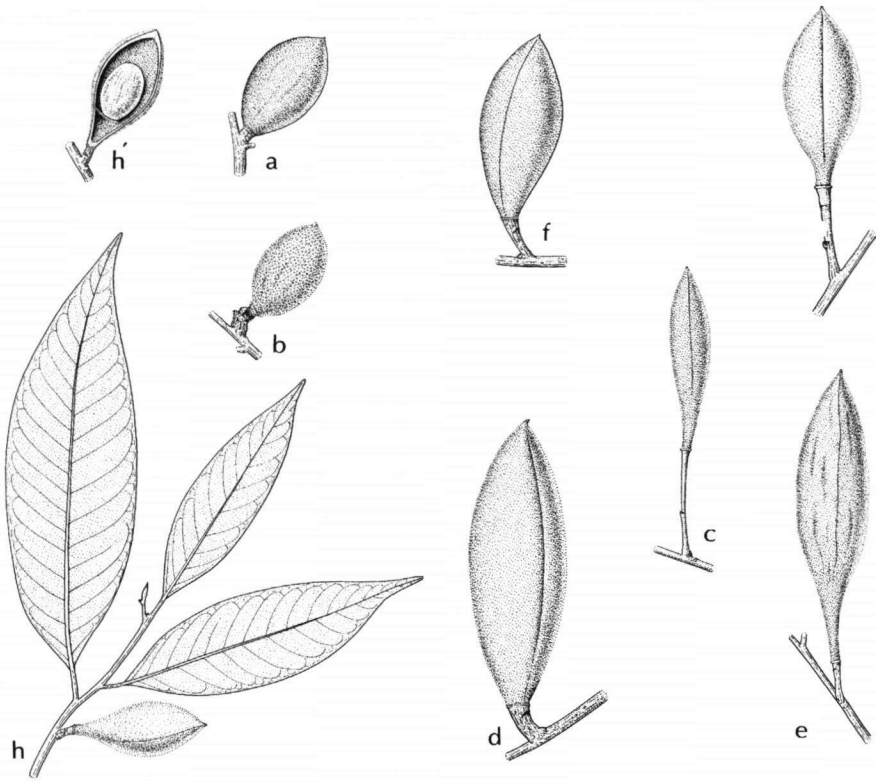


Fig. 3. Fruit of various small-leaved *Myristica* species, all $\times 0.5$. — a. *M. brachypoda* W.J. de Wilde, pericarp glabrescent (NGF 8079, type, L). — b. *M. brevistipes* W.J. de Wilde, pericarp short-pubescent (Darbyshire 929, type, L). — c. *M. flosculosa* Sinclair; note long slender fruiting pedicel, fruit with pseudostalk (Guilianetti in McGregor s.n., K). — d. *M. fusiformis* W.J. de Wilde subsp. *fusiformis*, pericarp largely glabrescent (Milliken 1408, type, K); e. *M. fusiformis* subsp. *pseudostipitata* W.J. de Wilde, fruit largely glabrescent; note pseudostalk (von Römer 304, type, L). — f. *M. laevifolia* W.J. de Wilde, fruit glabrescent (Craven & Schodde 1073). — g. *M. longipes* Warb., fruit minutely mealy pubescent; note stalked inflorescence (Schodde 2963). — h. *M. sogeriensis* W.J. de Wilde, fruit minutely pubescent, with distinct pseudostalk; h'. ditto, dry fruit lengthwise opened, showing seed (Forbes 396, type, K).

Myristica brassii A.C. Smith, J. Arnold Arbor. 22 (1941) 72 (for the type only); Sinclair 245, f. 22.

Note — Foreman (1974: 43; 1978: 210) treated this species under *M. sphaerosperma* A.C. Smith.

Myristica brevistipes W.J. de Wilde, *spec. nov.* — Fig. 3b

Affinis *Myristicae cylindrocarpae* et *M. pygmaeae* in fructu sessile differt. Etiam affinis *Myristicae concinnae* sed in fructu maiore et pagina folii inferioris non papillosa differt. Folia exsiccant viride. — Typus: Darbyshire 929 (L).

Treelet c. 5 m. *Twigs* slender, subterete, towards the apex 1.5–2 mm diam., at first with minute tomentum, brown appressed hairs 0.1–0.2 mm, early glabrescent, bark of twigs lower down coarsely striate or finely longitudinally fissured, brown-black, lenticels not apparent. *Leaves* membranous; blades (oblong-)lanceolate, 7–17 by 2–4 (–5) cm, base short-attenuate or narrowly rounded, top (long-)acute-acuminate; upper surface drying green-olivaceous, lower surface pale greenish brown, glabrous (original indumentum of immature leaves not seen), non-papillose, non-traumatic dots absent; midrib slender, raised above; lateral nerves 10–15 per side, at an angle of 70–80° to the midrib, slender, flat or sunken and inconspicuous above, little contrasting below, lines of interarching indistinct; tertiary veins fine, indistinct; petiole brown-yellow, 7–10 by 1.5 mm; terminal leaf bud rather short, acute, 5–7 by 2 mm, dark brown appressed-pubescent with roughish hairs 0.3–0.5 mm long. *Inflorescences (infructescences)* roughly rusty pubescent with hairs c. 0.5 mm long, axillary to the lower leaves; of the *Knema*-type, i.e. a (sub)sessile, scar-covered wart-like brachyblast, c. 3 mm diam.; bracts not seen. *Male inflorescences, male and female flowers* not seen. *Female inflorescences* (according to infructescences) few-flowered, flowers roughly rusty-brown pubescent with hairs c. 0.5 mm. *Fruits* 1 or 2 per infructescence; fruiting pedicel 2(–3) by 1.5–2 mm, roughly pubescent with hairs c. 0.5 mm, the scar of the bracteole situated about halfway; *fruits* much resembling those of *M. pygmaea*, ellipsoid-oblong, ± fusiform, 2.5–3 by 1.5 cm, base somewhat tapered, top acute, (dry) pericarp 1–2 mm thick, with thin woolly, bright (light) brown or rusty-brown indumentum with hairs 0.3 mm long, those towards the base becoming stouter, c. 0.5 mm long; immature seed ellipsoid-oblong, c. 1.5 cm long.

Distribution — Only known from the type collection, c. 1 mile north-west of Maipa village, Kairuku Subprov., Central Prov., Papua New Guinea.

Habitat & Ecology — In forest on summit of small hill in tall foothill forest; c. 150 m altitude; fr. Sept.

Notes — 1. Fieldnotes: Tree c. 5 m tall, bole c. 2 m, dbh c. 5 cm. Fruits green with rusty-brown bloom. Leaves bright green above, pale green below.

2. The collection on which the present new species is based was included by Sinclair (1968: 339) in his *Myristica cylindrocarpa*; the latter species is quite distinct in details, and especially by its stalked inflorescences. The fruit of the present *M. brevistipes* is very similar to the here newly described *M. pygmaea*, which differs by vegetative characters, and by (shortly) peduncled inflorescences. *Myristica brevistipes* appears particularly close to certain specimens relegated to *M. concinna*, which differs by smaller fruit and more or less distinctly papillose lower leaf surface. Finally there is much resemblance with certain specimens of the New Guinean form of *M. insipida*. The latter species generally has fruit with a more conspicuous, woolly indumentum with longer hairs and leaves papillose below. In New Guinea, however, specimens linking up with *M. insipida* often have leaves with less distinct papillation and this may be indicative that the demarcation of the present *M. brevistipes* with *M. insipida* is not sufficiently defined, but nevertheless its type is in general appearance quite distinct from the majority of *M. insipida* specimens.

Myristica buchneriana Warb., Bot. Jahrb. 13 (1891) 311; Sinclair 321, f. 44; Foreman 187 (excl. descr. of male flowers).

Myristica byssacea* W.J. de Wilde, *spec. nov.

Myristica flosculosa auct. non Sinclair, p.p.: Sinclair 359, p.p., incl. female flowering and fruiting specimens, f. 59.

Ramunculis c. 2 mm diametro, angulis binis, foliis 10–16 cm longis, pagina inferiore cum tomento brevi sericeo, tertiaria nervatura trabeculata. Fructo c. 3 × 2 cm, pedicello c. 1 cm longo, cum cicatrice bracteolae circa medio instructo. — Typus: *C.E. Carr 15549* (L).

Tree 6–7 m. Twigs ± 3-angular with two sharp ridges, towards the apex 1.5–2 (–2.5) mm diam., dull (light) brown, at first with very short tomentum of pale brown 'scales' less than 0.1 mm, glabrescent; bark of older twigs dull brown, striate, neither longitudinally cracking nor flaking, lenticels not apparent. *Leaves* subchartaceous, blades elliptic-oblong, 10–16 by 3–5.5 cm, base attenuate to nearly rounded, top acute-acuminate with conspicuous acumen up to 2.5 cm; upper surface drying olivaceous, lower surface pale, grey-olivaceous or yellowish, late glabrescent or with subsistent tomentum with dense pale brown or grey brown scale-like hairs c. 0.1 mm or less; papillae and dark brown dots absent; midrib moderate, flat or somewhat raised above; nerves 10–15 per side, at an angle of 45–60° to the midrib, ± curving, sunken above, nerves beneath bright brown, contrasting in colour, lines of inter-arching not distinct; tertiary veins moderately distinct, fine, rather trabeculate; petiole 10–15 by 1.5–2 (–2.5) mm; terminal leaf bud slender, acute, 10–15 by 1.5–2 mm, densely dull (yellowish) brown pubescent with appressed hairs c. 0.1 mm. *Inflorescences* (only female known, and infructescence): sessile or up to 1 (–1.5) mm stalked, of the *Knema*-type, axillary to the leaves. *Female inflorescence* pubescent or late glabrescent, c. 1 mm long, bearing 1–3 flowers; flowers short-pubescent with hairs 0.1 mm long or less, bracts and bracteoles caducous, the scar of the latter situated far below the perianth. *Male flowers* not seen. *Female flowers*: pedicel (6–) 7–9 by 1 (–1.5) mm, the scar of the bracteole situated 2–4 mm below the perianth; perianth in bud ovoid-oblong, slightly narrowed in the upper half, c. (6–) 7 by 3.5 mm, base rounded, top narrowly rounded or subacute, not angular in transverse section; lobes 1 (–1.5) mm; ovary ovoid-oblong, appressed golden brown pubescent with hairs 0.1–0.2 mm, incl. stigma c. 3–3.5 by 2 mm. *Fruit* single or in pairs, broadly ovoid-ellipsoid, base broadly rounded and contracted into c. 3 mm long pseudostalk, top rounded with 1.5 mm long apiculum, (2.5–) 2.8–3 by 2–2.3 cm, dry pericarp 2–2.5 mm thick, very short dull brown scurfy-pubescent with hairs c. 0.1 mm or less; fruit stalk stoutish, straight, striate, 9–10 by 3.5–4 mm, with the faint scar of the bracteole situated about halfway; seed (immature) ellipsoid, c. 1.5 by 0.8 cm.

Distribution — Papua New Guinea, known from only two collections found at Isuarava, Northern Prov.: *Carr 15549* (female flowers), *15550* (fruit).

Habitat & Ecology — Montane forest at 1600–1700 m altitude; fl., fr. Feb.

Notes — 1. Fieldnotes: A tree of c. 20 ft tall. Fruit yellow-brown.

2. The collections belonging to the present new species were by Sinclair (l.c.) included in his *Myristica flosculosa*; female flowering and fruiting specimens of the present species are well depicted by Sinclair, l.c. fig. 59. One of the female inflorescences in a Leiden-specimen is 1–1.5 mm stalked, but all other inflorescences seen are sessile.

3. The epithet was chosen because of the silky appearance of the lower leaf surface, which is covered by a dull yellowish brown, very thin indumentum. Other characteristic features are the angular twigs and the rather trabeculate tertiary veins of the leaves.

***Myristica carrii* Sinclair 160, f. 8.**

Note — This species was included in *M. hooglandii* Sinclair by Foreman 200.

Myristica chalmersii Warb., Monogr. Myrist. (1897) 519, t. 19 = ***Myristica globosa* Warb. subsp. *chalmersii* (Warb.) W.J. de Wilde.**

***Myristica chrysophylla* Sinclair 254, f. 26; Foreman 187.**

subsp. ***chrysophylla***

subsp. ***entrecasteauxensis* (Sinclair) W.J. de Wilde, *stat. nov.***

Basionym: *Myristica chrysophylla* Sinclair var. *entrecasteauxensis* Sinclair 257, f. 24; Foreman 189.

Synonym: *Myristica fatua* Houtt. var. *morobensis* Sinclair.

Myristica chrysophylla Sinclair var. *entrecasteauxensis* Sinclair = ***Myristica chrysophylla* Sinclair subsp. *entrecasteauxensis* (Sinclair) W.J. de Wilde.**

***Myristica clemensii* A.C. Smith, J. Arnold Arbor. 22 (1941) 78. — *M. lancifolia* Poir. var. *clemensii* (A.C. Smith) Sinclair 463, f. 81; Foreman 204.**

Note — The specimen *Takeuchi 4957* (L, ex BISH) may key out near *M. clemensii* or *M. lancifolia*, and presumably represents an undescribed species. It was collected Sept. 1989 in Papua New Guinea, East Sepik Prov., Hunstein Range, 4° 28' S, 142° 43' E, altitude not mentioned; a tree 15 m tall, with male flowers. Characterized by the indumentum of twig apex and sterile terminal bud of hairs c. 0.5 mm long, lower leaf surface papillose but covered with persistent dense tomentum of hairs 0.1–0.2 mm, dots absent, peduncle of male inflorescences 2(–3) mm, proceeding into 1 (or 2) scar-covered brachyblast(s) terminally with 5–8 flowers; male perianth oblong, 5–6 mm, woolly hairy (hairs 0.2–0.3 mm long), lobes splitting the perianth for 1/4(–1/3), anthers 7 or 8, androphore about as long as synandrium, 2(–3) mm, glabrous except a collar of conspicuous hairs at the base. The specimen is readily distinguished by the overall conspicuous indumentum, including the dense persisting tomentum of the lower leaf surface.

Myristica coacta* W.J. de Wilde, *spec. nov.

Arbor montana, laminae 14–16 cm longae, 5–7 cm latae, pagina inferiora tomento persistenti dense coacto provisum, infructescencia sessilis, fructus 3.5–4 cm longus cum pedicello 8–10 mm longo. — Typus: (*Henty, Isgar, Galore*) NGF 41553 (K).

Tree c. 10 m. *Twigs* subterete, slender, towards the apex 2(–3) mm diam., at first with minute tomentum, rusty hairs c. 0.1 mm, early glabrescent; bark of twigs lower down grey-brown, coarsely striate, somewhat longitudinally cracking (not flaking), with numerous small lenticels. *Leaves* (thinly) coriaceous; blades elliptic-oblong, broadest at or above the middle, 14–16 by 5–7 cm, top (rather long-)acute-acuminate, base cuneate (acute); upper surface drying dark olivaceous(-brown), lower surface bright yellowish brown or cinnamon because of a persistent, dense, felty tomentum with interwoven scale-like and ‘floculose’ hairs 0.2–0.3 mm; lower leaf surface non-papillose, dark brown non-traumatic dots absent; midrib slender, ± raised above; costae 12–14 per side, at an angle of c. 60° to the midrib, slender and flat above, little raised and rather faint below, lines of interarching indistinct, tertiary veins indistinct at both surfaces. Petiole 15–20 by 2–2.5 mm. Terminal leaf bud slender, subacute, 10–15 by 2 mm, with tomentum with bright rusty hairs 0.2–0.3 mm. *Inflorescences* (sub)sessile, of the *Knema*-type, known only from the infructescences; female inflorescences apparently few-flowered. *Male* and *female flowers* not seen. *Infructescences* sessile, single-fruited; fruiting pedicel 8–10 by 3.5–4 mm, short-pubescent, densely and conspicuously lenticellate, with the (faint) scar of the bracteole 1–3 mm below the top; *fruit* (slightly) immature, ovoid-ellipsoid, 3.5–4 by 2 cm, base narrowed or narrowly rounded, top subacute, (dry) pericarp 3–4 mm thick, indumentum densely dark rusty scurfy, with hairs 0.1(–0.2) mm; mature seed not seen.

Distribution — Known only from the type, collected 15.x.1968 at Oksapmin, W Sepik Prov., Papua New Guinea, 5° 20' S, 142° 15' E, and a deviating collection, *Takeuchi 4136*, from Morobe Prov. (see note 3).

Habitat & Ecology — Tree of c. 10 m height in degraded Fagaceous forest; altitude c. 2000 m; fr. Oct.

Notes — 1. Fieldnotes: Tree, 30 ft tall. Leaves dark green above, brown tomentose below.

2. This new species keys out beside *M. tenuivenia* and *M. inutilis* subsp. *papuana*, species with (partly) small leaves and a persistent, dense, short tomentum below. *Myristica coacta* is readily distinct by the short and dense, felty tomentum with ‘floculose’ hairs.

3. The collection *Takeuchi 4136* from Papua New Guinea, Morobe Prov., Kuper Range, 7° 39' S, 146° 48' E, at c. 2000 m altitude, deviates from the type in general appearance, mainly by having a somewhat less dense tomentum on the lower leaf surface, showing whitish in places. Its fruit measures c. 3.5 by 2 cm, fruiting pedicel 7–10 mm. The specimen was collected far from the type locality of *M. coacta*, and geographically close to the type locality of *M. lasiocarpa*, a resembling species that differs by much longer and shaggy hairs on the fruit. Of both species male flowers are not known and more material is needed to establish the true status of *Takeuchi 4136*, which might represent a separate new species.

Myristica conspersa* W. J. de Wilde, *spec. nov.

Myristica scripta affinis, in ramunculis 1(–2) mm diam., foliis virescentibus (in sicco) infra punctatis, floris masculini periantho c. 3.5 mm longo, bracteola c. 1 mm longa persistenti, fructu (2–)2.5 cm longo basi in pseudo-pedicello brevi contracto differt. — Typus: *Schram BW 7964* (L).

Tree 20–35 m. *Twigs* (sub)terete, at first with sparse tomentum, brown or greyish hairs c. 1 mm long or less, early glabrescent, slender, towards the apex 1–2 mm diam.; bark of twigs lower down grey-brown, coarsely striate or finely fissured, not cracking nor flaking, without or with small inconspicuous lenticels. *Leaves* (thinly) chartaceous; blades (elliptic-)oblong or oblong-lanceolate, 5–10 by 2–2.5(–3) cm, base attenuate or cuneate, top subacute or usually blunt or narrowly rounded; upper surface drying olivaceous, lower surface grey brown or pale brown, at first with dense or lax tomentum, minute brown-grey scale-like hairs 0.1 mm or less, early or late glabrescent, or tomentum (sub)persistent; not or faintly papillose; non-traumatic dots and dashes present; midrib slender, (flat or) raised above, nerves 15–22 per side, thin and flat and inconspicuous above, at an angle of (70–)80° to the midrib; lines of interarching faint, tertiary veins faint or invisible; petiole 7–12 by 1(–1.5) mm, terminal leaf bud small, slender, acute, 7–10 by 1.5(–2) mm, densely dull pale brown or greyish appressed-pubescent with hairs c. 1 mm or less. *Inflorescences* of the *Knema*-type, i.e. sessile or subsessile, simple (or 2-fid) scar-covered slender wart-like or worm-like brachyblasts up to 5 mm long, 1–1.5 mm thick, glabrescent, peduncle absent or up to 2 mm long; in male inflorescences terminally with a sub-umbel of (2–)4–6 flowers (flower buds) of various size according to age; female inflorescences 2(–4)-flowered; flowers minutely dull brown or dark brown pubescent with hairs 0.1(–0.2) mm, bracteole at apex of pedicel, persistent or caducous. *Male flowers*: pedicel slender, c. 3 by 0.5 mm; bracteole small, broadly rounded, c. 1 mm, persistent, mature male perianth in bud oblong(-tubiform), c. 3.5 by 1–1.5 mm, top narrowly rounded, base rounded, lobes 1(–1.5) mm, at sutures (0.1–)0.2 mm; androecium slender, cylindrical, c. 2.5 mm; androphore cylindrical, c. 1 by 0.3 mm, glabrous; synandrium cylindrical, c. 1.5 by 0.3–0.4 mm, anthers 6 or 7 (i.e. with c. 12 thecae), contiguous, sterile apex bluntish, (0.1–)0.2 mm. *Female flowers*: pedicel c. 3 by 0.6 mm; bracteole caducous, leaving its scar slightly below the perianth; (sub)mature female flower perianth ovoid, c. 3 by 2 mm, ovary not seen. *Fruit* solitary, subsessile; fruiting pedicel slender, at first with minute tomentum, glabrescent, c. 5 by 1 mm, scar of the bracteole nearly 1 mm below the fruit; fruit ellipsoid (-fusiform), (2–)2.5 by 1.4 cm, top acute with minute pointed style-remnant, base contracted into c. 3 mm long pseudostalk, dry pericarp c. 2 mm thick, with minute, scurfy, rust-brown tomentum, hairs 0.1 mm or less; seed ellipsoid, c. 1.5 cm long.

Distribution — West New Guinea, Vogelkop Peninsula.

Habitat & Ecology — Rather common in primary forest on sandy clay; from low altitudes up to c. 900 m; fl. May and Nov., fr. May.

Notes — 1. Fieldnotes: Bole not buttressed. Bark with shallow fissures or not fissured, either not peeling, or strongly flaking.

2. The three specimens here united into the new species *M. conspersa* are rather heterogeneous, and placed into one species provisionally and for convenience's sake.

All three do not fit in any other known species, but when more material becomes available it may appear that they represent more than one taxon. Some brief notes on the following specimens: — *Schram BW 7964*, the type, has the leaves below with rather persistent tomentum, although the hairs are extremely short, scale-like, and interwoven, so that it seems as if the leaves are glabrous. This specimen originates from c. 840 m altitude. It has male flowers, with small perianth, the small bracteole seems persistent. Bark not fissured, strongly peeling. — *Schram BW 6065*, from 'low altitude' is female: there are a few (sub)mature flowers, and some fruit. This specimen has particularly delicate twigs, at apex only 1 mm diam. or less; its leaves are glabrous (early glabrescent) below. — *Moll BW 12850* has only immature flowers. The specimen deviates by its somewhat stouter twigs and leaves with a somewhat thicker texture; it was collected not far from the type, near the Kebar valley, at c. 870 m altitude. This specimen approaches *M. flavovirens* from the same area in general appearance.

3. *Myristica conspersa* seems most related to *M. arfakensis* from about the same region, especially by its similar, small, male flowers and androecium; it differs by stalked inflorescences, slightly larger fruits, and by the lower leaf surface being only dotted, not dashed and dotted. *Myristica scripta* (from New Guinea, except Vogelkop) is another closely related species, which differs by a generally somewhat stouter habit, leaves with acute top, a more dark brown drying colour, and larger flowers and fruit not contracted at the base into a pseudostalk; its flowers (incl. the androecium), however, are very similar. *Myristica pachyphylla*, also resembling *M. conspersa*, has larger fruit.

4. With Sinclair (1968) and in the herbarium, specimens were determined as *M. globosa* and as *M. lancifolia* ('probably young and rather atypical'). The present new species has the faint, rather closely set lateral nerves in common with *M. lancifolia*.

Myristica cornutiflora Sinclair 348, f. 53, 54; Foreman 190, f. 87.

subsp. ***cornutiflora***

Note — Foreman (l.c.) includes *M. gracilipes* Sinclair in *M. cornutiflora*, but that species is kept as a distinct species in the present treatment.

subsp. ***elegans*** W.J. de Wilde, *subsp. nov.*

A subspecies typica in pedunculo gracile, 1–1.5 mm crasso, perianthio masculi elongato, 12–20 × 2–3 mm, pedicello 8–14 mm longo differt. — Typus: (*Foreman & Kumul*) NGF 48167 (L).

Male inflorescences elegant, the peduncle slender, 1–1.5 mm wide; male perianth much elongated, 12–20 by 2–3 mm, membranous, c. 0.2–0.3 mm thick, at apex ± triangular in section, but not with sharp edges; pedicel slender, 8–14 mm long; scar of bracteole situated up to 2 mm below base of the perianth; androphore 3–4.5 mm long, about as long as the synandrium; fruit (somewhat immature) ± fusiform, top acute, 4.5–5.5 by 2(–2.5) cm, at base with a tapering pseudostalk, the pericarp densely, very minutely, brown 'scurfy' pubescent with hairs less than 0.1 mm.

Distribution — Northern Central Papua New Guinea, West Sepik Prov.: *LAE* 50573, 56513, 56552, 56556; *Ledermann* 9728; *NGF* 42668, 48154, 48167; East Sepik Prov.: *Takeuchi* 6849.

Habitat & Ecology — *Hopea-Anisoptera* forest, lowland rain forest beside rivers, flood plains, mid-montane forest, forest on low ridges; 200–1050 m altitude; fl., fr. March, June, Sept.

Note — Fieldnotes: Shrub 1–2 m, or low tree to 10 m. Flowers creamy with a waxy appearance. Fruit green-yellow or orange-yellow, orange-brown. Outer bark smooth, grey or dark brown, inner bark cream; wood soft, straw or light brown. Leaves glossy. Sap from bark watery, red. Fresh male flowers recorded as to 2.5 cm long.

Myristica costata Warb., Bot. Jahrb. 18 (1893) 191; Monogr. Myrist. (1897) 487, t. 19; K. Schum. & Laut., Fl. Schutzgeb. Südsee (1900) 327; Markgraf, Bot. Jahrb. 67 (1935) 166, p.p. — Type: *Hellwig* 247 (B, lost), from Sattelberg near Finschhafen, at 2500 ft altitude.

Notes — 1. A doubtful species, type lost. Amply described by Warburg. Placed in the synonymy of *M. subalulata* Miq. by Sinclair (1968: 385) and Foreman (1978: 210), but this is unlikely, as judged from the discussion by Warburg (1897: 487): twig without ?ant-swellings, \pm not hollow, fruit larger than in *M. subalulata* and *M. hollrungii*.

2. Markgraf (l.c.) added and described a male flowering specimen, possibly not belonging to the type (B, lost as well). Its identity is discussed by Sinclair (395), but the fruit of the original type specimen, 4.5 cm long, is far too large for *M. subalulata* var. *subalulata* as accepted by me; var. *paucicarpa* has larger fruits, 2.5–3 cm long, but still the fruit described by Warburg is much larger. Possibly its identity must be sought in the vicinity of *M. bialata* Warb. or *M. hollrungii* Warb.

Myristica crassipes Warb. in K. Schum. & Laut., Fl. Schutzgeb. Südsee (1901) 326; Sinclair 353, f. 55; Foreman 190 (p.p.). — Fig. 6d

subsp. **crassipes**

Note — Foreman (l.c.) included *M. firmipes* Sinclair, but this species is kept separate in the present census.

subsp. **altmontana** W. J. de Wilde, *subsp. nov.*

A typo-subspecie in fructu mature glabrescenti, stipite gracili, 6–17 × 3–4 mm, cicatrice bracteolae sita 2–7 mm infra fructum, differt. — Typus: (*Henty, Isgar, Galore*) *NGF* 41681.

Differs from the type subspecies by generally slightly thicker twigs, at apex (1.5–) 2–3 mm diam. Leaves (sub)coriaceous, the nerves impressed above, rendering the blade sometimes almost bullate. Male flowers not known but likely as described for the type subspecies. Fruit early glabrescent, rather ellipsoid or broadly fusiform; fruiting pedicel longish, 6–17 by 3–4 mm, smooth or somewhat fissured, the scar of the bracteole situated at 2–7 mm below the fruit.

Distribution — Eastern Irian Jaya and Papua New Guinea: *Brass & Versteegh* 11925, 12597; *Clemens* 5475, 7810a, 9312; *LAE* 59598, 59854; *NGF* 1076, 3393, 8444, 11422, 20198, 20418, 20425, 20872, 24710, 41624, 41681 (type), 42442.

Habitat & Ecology — Altitude (1250–)1500–2000 m.

subsp. **marronia** W.J. de Wilde, *subsp. nov.*

A typo-subspecie in foliis membranaceis, fructu cum (denso) tomento castaneo pilorum 0.1–0.2 mm longorum, differt. — Typus: (*Stevens & Veldkamp*) *LAE* 54345 (L).

Leaves membranous-chartaceous; fruit with bright dark-chestnut- or chocolate-coloured tomentum, with hairs 0.1–0.2 mm, apparently persistent.

Distribution — Two collections known from Mt Suckling, Milne Bay Prov., Papua New Guinea: *Veldkamp & Stevens* 5808; *LAE* 54345 (type).

Habitat & Ecology — Montane forest rather near riverbanks of rivulets in open *Araucaria* forest; 1700–1800 m altitude; fl., fr. June, July.

Note — Fieldnotes: Tree 10–15 m; bark brown with shallow fissures, inner bark reddish. Wood pale straw with ± orange markings. Leaves shiny above, glaucous below. Flowers brownish outside, green inside; fruit brown.

Myristica cucullata Markgraf, Bot. Jahrb. 67 (1935) 166; Sinclair 364, f. 60G; Foreman 192, p.p., for the type only.

Myristica cucullata auct. non Markgraf, p.p.: Sinclair 364, f. 60D–F = ***Myristica duplopunctata*** W.J. de Wilde subsp. ***versteeghii*** W.J. de Wilde.

Myristica cylindrocarpa Sinclair 337, f. 50; Foreman 192, p.p.

Note — Part of the original material cited by Sinclair is in the present treatment described as a new species, *M. brevistipes*.

Myristica duplopunctata W.J. de Wilde, *spec. nov.*

Myristica brassii et *M. neglecta* affinis, in foliis ambobus lateribus punctatis, fructu 4–5 cm longo, pericarpio (in sicco) 5–10 mm crasso minute tomentoso differt. — Typus: *Iwanggin* *BW* 9041 (L).

Tree 10–25 m. *Twigs* medium or stoutish, subterete or ± angular because of grooves caused by drying, at first with minute tomentum, early glabrescent, towards the apex 3–6 mm diam.; bark of twigs lower down smooth or fissured, with or without lenticels. *Leaves* chartaceous or (thinly) coriaceous; blades elliptic-oblong or oblong, 15–23 cm long; lower surface with thin dense tomentum of interwoven scale-like hairs c. 0.1 mm, appearing as ± glabrous (lens!) or late glabrescent, not papillose; upper and lower surface (at least towards the leaf margin) with scattered small dark brown or blackish non-traumatic dots (lens!); midrib raised above; lateral nerves 20–25 per side, flat or sunken above, faint below. *Inflorescences* as in *Knema*, but peduncled, i.e. with a short peduncle [in male (3–)10 mm long, in female c. 5 mm long], ending in a small scar-covered portion terminally with few flowers in a clus-

ter. *Male flowers* much resembling those of *M. brassii* and *M. neglecta*; only known at anthesis in subsp. *duplopunctata*. *Fruit* solitary, 4–5 cm long; only known in subsp. *versteeghii*.

Notes — 1. An incompletely known taxon from the mountains of northern Irian Jaya and W northern Papua New Guinea; the rather heterogeneous material is accommodated in two allopatric subspecies.

2. Specimens were relegated by Sinclair (1968) and Foreman (1978) to *M. cucullata*, but I prefer to restrict this latter species to the original type collection.

KEY TO THE SUBSPECIES

- a. Twigs stoutish, at apex c. 5 mm diam. Leaves drying (thinly) coriaceous. At 1500–2100 m altitude subsp. **versteeghii**
- b. Twigs medium, at apex c. 3 mm diam. Leaves ± chartaceous. At 500–700 m altitude subsp. **duplopunctata**

subsp. **duplopunctata**

Tree c. 25 m. *Twigs* medium, towards the apex terete, c. 3 mm diam., at first with greyish or brown tomentum, hairs c. 0.1 mm, early or late glabrescent, (grey-) brown, finely striate, bark of twigs lower down (coarsely) striate with few or numerous lenticels. *Leaves* chartaceous or thinly coriaceous; blades oblong or oblong-lanceolate, 15–23 by 5–8 cm, base (short-)cuneate, top (acuminate-)acute; upper surface drying olivaceous or brown, with scattered dark dots, sometimes only (few) towards the blade margin; lower surface pale brown with dense layer of interwoven scale-like hairs c. 0.1 mm or less, or late glabrescent, with scattered small blackish dots which in the younger leaves may be partly obscured by the tomentum; lower leaf surface not papillose; midrib rather slender, raised above; lateral nerves (20–)25–30 per side, flat or sunken, slender above, little raised and not conspicuous below; tertiary veins invisible; petiole 15–20 by (2–)2.5 mm; terminal leaf bud slender, acute, c. 10–15 by 2 mm, with appressed tomentum of greyish or brown hairs 0.1–0.2 mm long. *Inflorescences* in male: peduncle smooth, slightly flattened, dark brown, finely pubescent or glabrescent, 5–10 mm long, ending in a minute scar-covered portion with 2 or 3 flowers; flowers minutely pubescent with rusty hairs 0.1 mm long or less, bracteole caducous, slightly below the perianth. *Male flowers*: pedicel 13–14 by 1.5 mm, the scar of the bracteole 3–3.5 mm below the top, perianth leathery; mature bud (ellipsoid-)oblong, c. 10 by 4.5 mm, top and base narrowly rounded, apical portion not angular in transverse section, lobes c. 2 mm, at sutures 0.5 mm; androecium stout, cylindrical, tapered to the top, c. 8 mm long, androphore stout, slightly shorter than the synandrium, cylindrical, 3(–3.5) by 1.5 mm, in the lower half with minute whitish hairs less than 0.1 mm, synandrium c. 4 by 1.5(–2) mm, anthers 8–10 (i.e. with 16–20 thecae, contiguous), sterile apex acute, 0.7–1 mm long. *Female flowers* and *fruit* not seen.

Distribution — Three collections from the coastal mountains in northern Irian Jaya: *Karstel* BW 5321, 5324; *Iwanggin* BW 9041 (type).

Habitat & Ecology — Scarce or locally common in primary forest on clayey soil or on stony clay; 500–700 m altitude; fl. March, May.

Notes — 1. Fieldnotes: In young tree: bark black, slightly flaking and with some watery sap.

2. Specimens (of the type subspecies) may resemble *M. mediovibex*, but that species is more delicate, and its leaves are not punctate.

3. The male flowers of *M. brassii*, *M. neglecta*, and the present species are much alike. The staminal column is completely hairy in *M. neglecta*, only so in the lower half in *M. brassii*, whereas it is extremely inconspicuously pubescent with pale hairs less than 0.1 mm in *M. duplopunctata*.

subsp. *versteeghii* W.J. de Wilde, *subsp. nov.*

Synonym: *Myristica cucullata* auct. non Markgraf: Sinclair 364, f. 60D–F.

A typo-subspecie in habitu robustioro, ramunculis ad apicem c. 5 mm diametro, foliis (sub)coriaceis, nervis lateralibus dilutis, tertiaria nervatura invisibili, fructu 4–5 cm longo, pericarpio in sicco 5–10 mm crasso, tomento farinoso cum pilis c. 0.1 mm, differt. — Typus: *Brass & Versteegh 12512* (L).

Tree 10–25 m. *Twigs* stout, at first with grey or brown tomentum, hairs less than 0.1 mm, early glabrescent, ± angular or deeply furrowed on drying, at apex c. 5 mm diam., bark of twigs lower down coarsely striate and with a few lenticels. *Leaves* thinly or thickly coriaceous; blades (elliptic-)oblong, ± parallel-sided or broadest somewhat above the middle, 15–20 by (5–)6–8 cm, base (broadly) rounded, top bluntish or ± acute-acuminate; upper surface drying dark olivaceous or (dark) brown, with small, regularly spaced, blackish dots (lens!), lower surface pale brown or grey-brown, similarly dotted, the dots obscured in not too old leaves by thin, greyish, felty tomentum with minute interwoven scale-like hairs 0.1 mm or less, lower leaf surface not papillose; midrib stoutish, flat or somewhat raised above, lateral nerves 22–30 per side (with in addition numerous lesser intercalary ones), flat or sunken, thin, and inconspicuous above and below; tertiary invisible; petiole 15–20 by 4–5 mm; terminal leaf bud acute, c. 15 by 3–4 mm, with dense tomentum of very minute appressed hairs less than 0.1 mm, appearing glabrous. *Inflorescences* incompletely known; peduncle 5–10 mm long, finely pubescent. *Male and female flowers* not seen (but see the note). *Fruit* solitary; infructescence with a stout short peduncle, 5–10 mm long; fruit ± ellipsoid, 4–5 by 3.5–4 cm, pericarp rather firm, (5–)10 mm thick, with dense, mealy, rusty tomentum with hairs 0.1 mm long; fruiting pedicel 6–8 mm long, stoutish, with the scar of the bracteole at c. 1/3 from the top; mature seed ellipsoid, 2.5 cm long; seed according to the herbarium label *LAE 59358*: brown, 1 cm long.

Distribution — Mountains at the north side of the New Guinean main range in W Irian Jaya and W Papua New Guinea (W Sepik Prov.): *Brass & Versteegh 12512, 13523; Milliken 1269; (Vinas et al.) LAE 59358*.

Habitat & Ecology — Frequent in primary forest on slope of ridge; montane forest on top of ridge with small trees, shrubs and dense moss dominating the understorey; 900–2100 m altitude; fr. Feb., March, April.

Note — Resembling *M. neglecta* and *M. millepunctata*, differing by smaller leaves with small scattered dots on both surfaces. Possibly subsp. *versteeghii* merits the

status of a species of its own; its inclusion in *M. duplopunctata* is provisional, until more and (male) flowering material becomes available. The specimen *Milliken 1269* (in K) has a short-peduncled male inflorescence, peduncle c. 3 mm long, with a few very immature male flowers: pedicel stout, c. 3 by 2 mm, bracteole (largely enveloping the immature perianth) boat-shaped, c. 5 by 4 mm, perianth ellipsoid-fusiform, c. 4.5 by 3 mm; androecium c. 3 mm, synandrium c. 2 mm long, with 4 or 8 anthers (still septated, as usual in immature state), androphore c. 1 mm, apparently completely glabrous.

Myristica ensifolia Sinclair 332, f. 48; Foreman 193.

Myristica euryocarpa Warb. in K. Schum. & Laut., Fl. Schutzgeb. Südsee (1900) 327
= *Myristica hollrungii* Warb.

Myristica fasciculata W. J. de Wilde, *spec. nov.*

Myristica subalulata ramunculis cavis angulatis similis, sed fructu ovoideo-oblongo distaliter attenuato 3–3.5 cm longo cum pedicello gracili 10–15 mm longo differt. — Typus: *Hoogland & Craven 10400* (L).

Tree 5–9 m. *Twigs* subterete or 2-angled, hollow and faintly swollen in places with slit-like perforation, and inhabited by ants (see note 2), towards the apex (4–)5–7 mm diam., with raised lines or low wings to c. 1 mm high between the insertions of the petioles, at first with tomentum, dense dull brown scale-like hairs 0.1 mm or less, early glabrescent; twigs lower down striate (not flaking), with scattered small but conspicuous lenticels. *Leaves* membranous; blades oblong, ± parallel-sided or broadest at or somewhat above the middle, 20–35 by 7.5–14 cm, base (short-)cuneate, (broadly) rounded or shallowly cordate, top acute-acuminate; upper surface drying olivaceous(-brown), lower surface pale greyish brown, papillose or not (see note 3); without dark dots; midrib rather slender, flat (or slightly raised towards the top), lateral nerves 17–30 per side, slender, flat or impressed above, at an angle of 60–80° to the midrib, lines of interarching distinct, tertiary veins laxly reticulate, rather distinct; petioles 15–25 by 2–3 mm; terminal leaf bud slender, acute, 10–15 by 2–3 mm, densely covered with dull brown tomentum with scale-like hairs c. 0.1 mm. *Inflorescences* of the *Knema*-type, i.e. (sub)sessile scar-covered wart-like brachyblasts, simple or forked, to 7 mm long, 4 mm wide, finely brown pubescent; bracts small, caducous; male inflorescences terminal with subumbels (clusters) of 8–15 flowers (or flower buds), all of nearly the same size and age, female inflorescences of subumbels of 6–10 flowers, of similar size and age, apparently often present together with fruit developed from the flowers of a previous flowering season (see note 4). *Flowers* long-pedicellate, ± densely or sparsely dark brown or dull brown pubescent with hairs 0.1 mm or less, or somewhat glabrescent, bracteoles caducous (see note 5), situated at the top of the pedicel. *Male flowers* (immature): pedicel 10–11 mm long, 1(–1.5) mm thick, bracteole broadly ovate, sometimes faintly 3-topped, c. 3.5 mm long, inserted at the transition to the perianth, (immature) perianth in bud ellipsoid(-oblong), c. 4.5 by 3 mm, lobes 1(–1.5) mm long, at

sutures 0.3(–0.4) mm thick; androecium c. 3 mm long, androphore 0.3 mm long, 0.5 mm wide, with scattered minute pale hairs less than 0.1 mm long, synandrium 2.5–2.8 by 1 mm, top rounded, anthers 8–10, sterile apex absent. *Female flowers*: pedicel 7–9 mm long, bracteole caducous, not seen, leaving its scar at the top of the pedicel; mature perianth in bud ovoid-oblong, \pm tapering to the top, 6–8(–9) by 3–5 (–6) mm, lobes 2–3 mm long, ovary ovoid-oblong, densely (reddish) brown pubescent with scale-like hairs less than 0.1 mm, 4.5–6 by 2–3 mm, at apex narrowed into 2-lobed stigma. *Fruit* clustered in fascicles of (2–)4–7 per infructescence, sometimes (or always?) with flowers of a later flowering period in-between; fruit rather elongate, ovoid-oblong, 3–3.5 by 1(–1.5) cm, gradually narrowed from about the middle into a narrow apex which is 2–3 mm beaked by the stigma remnant, base rounded; pericarp (dry) thin, c. 1 mm thick, with dense dark brown or red brown tomentum with minute scale-like hairs less than 0.1 mm; fruiting pedicel slender, 12–15 by 1(–1.5) mm, with a few conspicuous warty and ‘mealy’ lenticels towards the apex; seed c. 2 cm long, ellipsoid-oblong.

Distribution — Papua New Guinea, a local endemic of the upper Sepik River area, Sepik Prov.: *Hoogland & Craven 10400, 10687*; (*Sayers*) *NGF 19538*.

Habitat & Ecology — Locally common, in primary and secondary forest; forest on river flat; 50–150 m altitude; fl., fr. March, June, July.

Notes — 1. Fieldnotes: Slender tree; locally common. Myrmecophilous. Leaves glaucous or greyish white below. Flowers cream or whitish; fruit orange-brown, 1 inch long.

2. Ant-swellings. The twigs in the available limited material are not very conspicuously swollen. The twigs are hollow and but slightly broadened in places, but there are distinct slit-like openings. The herbarium label of *Hoogland & Craven 10400* mentions that the tree is myrmecophilous.

3. Lower leaf surface. This is in *Hoogland & Craven 10400* and *10687* not papillose, in *NGF 19538* distinctly papillose. The leaves of the latter collection slightly differ also in shape and general aspect. It is recalled here that in a number of species I consider the feature of a papillose lower leaf surface as a good additional character for species delimitation, a character apparently breaking down in the present species.

4. Quite markedly, the two mainly female flowering and mainly fruiting collections have fruits and flowers together in part of the inflorescences within each specimen.

5. The bracteole of female flowers is early caducous; the male flowers, as given in the description of *Hoogland & Craven 10687*, have the bracteole still persistent, but likely they fall off later, because these flowers all are clearly still immature.

Myristica fatua Houtt., Nat. Hist. Pl. 2 (3) (1774) 337; Sinclair 268, p.p., f. 30.

Note — Sinclair (l.c.) and Foreman 193 recognize for New Guinea a number of varieties, all of which are relegated here to different species.

Myristica fatua Houtt. var. *ingens* Foreman 37, f. 1; Foreman 193 = *Myristica ingens* (Foreman) W.J. de Wilde.

Myristica fatua Houtt. var. *morindiifolia* (Blume) Sinclair 286, f. 34; Foreman 194 = *Myristica subcordata* Blume var. *morindiifolia* (Blume) W.J. de Wilde.

Myristica fatua Houtt. var. *morobensis* Sinclair 289, f. 35 = **Myristica chryso-phylla** subsp. **entrecasteauxensis** (Sinclair) W. J. de Wilde.

Myristica fatua Houtt. var. *papuana* Markgraf, J. Arnold Arbor. 10 (1929) 77, 214; Sinclair 294, f. 37; Foreman 194, f. 88 = **Myristica inutilis** Rich. ex A. Gray subsp. **papuana** (Markgraf) W. J. de Wilde.

Myristica fatua Houtt. var. *quercicarpa* Sinclair 302, f. 38D–F; Foreman 196 = **Myristica quercicarpa** (Sinclair) W. J. de Wilde.

Myristica fatua Houtt. var. *subcordata* (Blume) Miq., Ann. Mus. Bot. Lugd.-Bat. 2 (1) (1865) 46, p. p.; Sinclair 307, f. 38A–C; Foreman 196 = **Myristica subcordata** Blume var. **subcordata**.

Myristica filipes W. J. de Wilde, *spec. nov.*

Myristica flosculosa et *M. pumila* affinis, sed differt floris masculini periantho tubiformi intus ad basin verrucato, inflorescentiis sessilibus, fructu pseudo-pedicello longo proviso; pedicellus gracilis, 25–30 mm longus. — Typus: (Foreman) LAE 52061 (L).

Bushy or erect tree, 2.5–9 m. *Twigs* slender, in apical portion 1–1.5 mm diam., faintly angular, at first with minute tomentum of greyish hairs less than 0.1 mm, very early glabrescent, bright brown or yellowish brown; bark of older twigs dark (grey-)brown, (finely) striate, neither cracking nor flaking, lenticels inconspicuous or absent. *Leaves* chartaceous; blades elliptic-oblong or oblong, 6–14(–18) by 2–4.5 (–7.5) cm, base short to long attenuate, top acute-acuminate; upper surface drying dark brown, lower surface glabrous, at first with minute tomentum, hairs less than 0.1 mm, very early glabrescent, drying mid-brown; not papillose; without dots; midrib slender, (flat to) raised above, nerves 11–16 per side, at an angle of c. 70(–80)° to the midrib, sunken above, nerves on lower leaf side comparatively strong, raised, yellowish brown and contrasting, lines of interarching not very distinct; tertiary veins indistinct; petiole 6–10(–16) by 1–1.5(–2.5) mm, terminal leaf bud slender, acute, 4–6 by 1 mm, minutely greyish appressed pubescent with hairs less than 0.1 mm. *Inflorescences* sessile, of the *Knema*-type, simple or (in male) sometimes 2- (or 3-) forked, scar-covered rather slender brachyblasts, up to 6 mm long, glabrescent, terminally with a 1–4-flowered cluster with flowers (flower buds) of slightly different age and size; female inflorescences consisting of a small wart, c. 1 mm high, according to the infructescences bearing only a single flower; bracts minute, caducous; flowers glabrous, except for a few minute, scattered, scale-like hairs less than 0.1 mm, bracteole not seen, caducous, leaving its scar on the long, slender pedicel far below the perianth; perianth membranous, c. 0.2 mm thick. *Male flowers*: pedicel slender, 9–11 mm long, 0.4–0.5 mm thick, the scar of the bracteole 4–4.5 mm below the perianth; perianth elongate, ± tubiform, somewhat narrowed below the middle, c. 7 by 1.5 mm, base short-attenuate, top bluntish (to subacute), somewhat angular in transverse section; lobes c. 2 mm, i. e. splitting the perianth at anthesis for

c. 1/4, suberect; perianth inside contiguous with the androphore thickened with irregular warty appendages; androecium cylindrical, slender, 6–6.5 mm long, synandrium cylindrical, c. 3 by 0.5–0.6 mm, incl. subacute sterile apex c. 0.2 mm, anthers 6 or 7 (c. 15 thecae), contiguous; androphore cylindrical, slender, c. 3.5 by 0.4 mm, glabrous. *Female flowers* not seen; according to the perianth remnant below the fruit of *Conn et al.* 281 (in L): perianth tubiform, c. 7 by (1.5–)2 mm, lobes c. 1.8 mm, slightly out-curved. *Fruit* solitary; ± oblong, 3.5–4.5 by 1.2–1.5 cm, top acute (with minute apiculum), the basal part 1.5–2 cm narrowed into a slender pseudostalk, true fruit stalk (fruiting pedicel) slender, c. 25–30 mm long, c. 0.5 mm thick, with the scar of the bracteole at or below the middle; dry pericarp c. 1 mm thick, covered with very minute dense tomentum with greyish brown hairs less than 0.1 mm, seed ellipsoid, approximately 2 cm long.

Distribution — E Papua New Guinea, a local endemic of the Morobe Prov.; all collections from the Buso River area, Lae Subprov.: *Conn (et al.)* 182, 281; *LAE* 51668, 52061; *NGF* 45115, 45116,

Habitat & Ecology — Coastal swamp forest (with *Pandanus*), river flat forest, forest on low ridges; also secondary forest; 0–15 m altitude; fl. Aug., fr. May–Aug.

Notes — 1. Fieldnotes: Low bushy or straight tree, 2.5–9 m tall, bole dbh to 15 cm. Bark light grey or brown, ± smooth. Leaves recorded as 'silvery green below'.

2. Some specimens assigned to the present new species were formerly named *M. tubiflora*.

3. *Myristica filipes* obviously belongs with *M. flosculosa* and *M. pumila* to a coherent group of three species, all characterized by tubiform male flowers with the lower half of the perianth inside, contiguous with the androphore, conspicuously swollen by irregular warty thickenings. As in *M. pumila* the fruiting pedicel is peculiarly long and slender.

Myristica finschii Warb., Monogr. Myrist. (1897) 534, t. 19, 1–2; Markgraf, Bot. Jahrb. 67 (1935) 169.

Note — The type was lost in B. According to Markgraf, *M. finschii* was based on loose fruit of *Myristica fatua* var. *papuana*, now *Myristica inutilis* Rich. ex A. Gray subsp. *papuana* (Markgraf) W.J. de Wilde, and a leafy twig of *Myristica argentea* Warb.

Myristica firmipes Sinclair 355, f. 56.

Note — With Foreman 190 this species was sunk into *M. crassipes*.

Myristica fissiflora W.J. de Wilde, *spec. nov.*

Speciei novae *Myristicae subalutatae* similis, sed a floribus masculi cum perianthio lobato usque ad plus quam medium, bracteola 6–7 mm longa, caduca differt. — Typus: (*Henty*) *NGF* 28041 (L).

Shrub or tree 3–10 m. *Twigs* subterete or somewhat flattened, with distinct raised lines or short wings running at both sides between the bases of the petioles, wings 1(–2) mm high, twig towards apex (4–)5–10 mm diam., at first with minute to-

mentum, dull brown hairs 0.1–0.2 mm, glabrescent, smooth or finely striate, bright brown or dark brown, hollow and with ant-swellings similar to those in *M. subalulata*; bark of twigs lower down striate, with some conspicuous lenticels or not. *Leaves* membranous or (sub)chartaceous; blades obovate-elliptic to oblong, broadest at or usually somewhat above the middle, 22–35 by 7–16 cm, the base short-cuneate to rounded or shallowly cordate, the top acute or acute-acuminate; upper surface drying olivaceous, lower surface greyish(-green), glabrous or glabrescent, at first with minute, scattered, pale brown, scale-like hairs 0.1 mm long or less, glabrescent, without dots, lower surface \pm papillose (subsp. *fissiflora*) or not (subsp. *kostermansii*); midrib medium or slender, flat or slightly raised above, lateral nerves 18–23 per side, slender, flat or sunken above, at an angle of 45–80° to the midrib, tertiary veins laxly reticulate, usually quite distinct, lines of interarching of lateral nerves distinct; petiole 15–25 by 2–4 mm; terminal leaf bud smallish, slender, acute, c. 15 by 4 mm, densely appressed-pubescent with dull brown hairs c. 0.1 mm. *Inflorescences* of the *Knema*-type, i. e. a (sub)sessile, wart-like, scar-covered brachyblast, minutely pubescent, in male inflorescences up to 10 mm long, 4–6 mm wide, terminally with a subumbel of 2–8 flower buds or flowers of different size according to age; bracts caducous; bracteoles large or small, caducous. *Female inflorescences* not known. *Male flowers* rather sparsely to densely minutely pubescent with dark brown hairs 0.1–0.2 mm; pedicel distinct with scar of bracteole at apex; mature male perianth in bud \pm broadly fusiform or obovate-oblong, 8–12 mm long, lobed to over halfway (see further under the subspecies). *Female flowers* (perianth 7 mm long, splitting for c. 1/3 into the lobes, fresh fruit recorded as c. 47 by 34 mm, in *Hoogland 8944*) and *fruit* not known with certainty.

Distribution — Two subspecies in northern New Guinea.

subsp. *fissiflora*

Tree 6–8 m. *Leaves* (thinly) chartaceous, 25–35 by 7–16 cm, lower surface papillose. *Male flowers*: pedicel stoutish, 7–18 by 1–1.5 mm, bracteole (ovate-)oblong, (5–)7–8 mm long, caducous, leaving its scar at the transition to the perianth; perianth rather leathery, mature male perianth in bud ellipsoid-oblong, rather spindle-shaped, 10–12 by 3.5–5(–6) mm, base and top narrowed, apex acute, the apical portion of perianth \pm triangular in transverse section, inner surface finely papillose in lower portion, lobes 6–8 mm long, slightly spreading at anthesis, at sutures 0.4–0.5 mm thick, splitting the bud for c. 2/3; androecium stoutish, cylindrical, 8–9.5 mm, androphore short-cylindrical, 2.5–3(–4) by 1(–1.5) mm, \pm completely finely pubescent with bright brown or yellow-brown hairs 0.1–0.2 mm, synandrium \pm fusiform, faintly angular in section, 5.5–6 by 1.5 mm, sterile apex acutish, c. 1 mm, anthers 8–12 (c. 16–25 thecae, contiguous).

Distribution — Northern Papua New Guinea, Madang Prov.: *NGF 28041, 49251; Okada et al. 4388; Pullen 960; Schlechter 17749; Lauterbach 2865* (fr., doubtful); *Warburg 20704* (fr., doubtful); (*Katik*) *NGF 46688* (fr., doubtful); doubtful specimens from Morobe Prov.: *Hoogland 8944* (female fl.); *Takeuchi & Soejarto 6987*.

Habitat & Ecology — Primary and old secondary (regrowth) forest, advanced regrowth in *Pometia* forest; 100–400(–1000) m altitude; fl. March, May, Aug.

Note — Fieldnotes: Small tree c. 5–7 m. Stem hollow, full of ants. Bark brown. Wood white. Leaves light green above, glaucous beneath. Flowers orange, brownish cream, or yellow, pinkish at lobe apices, or dull brownish cream. Fruit recorded as brownish orange.

subsp. **kostermansii** W.J. de Wilde, *subsp. nov.*

Synonym: *Myristica subalulata* auct. non Miq.: Sinclair 385, p.p., f. 64D.

A subspecies typica in perianthio masculi membranaceo minore, 8–9 mm longo, synandrio obtuso, apice sterile carente vel solum 0.2 mm longo differt. — Typus: *Kostermans & Soegeng 392* (L).

Shrub or treelet 3–10 m. Leaves membranous or subchartaceous, lower surface indistinctly or not papillose. Male flowers: pedicel slender, 8–14 mm long, 0.5(–1) mm thick, bracteole 2–3 mm long, caducous, leaving its scar at the transition with the perianth; perianth membranous, mature male perianth in bud \pm obovate-oblong, 8–9 by 3.5–4(–4.5) mm, top bluntish, narrowed towards base; lobes c. 5 mm long, splitting the perianth for more than halfway; apical portion of perianth faintly triangular in bud; androecium cylindrical, rather slender, 6.5–8 mm, androphore cylindrical, 2.5–4 by 1 mm, (almost) completely pubescent with minute hairs 0.1(–0.2) mm or less; synandrium oblong, faintly 3-angular in section, 4–5 by 1.5 mm, the top bluntish, sterile apex absent or only c. 0.2 mm; anthers 7–10(–12). *Female flowers and fruit* not seen.

Distribution — NE Irian Jaya, in the vicinity of Jayapura: *Gjellerup 183, 644; Kostermans & Soegeng 392*.

Habitat & Ecology — Valley forest; 50–60 m altitude; fl. July, Aug.

Note — Fieldnotes: Bark smooth; calyx yellowish brown, inside of lobes white; corolla tube pinkish, or flowers light brown yellow.

Myristica flavovirens W.J. de Wilde, *spec. nov.*

Myristicae conspersae et *M. scriptae* affinis, in ramulis nigricantibus, foliis coriaceis supra flavovirentiter infra aurantiaco-lutee siccantibus, infra praeterea punctatis papillosisque, perianthio masculino c. 5 mm longo 2 mm lato, pedicello c. 1 mm crasso, bracteola minuta persistenti differt. — Typus: *Versteegh BW 10337* (L).

Tree 12 m. *Twigs* terete, slender, towards the apex 2–3 mm diam., striate, at first with rusty tomentum, hairs 0.1(–0.2) mm, glabrescent, drying brown-black; bark of twigs lower down grey-black, coarsely striate and somewhat cracking, not flaking; lenticels absent. *Leaves* coriaceous; blades oblong-lanceolate, \pm parallel-sided, 9–11 by 2–3 cm, base short-attenuate or narrowly rounded, top blunt or narrowly rounded; upper surface drying dark olivaceous-green, lower surface at first with scattered minute light brown scale-like hairs less than 0.1 mm, early glabrescent, densely papillose (lens!), the surface drying rather conspicuously orange-yellow; non-traumatic dots and dashes present; midrib slender, slightly raised above; nerves 20–22 per side, slender, sunken above, at an angle of 70–80° to the midrib, lines of interarching faint; tertiary veins faint; petiole drying blackish, 10–15 by 1.5–2 mm; terminal leaf bud slender, acute, c. 10 by 1.5 mm, densely golden rusty-red pubescent with

appressed hairs 0.1(–0.3) mm long. *Inflorescences* of the *Knema*-type, i.e. simple or 2-fid scar-covered brachyblasts to 5 mm long, sessile or with an up to 2 mm long, grey-black, coarsely fissured peduncle, glabrescent, bracts small, caducous; flowers in male inflorescences in clusters of (5–)10–15, the buds of varying size according to age; *female inflorescences* and *female flowers* not seen. *Male flowers*: densely rusty or dark brown pubescent with hairs 0.1–0.2 mm; pedicel 3–4 by 1(–1.5) mm, bracteole small, broadly rounded, c. 1 mm, at the transition of petiole and perianth, persistent; mature male perianth in bud (ellipsoid-) oblong, c. 5 by 2.5 mm, base and top rounded, lobes 1.5(–2) mm long, at sutures c. 0.3 mm (i.e. the perianth firmly carnose), splitting the perianth for c. 1/3; androecium slender, cylindrical, c. 3.5 mm long; androphore slender, c. 1.5 by 0.5 mm, glabrous except for a few minute hairs less than 0.1 mm at base; synandrium c. 2 by 0.8 mm, anthers (6 or) 7 or 8 (i.e. c. 14 thecae, ± contiguous), sterile apex bluntish, 0.2 mm. *Fruit* not seen.

Distribution — Irian Jaya, only known from the type collection, Vogelkop Peninsula, Kebar Valley: *Versteegh BW 10337*.

Habitat & Ecology — Scarce in old primary forest on clayey soil; altitude 1200 m; fl. Nov.

Notes — 1. Resembling and apparently closely related to *M. scripta*, *M. arfakensis*, and *M. conspersa*, three species with similar dotted/dashed leaves and the androecium with comparatively long androphore, not much shorter than the synandrium. *Myristica arfakensis* is distinct by stalked inflorescences and smaller flowers; *M. conspersa* also has much smaller (male) flowers; *M. scripta* is variable in size of flowers, but this species occurs in New Guinea outside the Vogelkop Peninsula, and generally has in drying a brown colour of the leaves which have an acute apex.

2. The twigs of *M. flavovirens* are conspicuously blackish; the leaves are coriaceous, drying with a strange green colour above, (orange-)yellow below, and have a dense conspicuous papillation (as seen under high magnification). The texture of the leaves and its drying colour is suggestive of a plant from ultrabasic soil.

Myristica flosculosa Sinclair 359, f. 58, p.p., excl. fruiting specimens, f. 59; Foreman 197, p.p. — Fig. 3c, 6e

Myristica flosculosa auct. non Sinclair, p.p.: Sinclair 359, p.p., incl. female flowering and fruiting specimens, f. 59 = ***Myristica byssacea*** W.J. de Wilde.

Myristica fragrans Houtt., Nat. Hist. Pl. 2 (3) (1774) 333; Sinclair 225; Foreman 197. — Cultivated.

Myristica fugax W.J. de Wilde, *spec. nov.*

Species monticola, laminae membranaceae 5–11 cm longae, inflorescentiae pedunculatae, perianthium masculum 4.5–6.5 mm longum 1.2–2 mm latum, lobis c. 1 mm longis, pedicello 3.5–6 mm longo, bracteola fugaci, androphoro 2.5–4 mm longo, pubescenti, synandrio 2–2.5 mm longo, antheris c. 6, fructus solitarius rostratus c. 4 cm longus 1.5 cm latus minute pubescens. — Typus: Carr 15501 (L).

Treelet, 4–5 m. *Twigs* slender, towards the apex (1–)1.5–2 mm diam., at first with very minute tomentum of greyish scales 0.1 mm or less, glabrescent; bark of twigs lower down grey-brown, \pm striate, not cracking nor flaking, lenticels not apparent. *Leaves* distichous; blades membranous, elliptic-oblong to oblong, 5–11(–12) by 2–3.5(–4.5) cm, base broadly rounded to attenuate, top longly acute-acuminate up to 1.5 cm; upper surface drying dull brown-greyish to dark brown, lower surface pale brown-greyish with the lateral veins generally brown and rather contrasting, glabrous (or with a few minute, scattered, appressed scales less than 0.1 mm high); papillae absent, scattered dark brown dots absent; midrib slender, raised above; nerves (6–)8–12(–14) per side, flat or \pm sunken above, indistinct, on lower surface \pm contrasting, at an angle of 50–70° to the midrib, lines of interarching not distinct; tertiary veins laxly or finely reticulate, generally indistinct; petiole 7–12 by 0.5–1(–2) mm; terminal leaf bud slender, acute, c. 7–12 by 1 mm, minutely grey-brown appressed-pubescent with hairs 0.1 mm or less. *Inflorescences* axillary or up to 3 mm supra-axillary to the leaves, with peduncle (1–)2–5 mm long, terete or but slightly flattened, slender, 0.5–1 mm thick; in male: peduncle ending in an up to 1.5 cm long, 1–1.5 mm thick, scar-covered brachyblast terminally with a cluster of 2–5 flower buds in different stages of development; female inflorescences consisting of 1 or 2 flowers, without peduncle or peduncle up to 5 mm long; inflorescences at first with minute grey-brown tomentum, glabrescent; bracts subtriangular, less than 1 mm long, caducous. *Flowers* wholly thinly minutely pubescent with grey-brown 'scales' less than 0.1 mm. *Male flowers*: pedicel slender, 3.5–6 mm long, 0.4–0.5 mm thick; bracteole broadly ovate, c. 1 mm long or less, pubescent, caducous, leaving its scar at or c. 1–2 mm below the perianth; perianth inside glabrous but in the lower half with longitudinal irregular furrows and rows of minute wart-like excrescences, mature perianth in bud ellipsoid-oblong, 4.5–6.5 by 1.2–2 mm, top bluntish or sub-acute, subcircular in transverse section, base narrowly rounded, valves 0.7–1(–1.5) mm long, suberect at anthesis; androecium slender, 3.5–6.5 mm long, synandrium 0.5–0.7 mm wide, (1.8–)2–2.5(–2.7) mm long, including distinct, acute, sterile apex 0.1–0.7 mm long; anthers 4–6 (8–12 thecae?), \pm contiguous; androphore cylindrical, 2.5–4 mm long, c. 0.5 mm wide, minutely appressed-pubescent with hairs less than 0.1 mm. *Female flowers*: pedicel c. 2.5 mm, scar of bracteole c. 1 mm below perianth, perianth ovoid-oblong, narrowed to the top, c. 7 by 2.5 mm, lobes c. 1 mm, ovary incl. stigma c. 5 mm. *Fruit* solitary, on a slender fruit-stalk (peduncle and pedicel) nearly 1 cm long, with scar of bracteole c. 1.5 mm below the fruit, fruit ellipsoid-oblong, 3.7–4.5 by 1.4–1.5 cm, including the base narrowed into a 4–5 mm long pseudostalk, and apical portion which is contracted into a somewhat curved beak 4–7 mm long; pericarp thin, c. 1 mm thick when dry, dull brown minutely densely scurfy pubescent with scaly hairs less than 0.1 mm; seed oblong, c. 2.8 cm long.

Distribution — Papua New Guinea, E Sepik, Gulf, Madang, and Central Provinces; see further under the subspecies.

Habitat & Ecology — In montane forest at (400–)1200–1600 m altitude.

Notes — 1. Most specimens of the present new species were by Sinclair included in *M. tubiflora*, but the latter species is distinct by sessile inflorescences of the *Knema*-type.

2. The male perianth, for the lower half at the inside, has an irregular 'warty' surface, similar as in the obviously closely related species *M. pumila* and *M. sogeriensis*.

subsp. **fugax**

Twigs slender, at apex 1–1.5 mm diam. Leaves above drying mainly dull brown-grey; lateral nerves 8–10 pairs. Male inflorescences slender, the peduncle c. 0.5 mm thick. Male flower pedicel 5–6 mm long, the scar of the bracteole situated (1–)2 mm below the perianth. Male perianth c. 6.5 mm long, lobes c. 1.5 mm long. Androphore c. 4 mm long, synandrium (anthers) c. 2 mm long, sterile apex c. 0.4 mm long. Fruit including pseudostalk c. 4.5 cm long.

Distribution — Papua New Guinea, Central Prov., found near Isuarava and Lala: *Carr 15501* (type), *15800*, *16086*, *16087*.

Habitat & Ecology — Primary and secondary mountain forest at 1200–1600 m altitude; fl., fr. Jan., Feb.

Note — May be confused with the resembling and related *M. pumila*, a species generally with sessile (non-peduncled) male inflorescences.

subsp. **septentrionalis** W.J. de Wilde, *subsp. nov.*

A subspecies typica in inflorescentia masculi crassia, androphoro brevior, circa tam longo quam synandrio, cicatrice bracteolae ad transitum pedicelli et perianthii differt. — Typus: *Schlechter 18670* (L).

Twigs towards apex c. 1.5 mm diam. Leaves above drying dark brown; lateral nerves 8–12(–14) pairs. Male inflorescences stouter than in the type subspecies, the peduncle c. 1 mm thick. Male flower pedicel c. 4 mm long, the scar of the bracteole situated at the transition to the perianth. Male perianth c. 6 mm long, lobes c. 1 mm long. Androphore 2.5–3 mm long, synandrium (anthers) c. 2.5 mm long, sterile apex c. 0.5 mm long. Fruit including pseudostalk c. 3.7 cm long.

Distribution — Papua New Guinea, E Sepik, Gulf, and Madang Provinces (Bismarck Mts): *Schlechter 18670* (male fl. Nov.; type); *Ledermann 9828*; *Schodde (& Craven) 4632*, *4725*.

Habitat & Ecology — Foothill and montane forest at 300–1200 m altitude.

Notes — 1. A deviating specimen. The collection *Ledermann 9810* (in L), apparently from the same area as *Ledermann 9828*, is strongly deviating in general aspect because of very much fainter nerves. The female flowers are immature, with a long slender pedicel, at least 10 mm long, with the scar of the bracteole not above the middle. A fruiting pedicel (without the broken-off fruit) is slender, nearly 20 mm long; the common peduncle is c. 5 mm long. The specimen obviously belongs in the vicinity of *M. fugax* or (more remotely) *M. olivacea*, and may represent a separate undescribed taxon.

2. *Schodde (& Craven) 4632*, *4725*, from the Gulf Prov., at c. 300 m altitude, are rather intermediate with the type subspecies.

Myristica fusca Markgraf, Bot. Jahrb. 67 (1935) 158; Sinclair 252, f. 25; Foreman 198.

Myristica fusiformis* W.J. de Wilde, *spec. nov.

Folii 10–16(–17) cm longi. Fructus fusiformis, c. 8×1.5 –2 cm cum tomento pilorum c. 0.1 mm, subglabrescenti. — Typus: *Milliken 1408* (K).

Treelet, c. 3 m. Twigs slender, towards the apex 1–1.5 mm diam., (sub)terete, at first with very minute pubescence, early glabrescent; twigs lower down (dark) brown-grey, coarsely striate, or slightly flaking, with a few minute, inconspicuous lenticels. Leaves thinly membranous or chartaceous; blades elliptic-oblong, 9.5–15(–17) by 3.5–6 cm, base attenuate, top acute-acuminate; upper surface drying olivaceous-brown or dark brown, lower surface pale brown-grey, glabrous with traces of scattered, extremely small, whitish, scale-like hairs much less than 0.1 mm long, densely fine-papillose but not readily recognized as such; dots absent; midrib slender, flat or slightly raised above; lateral nerves 10–15 per side, flat or sunken above, on lower surface grey-brown or brown and rather contrasting in colour, at an angle of 60–70° to the midrib, lines of interarching fairly distinct; tertiary veins fine, faint or quite distinct below; petiole 8–15 by 0.8–1.5 mm; terminal leaf bud slender, c. 10 by 1–1.5 mm, with inconspicuous tomentum of appressed hairs 0.1 mm or less. Inflorescences (infructescences) sessile, of the *Knema*-type, small, axillary; male inflorescences, male flowers, and female flowers not seen; female inflorescence (according to infructescence) consisting of a single axillary flower. Fruit solitary, axillary, peduncle absent; fruiting pedicel slender or thickish, 9–10 mm long, fissured and transversely cracked, quite glabrous (indicating that flowers are possibly glabrous or glabrescent), the scar of the bracteole obscure, at c. 2.5 mm below the top; fruit much elongated, (when dry) 7–8.5 cm long, \pm narrowly fusiform, with or without pseudostalk, top acute; (dry) pericarp c. (1–)2 mm thick, with thin, inconspicuous, pale rusty, 'mealy' tomentum with densely interwoven, scale-like hairs 0.1 mm long or less, partly or largely glabrescent; seed elongate, oblong, c. 3 cm long.

Distribution — SW Irian Jaya, known only from the types of the two subspecies.

subsp. *fusiformis* — Fig. 3d

Treelet, 3 m. Twigs at apex 1–1.5 mm diam. Leaves chartaceous, 10–17 by 4.5–6 cm, top narrowly acuminate; upper surface drying dark brown; lower surface grey-brown, tertiary veins faint; nerves 10–15 per side; petiole (10–)15 by 1(–1.5) mm. Fruit: fruiting pedicel thickish, c. 10 by 3–4 mm, fissured, with a few lenticels; fruit \pm fusiform, c. 7.5 by 2 cm, the basal portion gradually narrowed but not into a slender pseudostalk; pericarp largely glabrescent.

Distribution — W Irian Jaya, known only from the type collection, found at Kuri-ma, Jayawijaya, close to Ilamik village, 139° 20' E, 4° 14' S.

Habitat & Ecology — *Nothofagus*-dominated forest; altitude 1700 m; fr. Oct.

Notes — 1. Fieldnotes: Treelet 3 m. Fruit ochre. Leaf underside pale.

2. Obviously related to *M. tubiflora* (a lowland species) because of its sessile elongate fruit, but in that species the fruit is smaller (shorter).

subsp. *pseudostipitata* W.J. de Wilde, *subsp. nov.* — Fig. 3e

A typo-subspecie in fructu basi contracto in angustum pseudopedicellum 15–20 mm longum, fructu includenti pseudopedicellum 8.5×1.5 cm, minute pubescenti, differt. — Typus: *von Römer 304* (L).

Putatively a small tree; size not indicated. Twigs at apex c. 1 mm diam. *Leaves* thinly membranous, 9–10 by 3.5 cm, top shortly acute-acuminate; upper surface drying pale brown-olivaceous, lower surface grey, tertiary veins distinct; nerves c. 10 per side; petiole c. 8 by 0.8 mm. Fruit: fruiting pedicel slender, c. 9 by 1.5 mm; fruit long-fusiform, 8–8.5 by 1.5 cm, including the basal portion which is contracted into a narrow pseudostalk 15–20 mm long; pericarp largely minutely pubescent, partly glabrescent.

Distribution — SW Irian Jaya, at the lower Lorentz River (Noord River), only known from the type collection.

Habitat & Ecology — Apparently collected in forest at low altitude; fr. Sept.

Notes — 1. I have described this subspecies in spite of the fragmentary material at hand, as it is clearly distinct from the type subspecies and from all *Myristicas* known from New Guinea by its elongate fruit with long pseudostalk and rather long fruiting pedicel, solitary in the axil of a leaf scar. The specimen resembles in vegetative features very much *M. brachypoda* from southern Papua New Guinea, but in that species the papillosity on the lower leaf surface is much more pronounced, and the fruit (although with similar tomentum) is much smaller, almost sessile, without pseudostalk. The present type specimen was determined by Pulle (on the herbarium label, in 1911) as *M. tubiflora*, and this was confirmed by Sinclair (see also Sinclair 342), but that species, although possibly taxonomically much related, is distinct because of its much smaller (shorter) fruit.

2. In this subspecies the distinct reticulation of the lower leaf surface is reminiscent of that of *M. globosa*, a species otherwise very much different because of its (sub)globose fruit.

Myristica garciniifolia Warb., Monogr. Myrist. (1897) 525, t. 19; Sinclair 196, f. 13; Foreman 198.

Myristica globosa Warb., Monogr. Myrist. (1897) 540, t. 19, 1–2; Sinclair 378, f. 63; Foreman 199, p.p. (excl. *M. tristis* Warb.).

Synonyms: see under the subspecies.

subsp. ***globosa***

subsp. ***chalmersii*** (Warb.) W.J. de Wilde, *comb. et stat. nov.*

Basionym: *Myristica chalmersii* Warb., Monogr. Myrist. (1897) 519, t. 19.

Synonyms: *Myristica bäuerlenii* Warb. — *Myristica schumanniana* Warb.

Myristica globosa auct. non Warb.: Sinclair 378, p.p. (for the synonym *M. montanoides*) = ***Myristica lepidota*** Blume subsp. ***montanoides*** (Warb.) W.J. de Wilde.

Myristica gracilipes Sinclair 334, f. 49.

Note — By Foreman 190 this species was sunk into *M. cornutiflora* Sinclair.

Myristica heterophylla K. Schum. in K. Schum. & Hollr., Fl. Kaiser Wilhelmsland (1889) 45, p.p. (non Fern.-Vill., 1880); Sinclair 410 = *Myristica subalulata* Miq. and *M. hollrungii* Warb.

Myristica hollrungii Warb., Monogr. Myrist. (1897) 490, t. 19, 1–2; Sinclair 405, f. 68, 69; Foreman 199.

Synonyms: *Myristica heterophylla* K. Schum. — *Myristica albertisii* Warb. — *Myristica euryocarpa* Warb.

Myristica hooglandii Sinclair 156, f. 7; Foreman 39; Foreman 200, f. 89 (excl. syn. *M. carrii*).

Myristica incredibilis W.J. de Wilde, *spec. nov.*

Affinis *Myristicae inopinatae* in pagina folii inferioris cum tomento persistente, base laminae (sub)cordata, apice sterile synandrii minute lobulato, fructu 2(–2.5) cm longo, pericarpio sicco 1–2 mm crasso, cum tomento pilorum 1–1.5 mm longorum differt. — Typus: (*Katik*) LAE 70971, the male flowering element (L).

Tree 8 m. *Twigs* subterete, towards the apex 3–4 mm diam., at first with dense, conspicuous, (dark) brown indumentum, hairs c. 0.5 mm long, rather late glabrescent. *Leaves* chartaceous; blade (ovate or) ovate-elliptic, 12–17 by 6–8.5 cm, base (shallowly) cordate, top narrowly rounded or blunt; upper and lower surface of full-grown leaf pubescent with rather dense brown tomentum of mixed hairs 0.1–0.6 mm, upper surface early glabrescent, dark olivaceous, lower surface with persistent conspicuous indumentum, partly late glabrescent, not papillose, not punctate; midrib slender, raised above, nerves 9–13 per side, at an angle of 45–70° to the midrib, flat or ± sunken above, line of interarching not distinct, tertiary veins not conspicuous; petiole late glabrescent, 12–15 by 3 mm; terminal leaf bud c. 12 by 3 mm, bluntish, densely rusty pubescent with hairs 0.5(–1) mm. *Inflorescences* densely pubescent, stalked, i. e. in male a non scar-covered peduncle, 5–10 mm long, 2–3 mm thick, ending in 2 (or 3) scar-covered brachyblasts up to 5 mm long; the flowers (flower buds) terminally produced in a loose cluster of 5–10, not much differing in size and age; female inflorescences and infructescences not seen. *Flowers* densely bright brown pubescent with hairs c. 0.5 mm. *Male flowers*: pedicel c. 2–2.5 by 1–1.5 mm, bracteole rounded, c. 1 mm, caducous, its scar remaining visible at the top of the pedicel; mature perianth in bud ellipsoid-oblong, c. 8 by 4 mm, top rounded, not angular in transverse section, lobes 2.5–3 mm long (hence in anthesis splitting the perianth for c. 1/3); androecium cylindrical, 6.5–7 mm long, synandrium 3.5(–4) by 1.5 mm, anthers 7 or 8, contiguous, sterile apex consisting of minute excrescences c. 0.1 mm, in number corresponding with the anthers, androphore c. 3 by 1 mm, largely glabrous but at base with a collar of dense rufous-brown hairs c. 0.5 mm. *Female flowers* not seen. *Fruit* (slightly doubtful, see note 1): ovoid, c. 2 by 1.5 cm, base (broadly) rounded, top rounded, (dry) pericarp c. 1(–1.5) mm thick, with dense dark brown tomentum with hairs c. 1 mm; seed ellipsoid, c. 1.5 cm long.

Distribution — E Papua New Guinea, SE Milne Bay Prov., only known from the type from Rossel Island: (*Katik*) LAE 70971.

Habitat & Ecology — Hill forest, at c. 10 m altitude; fl., fr. March.

Notes — 1. Female inflorescences, flowers and infructescences are not yet known; the species has been described from a single male-flowering collection. According to the herbarium label, however, the fruit is orange of colour. In the L-specimen, the holotype, there is a separate single fruit which on section appeared to be mature, containing a ripe seed. This fruit, by necessity taken from a different specimen, may well belong to the same species as the male flowering plant. I cannot match the fruit with any other known species, although it approaches that of *M. chrysophylla*, but it is smaller, and shorter haired.

2. *Myristica incredibilis* is, particularly in habit, reminiscent of *M. schleinitzii*, mainly because of similarly shaped leaves with cordate base and rounded top. It has the general features of the male inflorescences and flowers in common with *M. inopinata*, but this latter species differs markedly by the distinct, acute, sterile apex of the synandrium. Possibly the present species is of a hybrid origin from the two species mentioned above, which both occur in the same region. *Myristica schleinitzii* differs by, among others, (nearly) glabrous papillose leaves, smaller flowers, and a glabrous or finely stellate-hairy androphore.

Myristica ingens* (Foreman) W.J. de Wilde, *stat. nov.

Basionym: *Myristica fatua* Houtt. var. *ingens* Foreman 37, f. 1; Foreman 193.

***Myristica ingrata* W.J. de Wilde, *spec. nov.* — Fig. 2c**

Similis *Myristicae subalulatae* cum ramunculis alatis, in perianthio masculi in alabastro ovoideo c. 7 × 3.5–4 mm, lobis c. 2 mm longis, apice sterile synandrii c. 0.2 mm longo, differt. — Typus: *bb 30596* (L).

Tree 5–15 m. *Twigs* subterete or ± flattened, distinctly 2-alate with wings 1–2 mm high, at first with minute dull brown tomentum, hairs c. 0.1 mm, early glabrescent, hollow, and usually with ant-swellings with longitudinal slit-like opening, towards the apex 4–10 mm diam.; bark of twigs lower down coarsely striate, with scattered lenticels. *Leaves* subchartaceous or subcoriaceous; blades (ob)ovate-oblong or oblong(-lanceolate), 15–40 by 5–14 cm, base cuneate, or rounded, or subcordate, top acute-acuminate; upper surface drying olivaceous or brown, lower surface grey-brown or grey, glabrous, i.e. at first with minute scaly tomentum, rather scattered pale hairs less than 0.1 mm, or with dense short tomentum (subsp. *velata*), glabrescent; surface below with papillae irregular of shape and size and appearing as non-papillose; dark dots absent; midrib flat or faintly raised above, lateral nerves 20–25 per side, slender, flat or sunken above, at an angle of 50–70° to the midrib, lines of interarching not very prominent, tertiary veins faint; petiole c. 15 by 3–4 mm; terminal leaf bud smallish, acute, 10–15 by 2–3 mm, densely dull brown or grey-brown appressed-pubescent with hairs c. 0.1 mm. *Inflorescences* of the *Knema*-type, i.e. (sub)sessile wart-like scar-covered brachyblasts, subglabrous, to 10 mm long, simple or 2-armed, in male terminally with a subumbel of (5–)10–15 flowers (flower buds) of unequal size and state of development, according to age; female inflorescences 5–8-flowered, sometimes simultaneously bearing some fruit of a previous

flowering season; flowers minutely pubescent with brown hairs 0.1 mm or less, bracteole apical, persistent. *Male flowers*: pedicel slender, (7–)10–12 by (0.6)–1 mm, bracteole inserted at the transition to the perianth, subovate, \pm 3-topped, 2–3 by 2–3 mm, persistent, mature male perianth in bud ovoid-oblong, 6.5–7.5 by 3.5–4 mm, base (broadly) rounded, top blunt and faintly 3-angular in transverse section or not, lobes 1.5–2.5(–3) mm, hence at anthesis splitting the perianth for 1/4–1/3; androecium narrowly cylindrical, 5.5–6.5 mm, androphore cylindrical, (1–)1.5–2 by 0.5–0.8 mm, minutely brownish pubescent with hairs 0.1 mm or less in the lower half, sometimes only at the base (see note 4); synandrium cylindrical, 4–5 by 0.8–1 mm, top acutish with sterile apex 0.2–0.3 mm, anthers 6 or 7, contiguous. *Female flowers*: pedicel 3–5 mm long, bracteole apical, c. 2 mm, persistent, perianth \pm ovoid, c. 5 by 3.5 mm, lobes c. 1.5 mm, ovary \pm ovoid, c. 3 mm, stigma small, 2-lobed. *Fruit* solitary or 2–4 per infructescence; (broadly) ovoid-ellipsoid, 2.5 by (1.5–)2 (–2.5) cm, or (ovoid-jellipsoid, 2.5–3.5 cm (subsp. *velata*), base rounded, top more or less rounded with short-apiculate apex, (dry) pericarp c. 2 mm thick, rusty pubescent with hairs 0.1(–0.2) mm long; seed ellipsoid, c. 2 cm long; fruiting pedicel stoutish, short or rather long, 3–10 by 3–4 mm, with a few lenticels.

subsp. **ingrata**

Distribution — Northern Irian Jaya, northern and southern Papua New Guinea (see note 4).

Habitat & Ecology — Lower montane forest, ridge forest, and lowland (alluvial) forest; 20(see note 4)–1250 m altitude; fl., fr. throughout the year. Twigs myrmecophilous (with small black ants), sometimes bearing galls resembling fruit.

Notes — 1. (*Foreman*) NGF 48095 carries mature fruit among female flowers in the same inflorescence.

2. Specimens of the present new species were included in *M. subalulata* by Sinclair (1968) and Foreman (1978); *M. ingrata* differs markedly by ovoid male perianth, persistent bracteole, and by generally larger fruit with stout fruiting pedicel. I was reluctant in describing this species because of the existence of a number of earlier proposed names placed in the synonymy of *M. subalulata* by Sinclair and Foreman (see above), but none of these seems to fit the present new species, e. g. a) *M. bialata* Warb. is distinct and endemic of the Bismarck Archipelago; b) the type of *M. costata* Warb. is lost, but described as with infructescences and fruit quite differing from *M. ingrata*; c) the type of *M. velutina* Markgraf is lost as well, its male flowers were described as 9 mm long.

3. The male flowers of the present species are rather similar to those of the related *M. hollrungii* which has shorter male pedicels, lined but never alate twigs, and generally larger, mostly glabrescent fruit.

4. I have included in the present subspecies the collections *Schodde (& Craven)* 4276, 4330, 4333, all from low altitudes in the Gulf Prov., S Papua New Guinea, with female and male flowers. I cannot distinguish these collections sufficiently from the rest of the material from northern New Guinea (which all comes from lower montane regions). In the specimens from S Papua New Guinea the staminal column is almost glabrous, with minute hairs at the base only; the female flowers of collection 4330 are rather delicate with slender, 5 mm long pedicels, the bracteoles deciduous.

5. Some collections (e.g. *van Royen & Sleumer 5972*) have galls in the twigs, very similar in shape and colour to the fruits.

subsp. **velata** W.J. de Wilde, *subsp. nov.*

A subspecies typica in foliis coriaceis, infra cum tomento bruneorum dilutorum pilorum similibus pholidis, fructu ovoideo oblongo, c. 3 cm longo differt. — Typus: *Jacobs 9127* (L).

Tree 10–20 m. Older twigs faintly ridged, coarsely fissured, lenticellate, dark brown or blackish. Leaves subcoriaceous, greyish or grey-brown below and with short dense persistent tomentum of interwoven scales, c. 0.1 mm thick. Male flowers not seen. Fruit 1–4 per infructescence, ovoid or ovoid-oblong, (2.5–)3–3.5 by 2 cm, with minute scurfy rust-coloured tomentum; fruiting pedicel rather stout, 3–5(–10?, see note 5) by 3–5 mm.

Distribution — Central Papua New Guinea, W Sepik and Eastern Highlands Prov.; possibly also in Irian Jaya (see note 5).

Habitat & Ecology — Ridge forest and forest on limestone; 500–800 m altitude; fr. June, Sept., Oct.

Notes — 1. Fieldnotes: Branches spreading, inhabited by ants. Bark with sticky red exudate. Fruit cinnamon or brownish orange.

2. *Jacobs 9127* mentions 'fruit unripe, inside still pale', but I think that the fruit is of about mature size and development.

3. The status of subsp. *velata* under *M. ingrata* is provisional; when male flowering material becomes available, it might appear that subsp. *velata* deserves the status of a separate species.

4. The new subsp. *velata* may be close to *M. velutina* Markgraf, of which the holotype is lost; the latter species, which was in the synonymy of *M. subalulata* with Sinclair (1968: 386), is by me re-instated here as a good species, with ridged twigs, without ant-swellings; a duplicate of one of the paratypes is present in L.

5. *Boden Kloss s.n.*, Nov. 1912, from Irian Jaya, Mt Carstensz, Canoe Camp, possibly belongs here. The specimen lacks ant-swellings and further deviates by longer fruiting pedicels, c. 10 mm long, and larger fruit, c. 4 cm long, with mature seed nearly 3.5 cm long. It is fairly scrappy and more matching material is needed for an accurate judgement. It also may be the same as the only New Guinean collection known of *M. fatua* Houtt..

Myristica inopinata Sinclair 199, f. 14; Foreman 200.

Myristica insipida R. Br., Prod. Fl. N. Holl. ed. 1 (1810) 400; Sinclair 369 (excl. syn. *M. muelleri*), f. 61; Foreman 200, p. p.

Synonym: *Myristica macgregorii* Warb.

Myristica inundata W.J. de Wilde, *spec. nov.*

Affinis *Myristicae atrocorticatae* in foliis latioribus, cum venis prominentioribus infra; floribus masculi cum bracteola (sub)persistenti, quasi tam longa quam perianthium, c. 4 mm longa, differt. — Typus: (*Streimann & Lelean*) NGF 18331 (L).

Tree 25–30 m. *Twigs* subterete or faintly angular, towards the apex 2(–3) mm diam., at first with minute (brown-)grey tomentum, hairs less than 0.1 mm, early glabrescent; bark of twigs lower down dark (blackish) brown, striate or fissured, densely lenticellate. *Leaves* (thickly) chartaceous; blades (elliptic-)oblong, 10–16 by 4–6 cm, base shortly cuneate or narrowly rounded, top (short) acute-acuminate; upper surface drying bright or dark brown, lower surface paler, brown-grey, at first with a tomentum consisting of a dense layer of greyish brown scale-like hairs, less than 0.1 mm thick, (late) glabrescent; lower surface not distinctly papillose; brown dots absent; midrib slender, flat or but slightly raised above; nerves 10–15 per side, slender, flat, and inconspicuous above, little raised and somewhat contrasting in colour below, at an angle of (50–)60–70° to the midrib, tertiary veins faint at both surfaces; petiole comparatively long, glabrous, drying blackish, 20–25 by 2.5 mm; terminal leaf bud c. 12 by 2.5 mm, densely covered with greyish scale-like hairs less than 0.1 mm. *Inflorescences* of the *Knema*-type, i.e. in male: a bright-rusty pubescent scar-covered wart-like brachyblast, 1–2 mm long, sessile or with glabrous peduncle up to 2 mm long, terminally with a cluster of 10–15 flowers, of rather different state of development, bracts not seen; flowers bright yellowish brown pubescent with hairs c. 0.3 mm long. *Male flowers*: pedicel rather long, 8–10 by 0.5(–1) mm; bracteole ovate or broad-ellipsoid, rounded, c. 4 by 4 mm, (sub)persistent, at the top of the pedicel and clasping the mature perianth; mature male perianth in bud ovoid-ellipsoid, c. 4.5 by 3.5 mm, top and base rounded; perianth lobes c. 1.5 mm long, i.e. at anthesis splitting the bud for c. 1/3, androecium ± cylindrical, c. 4 mm, synandrium c. 3 by 1–1.2 mm, anthers c. 8, subcontiguous, sterile apex c. 0.2 mm, androphore broad-cylindric, 1–1.5 by 1 mm, nearly glabrous, i.e. with only a few minute pale hairs c. 0.1 mm at base. *Female inflorescences*, *female flowers*, and *fruit* not seen.

Distribution — Papua New Guinea, only known from the type collection, made along the Tuidemasuk Road, Kiunga, Kiunga Subprov., Western Prov.

Habitat & Ecology — Seasonally inundated swamp forest, at c. 25 m altitude; fl. Sept.

Notes — 1. Fieldnotes: Tree 25 m tall, bole straight, 20 m, dbh 40 cm; spreading open crown; stiltroots. Leaves dull dark green above, bronze below. Flower buds brownish yellow.

2. Obviously closely related to *M. atrocorticata* from the same area, the latter being distinct by narrower leaves, and (male) flowers with the bracteole much shorter than the perianth, and a somewhat shorter tomentum; also prop-roots have been recorded in *M. atrocorticata*.

3. Because of the (sub)persistent, short, and dense tomentum of the lower leaf surface, the present species may be confused with *M. inutilis*. The male flowers have some reminiscence with those of *M. hollrungii*.

Myristica inutilis* Rich. ex A. Gray subsp. *papuana* (Markgraf) W.J. de Wilde, *comb. et stat. nov.

Basionym: *Myristica fatua* Houtt. var. *papuana* Markgraf, J. Arnold Arbor. 10 (1929) 77, 214; Sinclair 294, p.p. (excl. f. 37 = *M. subcordata* var. *morindifolia*); Foreman 39; Foreman 194, p.p.

Synonyms: *Myristica finschii* Warb. – *Myristica sericea* Warb. – *Myristica wallacea* Warb. (Aru Islands).

var. **papuana** (Markgraf) W.J. de Wilde, *var. nov.*

Basionym: *Myristica fatua* Houtt. *var. papuana* Markgraf, J. Arnold Arbor. 10 (1929) 77, 214.

var. **foremaniana** W.J. de Wilde, *var. nov.*

A *var. papuana* in habitu validiore foliis maioribus, laminis ad 30 cm longis 9 cm latis, fructu subsessili subgloboso 5–5.5 cm longo 5 cm diam., pericarpio (in sicco) c. 10 mm crasso pilis 0.1–0.2 mm longis provisus differt. — Typus: (*Foreman*) LAE 52230 (L).

Medium tree, 18 m. Twigs rather stout, towards apex c. 5 mm diam. Leaf blades up to 30 by 9 cm, densely grey-cinnamon felty below; fruit subsessile, fruiting pedicel 2–3 mm long, fruit subglobose, 5–5.5 by 5 cm, dry pericarp c. 10 mm thick, tomentum mealy, light dull brown, with hairs 0.1(–0.2) mm.

Distribution — Papua New Guinea, S of Dumpu, Madang Prov., known only from the type.

Habitat & Ecology — Forest on saddle between two ridges, 730 m altitude; fr. March.

Notes — 1. Fieldnotes: Medium tree, c. 18 m tall. Bark slightly fissured, underbark reddish; sap slight, reddish. Wood light brown. Leaves dark green above, covered with cinnamon-brown scales below. Fruit brown, aril red.

2. Known only from the type collection in fruit and tentatively treated as a variety under *M. inutilis* subsp. *papuana*. When flowers become available this variety may appear to represent a species of its own, characterized by the conspicuous (sub)globose sessile fruit. It could be confused with *M. sphaerosperma* which differs among others by a much longer fruiting pedicel. *Myristica pachycarpidia* also has a much longer fruiting pedicel and a (sub)glabrous lower leaf surface.

Myristica kalkmanii W.J. de Wilde, *spec. nov.*

Myristicae ornatae et *M. sulcatae* affinis, sed in ramunculorum cortice nigro rimas squamulasque agenti, laminis infra papillosis et nervis lateralibus distinctis, inflorescentiis sessilibus, fructu 3.5–4 cm longo glabrescenti, differt. — Typus: *Kalkman* BW 8522 (L).

Tree 15(–20) m. Twigs subterete or faintly angular, at first with minute light brown or grey-brown tomentum, hairs 0.1(–0.2) mm or less, early glabrescent, towards the apex 2.5–5 mm diam., (blackish) brown, smooth or coarsely striate; bark of twigs lower down blackish, longitudinally cracking and flaking, lenticels absent. *Leaves* (thinly) chartaceous; blades oblong-lanceolate, 15–32 by 5–11 cm, base cuneate or (narrowly) rounded, top acute-acuminate; upper surface drying bright brown or dark brown, lower surface pale grey-brown, glabrous, papillose, brown dots absent; midrib flat or slightly raised above, lateral nerves 14–20 per side, flat or sunken above, at an angle of 50–70° to the midrib, lines of interarching fairly distinct or indistinct, tertiary veins indistinct; petioles rather long, 18–38 by 2.5–4.5 mm, terminal leaf bud acute, ± longitudinally cracked on drying, densely grey-brown or pale brown appressed pubescent with hairs 0.1–0.2 mm. *Inflorescences* axillary to the lower leaves or (just) below the leaves on older wood; of the *Knema*-type, i.e. sessile, simple or 2- or 3-armed, scar-covered brachyblasts, in *female inflorescences* (as seen in infructescences) with the arms 5–8 mm long, at first yellow-rufous pubescent with

hairs 0.2–0.3 mm, bracts not seen. *Male* and *female* flowers not seen. *Fruit* 1(–3?) per infructescence; fruiting pedicel ± slender, 5–8 by 2–3 mm, with yellow-brown pubescence, glabrescent, bracteole apparently small, its scar up to 1.5 mm below the apex; fruit ± ellipsoid-fusiform, top narrowly rounded or acutish, base rounded or ± narrowed, 3.5–4 by (2–)2.5–3 cm, (dry) pericarp c. 5 mm thick, light (yellowish or orange-)brown, at first with mealy or powdery rusty tomentum, hairs 0.3(–0.5) mm, glabrescent; mature seed ellipsoid, c. 2 by 1.2–1.3 cm, the laciniae of the aril deeply impressed in the seed.

Distribution — SE Irian Jaya and Papua New Guinea, Western Prov. (and possibly West Sepik Prov.; see note 3).

Habitat & Ecology — Lowland forest on clayey soil, lowland rain forest on slight ridge, or on sloping ground; at 25–120 m altitude; fr. March, Sept.

Notes — 1. Fieldnotes: Small, straight, slender tree, without or with stiltroots up to 20 cm high. Few branches, small open crown; bole 10–15 m, dbh 10–18 cm. Leaves light blue-green below. Fruit: pericarp and pulp yellowish white, aril red, seeds brown; fruit c. 4 by 3 cm; immature fruit red brown or light rusty brown.

2. Somewhat resembling *M. ornata*, with which it has the markedly papillose lower leaf surface in common, but which differs by fainter nerves, stalked infructescences, and larger fruit.

Myristica kalkmanii is evidently close to *M. sulcata* Warb., the latter resembling it also by the dark brown colour of the leaves in drying. *Myristica sulcata* differs by a non-papillose lower leaf surface, thinly ridged (lined) or angular twigs, and by subglobose fruits. Flowers are not known of the present species.

3. The specimen (*Womersley*) NGF 3931 (K), in fruit, most probably belongs here; it was collected in W Sepik Prov., and its twig structure, leaf shape, and fruit quite agree with the material from southern New Guinea, but it differs by a non-papillose lower leaf surface.

Myristica laevifolia W.J. de Wilde, *spec. nov.* — Fig. 3f

Laminae 7–15 cm longae, infra glabrae et nervis planis vel impressis, folii gemma pilis 0.1 mm vel minus longis. Inflorescentiae sessiles. Flores subglabri, floris masculi perianthium plus minusve cylindricum c. 6 mm longum lobis c. 2 mm longis. Fructus plus minusve fusiformis 4–5 cm longus tomento evanescenti pilis minus quam 0.1 mm longis, pedicello 10–20 mm longo 2–3 mm lato, bracteolae cicatrix bene infra fructum. — Typus: (*Streimann*) NGF 23957 (L).

Tree 6–30 m. *Twigs* subterete or faintly 3-angular, towards the top slender, 1–2 mm diam., at first with minute tomentum of greyish hairs less than 0.1 mm, (early) glabrescent; bark of twig lower down brown, coarsely striate, with indistinct lenticels, bark neither cracking nor flaking. *Leaves* (thinly) coriaceous; blades (ovate or) ovate-elliptic or oblong-lanceolate, (6–)7–15 by 2–6 cm, base ± attenuate, top acute-acuminate; upper surface glabrous, drying olivaceous-brown to blackish brown (dark brown), lower surface glabrous, i.e. at first with sparse minute tomentum of greyish hairs less than 0.1 mm, early glabrescent (also in immature leaves), drying brown or light brown, not papillate, without brown dots; midrib slender, raised above; nerves 8–14 per side, flat or sunken and indistinct at both surfaces, not or but little contrast-

ing, at an angle of 45–70° to the midrib; tertiary veins faint or invisible on both surfaces, lines of interarching indistinct; petioles 10–15 by 1.5–2 mm; terminal leaf bud slender, acute, ± curved, 8–12 by 1.5–2 mm, densely grey-brown pubescent with hairs less than 0.1 mm. *Inflorescences* glabrescent; sometimes up to 2.5 mm peduncled (see note 3), but mostly of the *Knema*-type, i.e. a sessile wart-like brachyblast up to 7 mm long, scar-covered, glabrescent, terminally with 2–6 (rarely more) flowers (flower buds) somewhat differing in age and size in male inflorescences; in female inflorescences with 1–3 flowers of about the same size; flowers partly glabrescent, at first with very minute tomentum of rather scattered appressed grey or brown hairs, c. 0.1 mm or less, and appearing glabrous; bracteole small, rounded, c. 0.5 mm or less, caducous, situated generally at some distance below the perianth. *Male flowers*: pedicel slender, (4–)5–8 mm long, with the scar of the bracteole apically or up to 2 mm below the perianth; mature perianth in bud elliptic-oblong, top rather broadly rounded, base rounded or attenuate, 6(–6.5) by 2–2.2(–3) mm, the apical portion not angular in transverse section, lobes c. 2 mm long, in anthesis but slightly out-curving, splitting the bud for about 1/3; androecium narrowly or broadly cylindrical, 5–5.5(–6.5) mm, synandrium elliptic-oblong or cylindrical, 2.2–3 by 0.7–1(–1.5) mm, slightly longer than the androphore, anthers 5–7 (i.e. with c. 12–14 thecae?), mutually appressed, sterile apex acutish or bluntish 0.3–0.5 mm, androphore cylindrical, 2–2.3 mm long, glabrous except for very minute pale hairs less than 0.1 mm at or towards the base. *Female flowers* stoutish; pedicel 9–15 mm long, c. 1 mm thick, with the bracteole-scar 2–3 mm below the perianth, perianth ovoid-ellipsoid, top narrowed, base rounded, c. 5–5.5 by 3 mm, lobes 1.5–1.7 mm, splitting the bud for 1/4(–1/3), ovary ovoid-oblong, incl. 2-lobed stigma c. 4–4.5 by 2 mm, densely pubescent with pale brown hairs less than 0.1 mm, or partly glabrous. *Fruit* solitary or 2 or 3 together, ellipsoid-oblong, mostly somewhat fusiform, top narrowly rounded or subacute, base narrowed, with a pseudostalk up to 3 mm, 4–5.5 by (1.7–)2–2.5 cm, (dry) pericarp 2–3 mm thick, at first with very short scurfy grey-brown tomentum, hairs 0.1 mm or less, early or late glabrescent; fruit stalk straight, rather stout, 10–15(–18) mm long with the bracteole-scar 2–5 mm below the fruit; seed ellipsoid, 2–2.5 cm long.

Distribution — Papua New Guinea, Sepik (*Ledermann 10244*), Morobe, Eastern Highlands, Central, and Milne Bay Provinces.

Habitat & Ecology — Mid-mountain mixed rain forest; oak-forest, *Castanopsis*-dominated forest, mixed forest with *Kibara*, *Pasania*, *Elaeocarpus*, *Elmerrillia*; 1000–1800 m altitude; fl., fr. throughout the year.

Notes — 1. Fieldnotes: Unbuttressed tree, straight-boled or crooked. Bark smooth, rough, or fissured, not flaking off; grey-brown or dark brown; underbark pinkish or salmon, due to red (watery or sticky) exudate; wood cream or straw, staining brown on exposure; leaves dull green below; flowers cream, yellowish, or whitish; fruit brown, orange, or green with brown tinge.

2. This species appears morphologically rather intermediate between *M. crassipes* subsp. *altemontana* (with about the same distributional area and habitat) and *M. tubiflora*. *Myristica tubiflora* is a lowland species mainly of western New Guinea, and has glabrous flowers, the male perianth being larger, longer and comparatively more slender, and with, e.g., shorter fruit stalks, 2–7 mm long; *M. altemontana* as a whole

makes a sparsely haired impression, but appears to have a more distinct, subsistent (or late glabrescent) indumentum on the lower leaf surface, and shortly pubescent flowers, the male ones (known from only one collection) with larger, persistent bracteole and the androphore pubescent; the leaves dry usually conspicuously pale below and show a distinct, rather contrasting venation.

The present species can be recognized by its completely glabrous appearance, the leaves with the lateral nerves and the venation \pm flat or sunken and little visible on both surfaces.

3. A few specimens from the Central Province, viz. *Carr 14391* (male flowers) and *Carr 13394, 13395* (female flowers, fruit) have, exceptionally, shortly stalked inflorescences, the peduncle up to 2.5 mm long, mixed with sessile inflorescences. Because of this, *M. laevifolia* appears twice in the key to the species. The specimens mentioned may be confused with *M. longipes* which has a different leaf venation, etc.

4. Most collections of the present species were included by Sinclair (1968) and by Foreman (1978) in *M. longipes*, a species with peduncled inflorescences.

Myristica lancifolia Poir. in Lam., *Encycl. Méth. Bot.*, Suppl. 4, 1 (= 12) (1816) 35; Sinclair 456; Foreman 202, p.p., for var. *lancifolia* only; W.J. de Wilde, *Blumea* 35 (1990) 246.

subsp. ***lancifolia***

Synonyms: *Myristica lancifolia* Poiret var. *lancifolia*: Sinclair 456, f. 79, p.p.; Foreman 204, p.p. — *Myristica papuana* Scheff. — *Myristica montana* Roxb. var. *papuana* (Scheff.) Warb.

subsp. ***kutubuensis*** W.J. de Wilde, *subsp. nov.*

A typo-subspecie in tomento plus conspicuo paginae folii inferioris, cum pilis 0.1–0.3 mm, lamina folii 4–10 cm longa, fructu c. 2 × 1.5 cm cum pilis c. 0.2 mm, differt. — Typus: *Jacobs 9280* (L).

Tree 25 m. Tomentum of innovations, sterile leaf bud, lower surface of immature leaves and flowers with minute, rusty, stellate hairs 0.1–0.3 mm long. *Leaves* thinly chartaceous, papillose below; blades elliptic-oblong, 4–10 by 1.5–3.5 cm, nerves 10–15 per side, faint; tertiary veins almost invisible. *Male flowers* not seen. *Female flowers*: pedicel c. 3 mm, mature perianth in bud ovoid, 3.5 mm long, bracteole broadly rounded, caducous, the scar situated at the transition of pedicel and perianth. *Fruit* solitary or 2 per infructescence; fruiting pedicel c. 5 by 3 mm, the scar of the bracteole subapical; fruit ovoid-ellipsoid, c. 2 by 1.5 cm, top and base \pm rounded, (dry) pericarp somewhat woody, 2–3 mm thick, with bright rusty 'mealy' tomentum with hairs 0.1–0.2 mm; seed c. 1.5 cm long.

Distribution — Papua New Guinea, Southern Highlands Prov., once found near Waro Airstrip, 20 km SSW of Kutubu.

Habitat & Ecology — Primary forest of limestone country; 500–600 m altitude; fl., fr. Oct.

Notes — 1. Fieldnotes: Tree c. 25 m. Innovations olive-green. Flowers white; fruits dull brown, rather hard, dehiscent; seeds with red aril.

2. The true status of subsp. *kutubuensis* is unknown, as it is as yet only known from one female flowering and fruiting specimen. This is tentatively described as a new subspecies under *M. lancifolia*, as the specimens easily key out to that species. Its distinctness is possibly related to its habitat in forest on limestone at quite a distance from the area of the type subspecies.

subsp. **montana** (Roxb.) W.J. de Wilde, *Blumea* 35 (1990) 247, f. 1: 7b — Moluccas and Adi Island (New Guinea).

Basionym: *Myristica montana* Roxb.

Myristica lancifolia Poir. var. *bifurcata* Sinclair 460, f. 80 = ***Myristica bifurcata*** (Sinclair) W.J. de Wilde.

Myristica lancifolia Poir. var. *clemensii* (A.C. Smith) Sinclair = ***Myristica clemensii*** A.C. Smith.

Myristica lancifolia Poir. var. *lancifolia*: Sinclair 456, f. 79; Foreman 204, p.p. = ***Myristica lancifolia*** Poir. subsp. ***lancifolia***.

Myristica lasiocarpa W.J. de Wilde, *spec. nov.*

Myristicae chrysophylla similis, sed in pedunculo fructifero 1 cm longo, pericarpio tomento hirtio pilis 2(–3) mm longis differt. — Typus: *Kairo 401* (K).

Tree, 10–12 m. *Twigs* subterete, slender, towards the apex 1.5–2(–3) mm diam., at first with a tomentum of dull-rusty or brown grey hairs, 0.2–0.3(–0.5) mm, rather late glabrescent; bark of twigs lower down brown, coarsely striate, somewhat longitudinally cracking, with scattered lenticels not much contrasting. *Leaves* chartaceous or coriaceous; blades oblong-lanceolate, 10–16 by 3–5 cm, base attenuate, top acute-acuminate; upper surface drying dark-olivaceous or dark (blackish) brown, lower surface light brown-grey with (sub)persistent dense felty indumentum of a dense layer of pale brown 'scale-like' hairs 0.1–0.2 mm, and more scattered, emergent, bright brown, dendroid hairs 0.3–0.5 mm long; lower surface not papillose (i.e. not distinctly so because of papillae irregular in size), brown dots absent; midrib slender, (flat or) raised above, lateral nerves 13–17 per side, at an angle of 45–60(–70)° to the midrib, slender, (flat or) sunken above, tertiary veins faint but visible in old leaves; terminal leaf bud slender, acute, c. 15 by 2–2.5 mm, densely roughish dull brown or dark brown pubescent with appressed hairs 0.2–0.3 mm long; petiole 13–20 by 1.5–2 mm. *Inflorescences* (infructescences) situated in-between the leaves; of the *Knema*-type, i.e. in female inflorescences a few-flowered, wart-like, scar-covered brachyblast, 2–3 mm diam., short-pubescent, glabrescent. *Male inflorescences*, *male* and *female flowers* not seen. *Fruit* solitary; fruiting pedicel (fruit stalk) 10(–12) by 4(–5) mm, late glabrescent, ± cracking, with the scar of the bracteole c. 2 mm below the top; fruit ellipsoid, c. 4.5 by 3.5 cm, base slightly attenuate, top rounded, pericarp (dry) c. 3 mm thick, with conspicuous, thickly-shaggy, rusty tomentum with hairs 2(–3) mm long; seed ellipsoid, c. 2.5 cm long.

Distribution — Papua New Guinea, Morobe Prov., Kuper Range area: *Kairo 401*; *Takeuchi 4136*.

Habitat & Ecology — Subcanopy layer of *Nothofagus*-forest, with multiple-tiered and congested canopy, understorey open, moist, dimly lit; 'in broad gully'; 1600–2000 m altitude; fr. Oct.–Nov.; 'only specimen in collection area'.

Notes — 1. Fieldnotes: Fruit reddish brown or orange, aril red-orange.

2. This species somewhat resembles *M. chrysophylla* mainly because of its conspicuous shaggy-pubescent fruit; it differs markedly from that species by its long fruiting pedicel. *Myristica chrysophylla* is a lowland species with a wider distribution in about the same area as the present species. Flowers are not known of *M. lasiocarpa*. According to the two collections available the present species belongs to the small-leaved class, but is rather tending toward the medium-sized class; in the key it is only admitted in the group of small-leaved species.

Myristica lepidota Blume, *Rumphia* 1 (1837) 183, t. 57; Sinclair 265, f. 29; Foreman 205; W.J. de Wilde, *Blumea* 35 (1990) 247.

subsp. ***lepidota***

Synonym: *Myristica microcarpa* Zipp., nom. nud. in sched.

subsp. ***montanoides*** (Warb.) W.J. de Wilde, *Blumea* 35 (1990) 247.

Synonyms: *Myristica montanoides* Warb. — *Myristica globosa* auct. non Warb.: Sinclair 378, p.p., for the synonym *Myristica montanoides*.

Myristica leptophylla W.J. de Wilde, *spec. nov.*

Myristicae pachyphylla affinis, sed in laminis grandibus tenuioribus, infructescentibus (sub-)sessilibus, pedicello fructifero crassiore, 4–5 mm crasso differt. — Typus: (*Vinas*) LAE 67023 (L).

Tree 10–12 m. *Twigs* terete, at first with minute tomentum, (grey-)brown hairs less than 0.1 mm, early glabrescent, towards the apex (1.5–)2.5 mm diam., bark of twigs lower down coarsely striate, dark brown, without or with few inconspicuous lentils. *Leaves* membranous or (thinly) chartaceous; blades oblong-lanceolate, 14–20 by 3.5–5 cm, base shortly attenuate or nearly narrowly rounded, top acute-acuminate; upper surface drying olivaceous-brown, lower surface grey-brown, early glabrescent, at first with extremely minute scattered scale-like palish hairs less than 0.1 mm, not papillose, scattered dark brown non-traumatic dots present (lens!); midrib slender, raised above; lateral nerves 20(–25) per side, thin and sunken above, bright brown and rather contrasting below, at an angle of 60–80° to the midvein; lines of interarching and tertiary veins inconspicuous; petiole 10–20 by 2–2.5 mm; terminal leaf bud slender, acute, 10–12 by 2 mm, with dense tomentum of appressed brown-grey hairs less than 0.1 mm. *Inflorescences* as seen only in female, in an incomplete state and in fruiting specimens: sessile or subsessile, of the *Knema*-type, i.e. a small, scar-covered, wart-like brachyblast c. 2 mm long, with peduncle absent or 2(–3) mm long, with 2 or 3 flowers (according to their scars), minutely pubescent, bracts not seen. *Male inflorescence* and *male* and *female flowers* not seen. *Infructescence* below

the leaves, sessile or subsessile, with peduncle up to 3 mm long; fruit solitary; fruiting pedicel 10–12 by 4(–5) mm, bright brown, finely fissured and with small contrasting lenticels, the scar of the bracteole at or slightly above the middle; fruit (somewhat immature) broadly fusiform, c. 4.5 by 2.5 cm, base \pm narrowed into a 3 mm long pseudostalk, top acute with c. 3 mm long beak formed by style-remnant; (dry) pericarp 3–4 mm thick, with dense, rusty, scurfy tomentum with hairs c. 0.1 mm long.

Distribution — Papua New Guinea, known only from the type area, W Sepik Prov., Telefomin Subprov., near Busilmin, 5° 00' S, 141°05' E: LAE 65748, 67023 (type).

Habitat & Ecology — Secondary regrowth of submontane forest, at 1500 m altitude; fr. March.

Notes — 1. Fieldnotes: Tree 10–12 m, bole 8 m, dbh 10–20 cm. Bark finely fissured. Leaves \pm glossy midgreen or dark green above, light green below. Fruit with orange-brown scurf.

2. This species keys out beside *M. pachyphylla* which it resembles and to which it is obviously closely related. The two specimens now known of *M. leptophylla* are distinct from *M. pachyphylla* by larger and thinner leaf blades and by slightly larger fruit with distinctly stouter fruiting pedicel, sessile or on a short peduncle only. *Myristica leptophylla* also much resembles *M. tamrauensis* from the Vogelkop Peninsula, here newly described.

Myristica longipes Warb., Monogr. Myrist. (1897) 535; Sinclair 343, f. 52C, D, F (p.p., for a part of the specimens from Central Prov., Papua New Guinea only); Foreman 205, p.p. — Fig. 3g.

Note — Sinclair 343 and Foreman 205 include *M. warburgii* K. Schum. and *M. pachyphylla* A.C. Smith, but I retain the latter two species as separate. Sinclair further quotes in the synonymy *M. succedanea* (non Reinw. ex Blume) Scheff. [Ann. Jard. Bot. Buitenzorg 1 (1876) 46, p.p.] and *M. resinosa* Warb. [Monogr. Myrist. (1897) 536 t. 17, f. 1]. The type, a specimen taken from cultivation in the Buitenzorg (Bogor) Garden, originating from the “North West coast of Netherlands New Guinea, Teijsmann s.n., anno 1878”, a leafy twig and a detached unripe fruit, in B, was lost. The problem of its identity was discussed by Sinclair 348, but I cannot match the name with any of the *Myristica* species known to me.

Myristica macgregorii Warb., Monogr. Myrist. (1897) 479 = ***Myristica insipida*** R. Br.

Myristica macrocarya Warb., Monogr. Myrist. (1897) 533, t. 19, f. 1–2; Markgraf, Bot. Jahrb. 67 (1935) 170; Sinclair 480 = doubtful species.

Myristica macrophylla Zipp. ex Miq., Ann. Mus. Bot. Lugd.-Bat. 2 (1) (1865) 47, nom. nud. = ***Myristica subalulata*** Miq.

Myristica markgraviana A.C. Smith, J. Arnold Arbor. 22 (1941) 66; Sinclair 221, f. 18; Foreman 206. — Fig. 4

Synonym: *Myristica philippensis* auct. non Lam.: Markgraf, Bot. Jahrb. 67 (1935) 158.

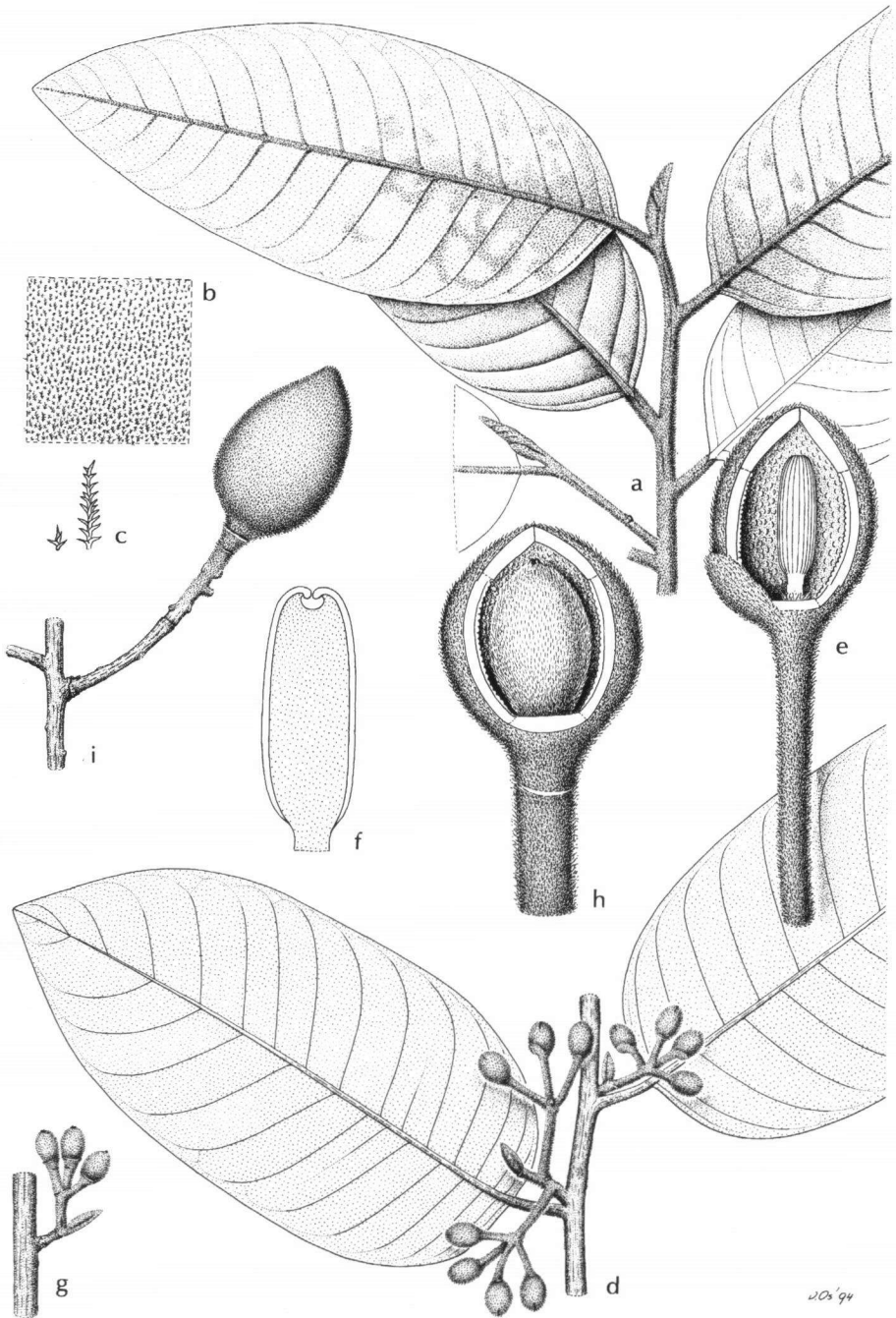
Myristica mas (non Rumph.) Labill., Relat. du Voy. à la Rech. de la Pérouse = *Myristica schleinitzii* Engl.

Myristica mediovibex* W.J. de Wilde, *spec. nov.

Myristicae longipes affinis, sed in folii gemma pilis c. 1 mm longis, lamina 10–17 cm longis, infra tomento subsistenti pilis 0.2 mm vel minus longis, floris feminei pedicello crasso c. 7 mm longo bracteolae cicatrice circa in medio, ovarii pilis 1–1.5 mm longis differt. — Typus: *Brass & Versteegh 13573* (L).

Tree 18–30 m. *Twigs* medium to slender, towards the top 1.5–3 mm diam., somewhat angular, at first with short or shaggy rufous or greyish tomentum, hairs up to 0.5 mm long, rather late glabrescent; bark of twigs lower down finely to coarsely striate, not cracking but sometimes blistering or flaking; lenticels occasionally present or small and frequent; leaf bud slender, acute, 8–18 by 1.5–3 mm, conspicuously tomentose with rufous hairs 1–1.5 mm long, or with short appressed brownish grey hairs 0.1 mm only (var. *kosteriana*). *Leaves* chartaceous; blade dark brown above, light brown to greyish beneath, with persistent 'mealy' tomentum composed of densely set stellate-scaly hairs, c. 0.2 mm or less (or late glabrescent); blade elliptic-oblong to oblong-lanceolate, (7–)9–17 by 2.5–7.5 cm, base \pm narrowly rounded to long attenuate, top acute-acuminate; lower surface not papillose, brown dots absent; midrib slender, raised above; nerves 13–17 per side, flat or sunken above, not much raised beneath, at an angle of c. 60° to the midrib; tertiary veins not distinct; lines of inter-arching not distinct; petiole 12–15 by 2–3 mm. *Inflorescences* pedunculate, minutely thinly pubescent with appressed brown-grey hairs 0.1–0.2 mm long; peduncle smooth, subterete, proceeding into 1 or 2 flower-bearing scar-covered brachyblasts; *male inflorescences* and *male flowers* not seen. *Female inflorescences*: peduncle stoutish, subterete, 4–8 by 2 mm (to 4 mm wide in infructescences), finely striate, ending in 1 or 2 knob-like scar-covered brachyblasts c. 2 mm long, each bearing 1–3 flowers of slightly different age and size; bracts small, ovate-triangular, pubescent, caducous; flowers somewhat coriaceous, shaggy pubescent with rusty hairs of various sizes, (0.1–)0.2–0.3 mm; bracteole minute, caducous, (in female) situated about halfway the pedicel. *Female flowers* (slightly immature): pedicel stoutish, 7–8 by 1.5–2 mm, broadening to the apex and \pm gradually passing into the perianth; bracteole minute, c. 1 mm or less, caducous and leaving a nearly ring-shaped slender scar 3–3.5 mm below the perianth; perianth in bud subellipsoid, broadest slightly below the middle, 4–4.5 by 2.5(–3) mm, lobes 0.5(–1) mm long, perianth rather firm, subcoriaceous; ovary ovoid-oblong, c. 3.5 by 1.5 mm, densely conspicuously rufous hairy, the hairs straight, 1–1.5 mm long; stigma 2-lobed, c. 0.5 mm. *Fruit* solitary or 2 or 3 together, the stipe as composed of peduncle and pedicel stoutish, c. 1.5 cm long, nearly 5 mm wide at base, striate, \pm lenticellate, the slender ring-shaped scar of the bracteole c. 5 mm below the fruit; fruit ellipsoid-oblong, c. (2.5–)4 by 2 cm, top \pm acute, at base contracted into a stoutish pseudostalk or not; (dry) pericarp rather woody, c. 4 mm thick, with dense mealy brown tomentum of scaly hairs 0.1 mm or less. Seed ellipsoid-oblong, c. 2.2 cm long (var. *mediovibex*).

Distribution — Rather locally with two varieties in northern Irian Jaya.



var. *mediovibex*

Distribution — Irian Jaya, Bernhard Camp, Idenburgh River (at 550 m altitude): *Brass & Versteegh 13573*; Japen I. (130 m alt.): *Iwanggin bb 10044*; *BW 9249, 10068*.

Habitat & Ecology — Said to be locally frequent in primary forest on sandy soil; forest on ridges; 130–550 m altitude; fl., fr. April, Sept., Oct.

Notes — 1. Fieldnotes: Tree of primary rain forest, 20–27 m tall; diameter to 58 cm. Bark 14 mm thick, black, scaly, or not peeling or bark with little light red exudate, not fissured, not peeling. Buttresses to 1 m high, 20 cm out, c. 3 cm thick, or absent.

2. The two specimens here assigned to the present species were by Sinclair (1968: 346) included in *M. longipes*, a species considered by me as a local endemic of SE Papua New Guinea and differing, among others, by a short-haired tomentum of the leaf bud. The present species (type variety) is characterized by long-haired leaf buds, rather conspicuous short-felty persistent tomentum on the lower leaf surface, coriaceous female flowers, and hard woody fruit.

3. The epithet of this new species is chosen because the caducous bracteole leaves its almost ring-shaped scar about halfway on the female flower pedicels and fruit stipes.

var. *kosteriana* W. J. de Wilde, var. *nov.*

Differt a varietate typi tomento gemmae terminalis cum pilis 0.1 mm longis vel minus. —
Typus: *Ch. Koster BW 8084* (L).

Tomentum of sterile leaf bud with hairs 0.1 mm or less. Fruit \pm ovoid, 2.5–3.5 by 2 cm, top subacute or bluntish, base with or without contraction into pseudostalk, hairs at base shorter. Leaves with persistent tomentum below.

Distribution — Irian Jaya, known from the type collected 4-ii-1959 at the Bodem River, 60 km SE of Sarmi, Div. Hollandia, and one collection from Papua New Guinea, E Sepik Prov. (*Takeuchi 6812*).

Habitat & Ecology — Rather common in primary forest on clayey soil; 70–200 m altitude; fr. Feb.

Notes — 1. Fieldnotes: Tree 18 m high, bole 15 m, dbh 45 cm. Buttresses up to 1.5 m high, 1 m out, 10 cm thick. Outer bark dark brown, not fissured, little peeling with large scales.

Fig. 4. *Myristica markgraviana* A.C. Smith. a. Habit of apical part of leafy twig, $\times 0.5$; b. tomentum of lower leaf surface, $\times 12$; c. short and long dendroid hair of tomentum of lower leaf surface, $\times 50$; d. portion of twig with male inflorescences, the latter arranged along axillary short-shoots each ending in a vegetative bud; $\times 0.5$; e. male flower, lengthwise opened, showing androecium; note finely warty inner surface of perianth; $\times 3$; f. androecium in lengthwise section, schematic; note shallowly impressed apex; $\times 6$; g. portion of twig with lateral short-shoot with one female inflorescence, $\times 0.5$; h. female flower, opened longitudinally, showing pistil (ovary); note scar of fallen bracteole, perianth minutely warty-bullate inside; $\times 3$; i. portion of older twig with one-fruited infructescence at the end of lateral short-shoot, $\times 0.5$ (a–c: *NGF 46566*; d–f: *NGF 14828*; g, h: *Saunders 426*; i: *NGF 45898*).

2. The specimen on which the present new variety is based was in the herbarium at Leiden determined by Hildebrandt as probably *M. sulcata* Warb., by Sinclair (1968) as *M. fatua* Houtt. var. *papuana* Markgraf.

Myristica mediterranea* W. J. de Wilde, *spec. nov.

Arbor 5–8 m alta, ramunculorum veterum cortice suberoso fissurato, foliis membranaceis parvis nervis lateralibus multis inconspicuis, infra pallentibus glaucis, inflorescentiis sessilibus, fructu c. 2.5 cm longo, pedunculo c. 2 mm longo. — Typus: *Soegeng Reksodihardjo* 328 (L).

Tree 5–8 m. *Twigs* of moderate size, terete, towards the apex (1.5–)2–3 mm diam., at first with very minute tomentum with grey-brown scales less than 0.1 mm, early glabrescent; bark of older twigs soon becoming corky, dark grey-brown, with longitudinal and (to a lesser extent) transverse cracks, the cracks deepening on older wood, but bark not much flaking; lenticels inconspicuous or absent. *Leaves* membranous; blade (elliptic-)oblong, 9–18(–20) by 2.5–6(–7) cm, base attenuate, top acute-acuminate; upper surface drying brown or dark (blackish) brown, glabrous, lower surface conspicuously pale, greyish (brown), sometimes with a yellow-brown discolouring, at first with minute tomentum, early glabrescent; papillae present, densely set, but irregularly spaced and appearing as if generally absent; dark dots absent; midrib slender, raised above; nerves 13–20 per side, at an angle of c. 60° to the midrib, slender, flat and faint above, nerves below almost flat, faint; lines of interarching and tertiary veins indistinct; petiole comparatively short, 5–10 by 1.5–3 mm; terminal leaf bud acute, rather slender, 5–10 by 1.5–2 mm, densely appressed pubescent with grey-brown hairs less than 0.1 mm. *Inflorescences* (known only from female inflorescences and infructescences) sessile, of the *Knema*-type; *female inflorescences* consisting of a small short-pubescent tubercle 1–1.5 mm, bearing 1–3 flowers; flowers short-pubescent with dark brown hairs 0.1(–0.2) mm, pedicel short, bracteole small, subpersistent, attached at or close to the transition to the perianth. *Male flowers* not seen. *Female flowers* (somewhat immature): pedicel short, c. 1.5 by 1 mm, bracteole broadly rounded, c. 1 mm, attached at the transition to the perianth, (sub-)persistent, perianth (in bud) ovoid(-oblong), c. 3 by 1.8(–2) mm, lobes c. 0.8 mm, ovary ovoid, incl. 2-lobed stigma c. 2 by 1.5 mm, densely minutely pale brown pubescent with hairs less than 0.1 mm. *Fruit* single (or paired), ellipsoid-oblong, 2.2–2.5 by (1–)1.2–1.4 cm, base narrowly rounded, top short-acute, somewhat oblique, (dry) pericarp c. 1 mm thick, densely mealy, scurfy, rusty pubescent with hairs less than 0.1 mm; fruit stalk short, brown, striate, 1.5–2 by 2 mm; seed ellipsoid-oblong, c. 2 cm long.

Distribution — New Guinea; known only from three collections from the southern border area between Irian Jaya and Papua New Guinea, at Ingambit, 5° 38' S, 141° 00' E: *NGF 31811, 33363; Soegeng Reksodihardjo 328.*

Habitat & Ecology — Disturbed forest on flat well-drained land, valley forest with semi-swamp near sago patches; c. 150 m altitude; fl., fr. June, July.

Notes — 1. Fieldnotes: Tree 5–8 m, dbh c. 5 cm. Branches horizontal, verticillate, bark smooth, dark brown. Leaves pale green, or glaucous, or very pale green below. Fruit orange or orange-brown.

2. Characterized by the corky, deeply fissured bark of the older twigs, the membranous leaves with very pale, whitish lower surface, and the ellipsoid-oblong, short-stiped fruit.

3. *Myristica mediterranea* obviously is close to *M. lancifolia*, a species also with rather closely set, faint, lateral nerves and with smaller fruit, and more distinct, 'regular' papillae on the lower leaf surface.

Myristica microcarpa Zipp., nom. nud. = *Myristica lepidota* Blume subsp. *lepidota*.

***Myristica millepunctata* W.J. de Wilde, spec. nov. — Fig. 5**

Myristicae neglectae affinis, sed in laminis tenuioribus supra sordidis in sicco, infra tomento sparsio evanescenti et nervis lateralibus numerosis nonnihil prominentibus manifestis differt. — Typus: *Soegeng Reksodihardjo 545* (L).

Tree 30–40 m. *Twigs* stout, towards the apex subterete, coarsely grooved, or sub-angular, (4–)5–7 mm diam., at first with greyish brown tomentum, hairs 0.1 mm or less, early glabrescent, drying dark brown or blackish, bark of twigs lower down striate, somewhat (but not much) cracking, brown, coarsely lenticellate. *Leaves* (thinly) coriaceous, drying brittle; blades (oblong-)lanceolate, ± parallel-sided or broadest at or somewhat above the middle, 25–40 by 7–11 cm, base short-cuneate or narrowly rounded, top acute(-acuminate); upper surface drying olivaceous-brown or blackish brown, dull, finely wrinkled, not smooth, lower surface pale, greyish or grey-brown, late-grabrescent, at first with very thin tomentum composed of densely set, pale, greyish brown, scale-like hairs less than 0.1 mm, appearing as if the leaf surface is glabrous; lower leaf surface not papillose; set with regularly spaced dark brown (blackish) dots; midrib medium, raised above; lateral nerves 28–40 per side, usually with slightly smaller intermediate nerves, at an angle of 70–80° to the midrib, lines of interarching indistinct; tertiary venation indistinct or generally invisible on both surfaces; petiole stoutish, 25–40 by 4–7 mm; terminal leaf bud stoutish, acute, 20–25 by 4–5 mm, with dense, short, grey or grey-brown tomentum with hairs 0.1 mm or less. *Inflorescences* incompletely known; according to the infructescences with short peduncle, presumably much resembling those of *M. neglecta*. *Male and female flowers* not seen. *Fruits* solitary, on the twigs below the leaves; on a short, ± woody infructescence nearly 1 cm long, with peduncle c. 5 mm long, c. 8 mm wide, cracked and lenticellate, and with some old flower scars at apex; fruit stoutish, broadly ovoid or subglobose, shortly narrowed at base and top, 5.5–6 by 4.5–5 cm; (dry) pericarp hard, woody, 10–12 mm thick with the outer layer with scattered stone-cell-like concretions visible on section; tomentum finely brown-mealy with hairs c. 0.1 mm; seed ovoid-broadly ellipsoid, c. 2 cm long.

Distribution — Montane area of Central New Guinea, SE Irian Jaya, in headwater area of Ok Denim and Oksibul River: *NGF 33212*; *Soegeng Reksodihardjo 545*.

Habitat & Ecology — Montane forest, ridge forest; 1400–1600 m altitude; fr. June.

Notes — 1. Fieldnotes: Tree with narrow crown. The bark fissured, 2 mm, dark brown. Leaves dull green above, pale bronze-green or glaucous beneath.

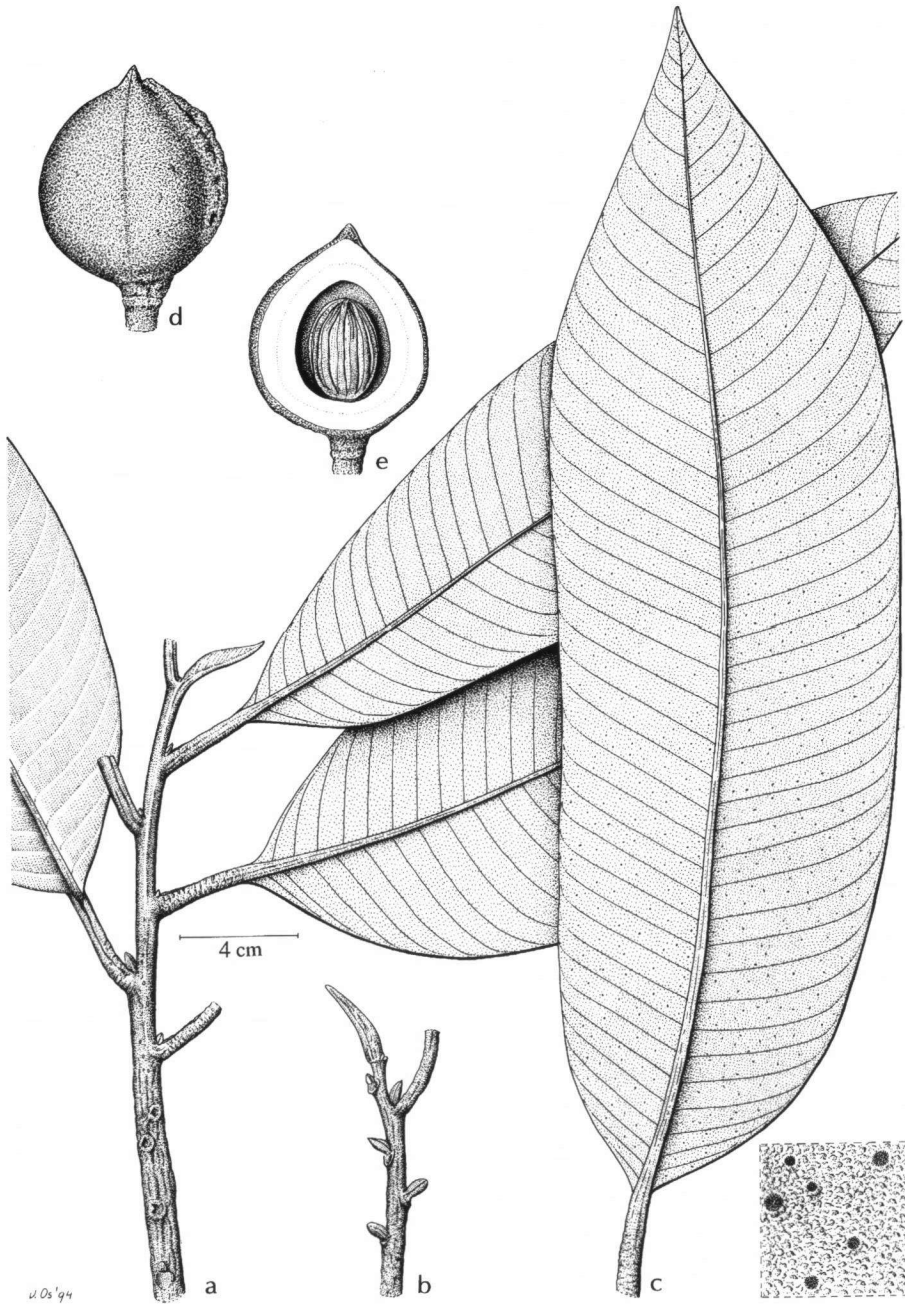


Fig. 5. *Myristica millepunctata* W.J. de Wilde. a, b. Portion of apex of twig showing sterile terminal leaf buds and axillary buds; somewhat less than $\times 0.5$; c. leaf seen from below, $\times 0.5$; inset: portion of lower leaf surface with scattered dots, $\times 25$; d, e. fruit from outside and longitudinally opened, $\times 0.5$ (all NGF 33212).

2. Closely related to *M. neglecta* Warb. in which the specimens now relegated to the present species were included by Foreman 40; 206. The mature fruit of *M. neglecta* is not known, whereas of the present species only mature fruit, no flowers, are known. The immature fruit of *M. neglecta* resembles very much the fruit of the present species. Still, I have decided not to unite the available specimens into one species because of rather striking differences in appearance of the dried leaves, and the quite differing habitat, *M. neglecta* being a species of lowland areas in the Vogelkop Peninsula.

Myristica montana Roxb., [Hort. Beng. (1814) 105, nom. nud.] Fl. Ind., ed. Carey 3 (1832) 846 = **Myristica lancifolia** Poiret subsp. **montana** (Roxb.) W. J. de Wilde.

Myristica montana Roxb. var. *papuana* (Scheff.) Warb., Monogr. Myrist. (1897) 514 = **Myristica lancifolia** Poiret subsp. **lancifolia**.

Myristica montanoides Warb., Monogr. Myrist. (1897) 514 = **Myristica lepidota** Blume subsp. **montanoides** (Warb.) W. J. de Wilde.

Myristica morindiifolia Blume, Rumphia 1 (1837) 186 ('*morindaefolia*') = **Myristica subcordata** (Blume) var. **morindiifolia** (Blume) W. J. de Wilde.

Myristica multinervia A.C. Smith, J. Arnold Arbor. 22 (1941) 70 = **Myristica subcordata** Blume var. **morindiifolia** (Blume) W. J. de Wilde.

Myristica myrmecophila Becc., Malesia 2 (1884) 37, t. 1 = **Myristica subalulata** Miq.

Myristica nana W. J. de Wilde, *spec. nov.*

Arbuscula 8 m attingens, inflorescentiae (sub)sessiles, floris masculini perianthium tubiforme c. 3.5 mm longum, androphorum pubescens, antherae 3, pedicellus gracilis, bracteola persistens circa ad medio inserta, fructus pseudo-pedicellus inclusus 3–3.5 cm longus; pedicellus gracilis c. 1 cm longus. — Typus: (*Stevens*) LAE 50348 (L).

Treelet, 1.5–7 m. *Twigs* slender, towards the apex subterete, 1–1.5 mm diam., (yellowish) brown, at first with minute tomentum, greyish hairs less than 0.1 mm, early glabrescent; bark of older twigs brown or grey-brown, striate, neither longitudinally cracking nor flaking; lenticels inconspicuous or absent. *Leaves* membranous; blade (elliptic-)oblong to lanceolate, 6–14 by 1.5–4 cm, base short- or long-attenuate, top acute-acuminate, the very tip often bluntish; upper surface drying olivaceous-brown to brown, lower surface glabrous, i.e. (late) glabrescent, at first with tomentum of scattered grey-brown hairs less than 0.1 mm, drying pale brown or grey-brown; papillae ± present, but not distinct; scattered dark-coloured dots absent; midrib slen-

der, flat or but slightly raised above; nerves 11–17 per side, flat, indistinct above, reddish brown, faint or indistinct beneath, at an angle of c. 70° to the midrib, lines of interarching and tertiary veins indistinct; petiole (reddish) brown, 7–12 by 1(–1.5) mm; terminal leaf bud slender, acute, 5–6 by (0.5–)1 mm, appressed pale brown pubescent with hairs 0.1 mm or less. *Inflorescences* almost of the *Knema*-type, i.e. sessile or up to 1.5 mm stalked, slender, simple or forked, scar-covered brachyblasts to 6 mm long, glabrescent, bracts c. 0.5 mm, short-pubescent, caducous; in male inflorescences terminating in a loose cluster of 1–3 flowers (flower buds) differing in age and size; female inflorescence consisting of an axillary single flower; flowers densely or thinly appressed pale-brown pubescent with hairs 0.1 mm or less, pedicels slender, the bracteole persistent or deciduous (female flowers), inserted below the perianth. *Male flowers*: pedicel slender, 3–4.5 mm long, c. 0.4 mm thick, bracteole ovate or elliptic, c. 1 mm long, minutely pubescent, inserted 1–2 mm below the perianth; perianth elongated, oblong or ovate-oblong, generally broadest in the lower half, c. 3.5(–4) by 1 mm, base rounded, top narrowly rounded, not angular in transverse section, lobes c. 1 mm, i.e. at anthesis splitting the bud to c. 1/4 (not seen in full anthesis); androecium slender, cylindrical, c. 3.5 mm, synandrium c. 1.8 by 0.4 mm, anthers c. 3 (i.e. with c. 6 thecae), contiguous, sterile apex inconspicuous, c. 0.1 mm, androphore slender, cylindrical, c. 1.7 by 0.3 mm, minutely pubescent with hairs c. 0.1 mm all over. *Female flowers*: pedicel slender, c. 5 mm long, the scar of the bracteole about halfway, perianth ovoid-oblong, c. 3.5 by 1.5(–2) mm, lobes c. 0.7 mm; ovary c. 2.5 by 1(–1.5) mm, minutely pubescent. *Fruit* solitary; ± elliptic-oblong, top subacute with minute stigmatic apiculum, the basal part contracted into a narrow pseudostalk, 3–3.5 by 1–1.3 cm incl. pseudostalk of c. 10 mm; fruit stalk (fruiting pedicel) slender, 8–12 mm long, c. 0.5 mm thick, with the scar of the bracteole at or below the middle; dry pericarp c. 1 mm thick or less, minutely pubescent with dull brown hairs 0.1 mm or less; seed ellipsoid, 1.7–2 cm long.

Distribution — A local endemic species of eastern Papua New Guinea, Central and Milne Bay Provinces: *Kanis 1149, 1187; (Stevens) LAE 50347, 50348.*

Habitat & Ecology — Forests at flat-land and steep slopes, at 400–750 m altitude; fl., fr. July, Aug.

Notes — 1. Fieldnotes: Treelet, 1.5–7 m, dbh c. 4 cm. Bark smooth, finely fissured, dark brown, grey, or blackish, inner bark straw; dark red sap; wood whitish; the leaves glaucous below. Flowers creamy or greenish white; female flower buds creamy, pale green at tip. Fruit (mature) greenish with brown scurf, or olive-green; seed brown, aril red.

2. Resembling *M. pumila*, but male flowers smaller, fruiting stipe shorter in *M. nana*.

3. Because of the narrow leaves this species also superficially resembles — and is possibly related to — *M. ensifolia* from the Western Prov.; the latter, known only from one fruiting specimen, differs by more elongate leaves with different venation, different lower leaf surface texture (× 60 lens!), and by the infructescence with a stouter stipe, including a short peduncle.

4. In one collection some of the male inflorescences are up to 1.5 mm long peduncled, next to sessile inflorescences.

Myristica neglecta Warb., Monogr. Myrist. (1897) 542, t. 17, f. 1–3; Sinclair 154, f. 6; Foreman 40; Foreman 206 (p.p., excluding fruiting material, at present relegated to *M. millepunctata*).

Myristica olivacea W. J. de Wilde, *spec. nov.*

Affinis *Myristicae cornutiflorae* in foliis siccantibus viridibus, non punctatis, inflorescentia cum pedunculo gracili ramoso, bracteola persistenti, perianthio masculi tubiformi 12–13 × 2.5 mm, lobis 1–1.5 mm longis, androecio gracili, 8.5–9 mm longo, antherae c. 6, differt. — Typus: Pullen 7663 (L).

Small undergrowth tree, 2.5–4.5 m. *Twigs* slender, towards the top 1–2 mm diam., early glabrescent, brown-yellowish, older bark of twigs striate, not or only faintly cracking or flaking, grey-black; lenticels not seen. Terminal leaf bud slender, 5–10 by 1 mm, densely appressed bright brown pubescent with hairs 0.2(–0.3) mm long. *Leaves* membranous; blade oblong-lanceolate, 10–30 by 2.5–7(–7.5) cm, top acute-acuminate or rarely bluntish, base attenuate; drying conspicuously dull olive-green; midrib rather slender, slightly raised above, much raised beneath, drying yellowish; nerves 10–15 per side, slender and slightly raised beneath, very faint above, at an angle of 60–80° to the midrib, lines of interarching and tertiary veins faint or absent; leaves below at first with minute scaly hairs, early glabrescent, leaving minute, characteristic, crater-like hair scars; dashes and dots absent or the latter extremely small and sparse; papillae absent; petiole yellowish brown, 20–30 by 1.5–2.5 mm. *Inflorescences* axillary or up to 7 mm supra-axillary, paniculate, with slender, somewhat flattened main peduncle; early glabrescent; in *male* 6–10 cm long, peduncle slender, 30–50 mm long, with paired lateral branches with 10–25 mm long smooth basal part, central branch 10–30 mm long, with 1–3 stages, the side branches up to c. 10 mm long, all branches proceeding into scar-covered short-shoots up to 5 mm long ending in a subumbel of 4–10 flowers (flower buds) in different stages of development; bracts small, long-triangular, 1–2 mm long, deciduous; *female* inflorescences with peduncle 25–30 mm long, shorter and less branched as compared to the male, in all bearing 2–4 flowers. *Flowers* conspicuously elongated, perianth and pedicel rather sparsely appressed dark-brown pubescent, the perianth partly glabrescent; bracteole small, 0.5–1 mm, semicircular, pubescent, persistent, situated at or near the apex of the pedicel. *Male flowers*: pedicel slender, 10–12 by 0.4–0.6 mm; bracteole at base of perianth; mature perianth in bud elongated, oblong, almost tubiform, narrowed to both ends, especially towards the top, c. 12–13 by 2.5(–3) mm, the apical portion not angular in section; lobes erecto-patent at anthesis, 1–1.5 mm; androecium cylindrical, slender, 8–9 mm long, synandrium cylindrical, 4.5–5.5 by 0.6–0.8 mm, sterile apex 0.2–0.3 mm, irregularly minutely 5- or 6-lobed, anthers 5 or 6, mutually closely appressed, at base passing into the slender cylindrical androphore, 3–3.5 by 0.5 mm, minutely pubescent with pale appressed hairs less than 0.1 mm. *Female flowers*: pedicel straight, stoutish, 18–20 by 0.8–1 mm; bracteole inserted 2–5 mm below base of perianth; perianth ovoid-oblong (flask-shaped, distinctly narrowed towards the top), c. 9 by 3–3.5 mm, lobes c. 1 mm long; ovary ovoid-oblong, densely minutely pale brown pubescent with hairs less than 0.1 mm, c. 6–7 by 2–3 mm, incl. the c. 1 mm long deeply 2-lobed glabrous stigma. *Fruit*

single, oblong, 3–3.5 by 1–1.3 cm, top acute, base contracted into 3–5 mm long pseudostalk; dry pericarp c. 1 mm thick with mealy indumentum of scale-like hairs c. 0.1 mm long. *Seed* 2–2.5 cm long.

Distribution — Papua New Guinea, Central Prov., Aban Subprov., c. 12 km N of Amazon Bay, 149° 23' E, 10° 11' S, known from four collections only: *Kanis 1064*, *1065*; *Pullen 7663*, *7665* (the latter in CANB only, mature fruit).

Habitat & Ecology — Rain forest on low hills; clayey soil; 75–120 m altitude; fl. June.

Notes — 1. Fieldnotes: Undergrowth tree, 2.5–4 m, dbh c. 4 cm. Bark undeeply fissured, dark grey or black. Blaze with red exudate. Flowers cream. Leaves green, midrib yellowish. Inflorescence ± pendent. *Pullen 7665* is annotated (possibly erroneously so) as a tree c. 20 m (c. 65 ft) tall. Leaf blades of a sterile twig may reach 34 by 8.5 cm, with petiole 4 cm long.

2. The present species is close to *M. cornutiflora* Sinclair; it differs chiefly by its more slender habit, in all parts. The twigs dry yellowish, the leaves conspicuously olivaceous-green. The flowers resemble most those of *M. cornutiflora* subsp. *elegans*, but differ by the persistent bracteole and a longer androecium relative to the perianth. Apparently the leaves lack the small dark brown dashes and dots below, but possibly the latter are represented as very small scattered points, only visible here and there and with high magnification.

3. The stomata on the lower leaf surface are deeply sunken in the surrounding tissue, only visible under high magnification; papillae absent.

Myristica ornata* W.J. de Wilde, *spec. nov.

Affinis *Myristicae neglectae* et *M. mediovicis* in pagina folii inferni valde papillata, lamina folii 15–20 cm longa fructu 5–6 cm longo, pedicello fructifero c. 10 mm longo cum cicatrice bracteolae sita circa in medio differt. — Typus: (*Streimann & Katik*) LAE 51752 (L).

Tree 25–30 m. *Twigs* medium, subterete, coarsely striate (or almost angled), at first with minute, scattered, pale brown, scale-like hairs less than 0.1 mm long, very early glabrescent, ± yellowish brown, at apex 2.5(–3) mm diam.; bark of twigs lower down (dark) brown, coarsely irregularly striate with a tendency of flaking, with a few small, brownish, scattered lenticels. *Leaves* subcoriaceous; blades (elliptic-)oblong, 15–20 by 3.5–6.5 cm, base cuneate, top acute, not or hardly acuminate; upper surface drying olivaceous-brown or yellowish brown, lower surface but slightly paler, glabrous, distinctly papillose (lens!), brown dots absent; midrib slender, not or but slightly raised above, lateral veins 15–20 per side, slender, flat and faint above, faint below, faintly anastomosing at a comparatively large distance from the leaf margin, tertiary veins inconspicuous; petiole medium, 15–20(–25) by 2.5–3 mm; terminal leaf bud ± slender, acute, c. 15 by 3–4 mm, somewhat longitudinally cracked on drying, densely pubescent with yellow brown appressed hairs (0.1–)0.3 mm long. *Inflorescences* known only from the infructescences. *Male* and *female flowers* not seen. *Fruit* solitary or paired, *infructescences* situated shortly below the leaves; consisting of a short peduncle, 5–10 by (4–)5–6 mm, glabrescent, with coarsely flaking bark, proceeding into the 10 mm long fruiting pedicel(s) with similar appearance, fissured and with lenticels or coarsely flaking; scar of bracteole about halfway the pedi-

cel; fruit (immature) broadly fusiform, 5–6 by 3–3.5 cm, base narrowed into a 5(–7) mm long pseudostalk, top \pm gradually tapered, acute; (dry) pericarp c. 10 mm thick, tomentum light brown, mealy, with hairs c. 0.3(–0.4) mm long; mature seed not seen.

Distribution — Papua New Guinea, Western Prov., Kiunga area: LAE 51752, only specimen seen.

Habitat & Ecology — Lowland rain forest flats, c. 50 m altitude; fr. Aug.

Notes — 1. Fieldnotes: Tree 30 m tall; straight slender bole, 25 m, dbh c. 50 cm. Bark dark grey, slightly vertically cracked. Leaves with thick margin slightly curved inward; dull dark green above, green below. Fruit rusty brown.

2. Known only from the type specimen. The species keys out beside *M. schleinitzii* Engl. because of the peduncled inflorescences and the papillate lower leaf surface, but otherwise is quite different and apparently not closely related.

3. *Myristica ornata* shows resemblances to *M. mediobibex* (also with the scar of the bracteole \pm halfway the fruiting pedicel), and especially to *M. neglecta* and *M. millepunctata*; these latter, however, have a non-papillose lower leaf surface and scattered non-traumatic dots.

Myristica ovicarpa W. J. de Wilde, *spec. nov.*

Arbor alta, omnes partes mature glabrescentes. Folia parva membranacea, siccantia fusca, 20–30 nervi laterales in ambobus lateribus, diluti. Fructus solitarii, axillares foliorum c. 7 \times 5 cm, pericarpium 2–2.5 cm crassum, stipes crassus, c. 4 mm longus. — Typus: (Damas & Katik) LAE 74587 (L).

Tree, 25 m. Twigs moderate or slender, towards the apex 1–2(–2.5) mm diam., smooth or finely striate, bright (reddish) brown, at first with minute tomentum, greyish hairs less than 0.1 mm, very early glabrescent; bark of older twigs brown, finely striate, neither cracking nor flaking; lenticels inconspicuous or absent. Leaves membranous; blades (elliptic-)oblong, 6–10.5 by 2.5–4 cm, base broadly attenuate, top subacute or somewhat acute-acuminate; upper surface drying glossy blackish brown, lower surface glabrous (i.e. at first with minute tomentum, greyish brown hairs less than 0.1 mm, very early glabrescent), drying dark brown; papillae absent, scattered dark dots absent; midrib slender, almost flat above; nerves numerous, 25–30 per side, at an angle of 70–80° to the midrib, slender, flat and faint above, faint below, lines of interarching and tertiary veins indistinct; petiole rather slender, bright dark brown, 10–18 by 1–1.5 mm; terminal leaf bud slender, acute, 6–10 by 1 mm, finely appressed pubescent with grey-brown hairs less than 0.1 mm. Inflorescences not seen; according to the infructescence sessile, short, of the *Knema*-type; male flowers not seen; female inflorescence possibly consisting of only one single axillary flower, with pedicel c. 4 mm long or less. Fruit: solitary, axillary to a lower leaf, ovoid-ellipsoid, apparently of mature size but seed not yet fully developed (i.e. shrunken within the aril), when dry c. 7 by 5 cm, base and top rounded; dry pericarp 2–2.5 cm thick, glabrous, but towards the insertion of the stalk with some minute tomentum of appressed brownish hairs less than 0.1 mm (hence ovary minutely pubescent); fruit stalk short, thickish, c. 4 mm long, c. 5 mm thick, brown, longitudinally cracked; seed (immature) ellipsoid, c. 2 cm long.

Distribution — E Papua New Guinea, known only from the type specimen collected on Mt Dom (Pambwa), Rossel I., Subprov. Misima, Milne Bay Prov., 11° 22' S, 154° 11' E.

Habitat & Ecology — Lowland hill forest, at. c. 200 m altitude; fr. March.

Notes — 1. Fieldnotes: Large tree, height 25 m, bole 20 m, dbh 50 cm. Outer bark black-greenish. Leaves glabrous, dark green above, light green below, growing tips rusty brown; fruit large, egg-shaped, solitary, axial, mature light green-yellow.

2. This species is distinct from other small-leaved *Myristicas* in the area by the glabrous nature of all parts, the many-nerved leaves, and the large, short-stiped, glabrescent fruit with very thick pericarp.

Myristica pachycarpidia* W. J. de Wilde, *spec. nov.

Arbor silvae montanae, ramunculi circa crassi, versus apicem c. 5 mm diametro, porcati.

Fructus subglobosus 5–6 cm diametro, pericarpium c. 2 cm crassum, minute pubescens, subglabrescens. — Typus: *Brass 23293* (L).

Tree c. 25 m. *Twigs* stoutish, subterete and (when dry) with two distinct low wings or sharp ridges running in-between the insertions of the petioles; twigs towards apex 4–5 mm diam., at first with very minute tomentum (hairs much less than 0.1 mm), very early glabrescent, dark brown or blackish, bark of twigs lower down coarsely striate, with a tendency of cracking and flaking, dark brown or greyish brown, lenticels present but not conspicuous. *Leaves* thinly chartaceous; blades elliptic-oblong or oblong-lanceolate, 12–25 by 4.5–10 cm, base narrowly or broadly rounded, top bluntish or subacute; upper surface drying dark brown or blackish brown, lower surface grey-brown or grey, glabrous (i.e. with extremely minute, scattered, whitish, 'scale-like' hairs much less than 0.1 mm only), not papillose, without brown dots; midrib slender, flat or slightly raised above; lateral nerves 20–30 per side, faint and flat above, at an angle of 60–80° to the midrib; lines of interarching and tertiary veins indistinct, somewhat impressed above and rendering the leaf slightly bullate; petiole 15–20 by 2.5–4 mm; terminal leaf bud smallish, acute, slender, c. 10 by 2 mm, apparently glabrous but covered with appressed grey-white hairs less than 0.1 mm. *Inflorescences* (known only from the infructescences) sessile, of the *Knema*-type, small, glabrous. *Male and female flowers* not known. *Fruit* solitary, on minute sessile infructescence, situated on the twig just below the leaves; fruiting pedicel stout, straight, 10–20 by 4–6 mm, at first with minute scattered scale-like hairs, glabrescent, ± warty or lenticellate, the scar of the bracteole at 1/3 or halfway from the top, and also with a conspicuous scar of the perianth at the top; fruit (somewhat immature) subglobose, 5(–6) by 4–5 cm, when dry strongly wrinkled, top ± acute, pericarp c. 2 cm thick, with ± thin tomentum of minute dull brown hairs less than 0.1 mm, with a tendency of becoming glabrous; seed (somewhat immature) subglobose or broadly ellipsoid, c. 2 cm.

Distribution — Papua New Guinea, Milne Bay Prov., Mt Dayman, known only from the type collection.

Habitat & Ecology — Occasional in oak forest of north slopes; at 1550 m altitude; fr. July.

Notes — 1. Fieldnotes: Leaves grey below; unripe fruit subglobose, 5–6 cm diam.

2. Ignoring its provenance from 1550 m altitude this species may key out beside *M. sulcata*, a lowland species with smaller fruit. Actually, the present type specimen, *Brass* 23293, was determined by Sinclair (1968: 398) as *M. sulcata*. Somewhat resembling also is *M. bialata* Warb. from lowland areas in the Bismarck Archipelago; that species, however, has ant-swellings in the twigs. The (immature) fruit may resemble that of *M. sphaerosperma* A.C. Smith, also a montane species, but this latter has a much more conspicuous tomentum on the lower leaf surface, terete twigs, etc.

Myristica pachyphylla A.C. Smith, J. Arnold Arbor. 22 (1941) 69.

Note — This species was sunk into *M. longipes* Warb. by Sinclair (1968) and Foreman (1978).

Myristica papillatifolia W.J. de Wilde, *spec. nov.*

Arbor c. 4 m alta. Folia 6–11 cm longi, pagina infera papillosa. Inflorescentia sessilis. Fructus late fusiformis, c. 3 cm longus cum tomento pilorum brevissimorum. — Typus: (*Ridsdale & Galore*) NGF 33366 (L).

Small tree, c. 4 m tall. *Twigs* towards apex slender (to moderate), drying distinctly 3-angular, 1.5–2(–3) mm diam., at first with minute greyish tomentum, dense hairs less than 0.1 mm, early glabrescent; bark of twigs lower down finely striate, not longitudinally cracking, nor flaking; lenticels inconspicuous or absent. *Leaves* membranous; blades elliptic-oblong, base long-attenuate (acute), 6–11 by 1.5–3 cm, top acute to acute-acuminate; upper surface drying dull dark (blackish) brown, glabrous, lower surface at first with few, scattered, whitish hairs less than 0.1 mm, very early glabrescent, drying light brown, in old leaves greyish, distinctly fine-papillate (lens, × 60!), without dots; midrib slender, slightly raised above; nerves 10–13 per side, fine, flat or sunken above, nerves on lower surface conspicuous, dark brownish and contrasting in older leaves, at a rather sharp angle of c. 45° to the midrib; lines of interarching indistinct; tertiary veins faint but in old leaves rather distinct and contrasting; petiole 7–10 by 1–1.5 mm; terminal leaf bud slender, acute, 6–10 by 1.5(–2) mm, densely very minutely greyish pubescent with hairs less than 0.1 mm. *Inflorescences* not seen; judged from infructescence sessile, simple, of the *Knema*-type, a short tubercle. *Male* and *female* flowers not seen. *Fruit* solitary, on the twig axillary to the leaf-scars just below the leaves; elliptic-fusiform, i.e. with narrowly 2(–3) mm long beaked apex and with the base narrowed into a slender 5(–7) mm long pseudostalk, incl. pseudostalk 3–3.3 by 1.5–1.7 cm, (dry) pericarp 1(–2) mm thick, dull 'mealy' grey-brown densely pubescent with very minute interwoven hairs less than 0.1 mm, appearing glabrous; fruiting pedicel slender, 15–17 by 1.5 mm, the bracteole-scar at (4–)5 mm below the fruit, the part above the scar smooth, that below it coarsely striate, or with rough texture by cracks; seed broad-ellipsoid, blackish brown, 1.5–1.7 cm.

Distribution — Central New Guinea, the border area between Irian Jaya and Papua New Guinea, near Ingambit, Kiunga Subprov., Western Prov., 5° 38' S, 141° 00' E, only known from the type collection.

Habitat & Ecology — Valley forest, semi-swamp with sago patches; c. 130 m altitude; mature fr. July.

Notes — 1. Fieldnotes: Tree, c. 4 m tall. Mature fruit orange-brown.

2. This species is known only from the type collection. It is clearly distinct among the smaller-leaved New Guinean *Myristicas* with a sessile, *Knema*-type of inflorescence, by the leaves with nerves steeply running from the midrib, the distinctly papillose undersurface (lens, $\times 60!$), and the delicately built, broadly spindle-shaped fruit, conspicuously narrowed at both ends, with a thin pericarp carrying a very thin tomentum, almost as if it is glabrous.

3. The only known specimen comes from an area in Central New Guinea, the central southern border area between Papua New Guinea and Irian Jaya, an area that appears to harbour a few more new taxa in the genus, for instance *M. mediterranea* and others.

Myristica papuana Scheff., Ann. Jard. Bot. Buitenzorg 1 (1876) 47 = *Myristica lancifolia* Poiret subsp. *lancifolia*.

Myristica pedicellata Sinclair 324, f. 45; Foreman 206.

Myristica philippens auct. non Lam.: Markgraf, Bot. Jahrb. 67 (1935) 158 = *Myristica markgraviana* A.C. Smith.

Myristica pilosella W.J. de Wilde, *spec. nov.*

Affinis *Myristicae cornutiflorae* in foliis longe acuminatis, alabastro terminali cum pilis c. 1 mm longis, innovationibus pilosis; fructu elongato, includenti pseudopedicello 5–10 mm longo, c. 5–5.5 cm longo, 2 cm lato, differt. — Typus: (*Streimann & Katik*) NGF 28986 (L).

Treelet, 5 m. Twigs slender, towards the apex 1–1.5 mm diam., somewhat angular, at first with short shaggy tomentum of softly pilose rusty hairs c. 0.5(–1) mm long, late glabrescent; bark of twigs lower down yellowish brown, smooth, \pm striate; longitudinally cracks and lenticels not apparent. Leaves thinly chartaceous; blade \pm oblong-lanceolate, broadest below the middle, 8–13 by 1.5–3.5 cm, base short-attenuate, apical portion \pm gradually narrowed into a long acute-acuminate top; upper surface drying dark brown, \pm dull, lower surface grey-brown, glabrescent, at first with minute, scattered, appressed, grey hairs less than 0.1 mm (lens!), the hairs somewhat stouter and subpersistent on the midrib; lower surface not papillate; brown dots absent; midrib slender, above raised (in a groove); lateral nerves 14–16 per side, thin and sunken above, at an angle of 60–70° to the midrib, lines of interarching and tertiary veins thin, fairly well visible on both surfaces; petiole 7–15 by 1–1.5 mm, glabrescent, at first with woolly tomentum of pilose hairs up to 1 mm; leaf bud \pm slender, acute, c. 6–12 by 1.5–2 mm, densely yellow-rusty pubescent with hairs c. 1 mm long. Inflorescences paniculate, i.e. with long slender peduncle, not known in male but likely resembling those of *M. cornutiflora* subsp. *elegans* and *M. olivacea*; at first with finely woolly tomentum of grey-brown hairs c. 0.5 mm long or less, late glabrescent; female inflorescence: peduncle (smooth part, without scars) slender, 15–25 by 0.5–1 mm, proceeding into a short scar-covered brachyblast up to 5 mm long, with

at the end 1 flower (bud), and with or without the initiation of a next flower bud; bracteole small, subpersistent, inserted at the top of the pedicel; flowers woolly with light brown hairs 0.5 mm or less. *Female flowers*: pedicel straight, stoutish, c. 6 by 0.7 (–1) mm, bracteole ovate, 0.5–1 by 1 mm, (sub)persistent, submature perianth in bud ovoid-oblong (\pm flask-shaped), c. 8 by 3(–3.5) mm, narrowed in the apical half, top subacute; lobes c. 0.7(–1) mm long; ovary (incl. stigma) ovoid-oblong, 6–6.5 by 2.5 mm, densely coarsely pubescent with hairs 0.5–1 mm. *Fruit* solitary, on long slender stalk, presumably pendulous, fusiform, 5–5.5 by 1.5(–2) cm, top \pm beaked, the base narrowed into a 5–10 mm long pseudostalk; fruiting pedicel 7–9 mm long, pubescent, with the (sub)persistent bracteole situated 1–2 mm below the top; pericarp (dry) c. 1 mm thick, densely scurfy-woolly yellow-rusty pilose with hairs 0.2–0.4 mm and with stouter straight hairs towards the top and at the base of the pseudostalk; seed not seen, presumably (ellipsoid-)oblong, 3–3.5 cm long.

Distribution — Papua New Guinea, Milne Bay Prov., Ruba-Ruba Subprov., at junction of Ugat and Mayu Rivers, near Mayu I.; 9° 37' S, 149° 10' E, known only from the type collection.

Habitat & Ecology — In *Castanopsis*-dominated forest, at 1000 m altitude; fl., fr. July.

Notes — 1. Fieldnotes: Tree; height 5 m, bole 3 m, dbh 5 cm. Leaves dull dark green above, green below; soft reddish scales on midrib and new growth. Flower buds reddish brown; fruit reddish brown.

2. According to the inflorescences this species obviously links up with *M. cornutiflora* and *M. olivacea*. It resembles *M. cylindrocarpa*, a lowland species also known only from a single fruiting specimen and differing by shorter tomentum, different leaf venation, shorter infructescences, and smaller fruit.

3. The specimen on which the present species is based was in the herbarium identified as *M. longipes* Warb.

Myristica polyantha W.J. de Wilde, *spec. nov.*

Affinis *Myristicae globosae* et *M. laevifoliae*, laminis coreaceis, infra nervis lateralibus colore discrepantibus, inflorescentiis masculis multifloris, bracteola ad pedicelli apice affixa caduca, perianthii lobis perianthio c. 1/4-plo brevioribus, fructu globoso distincta. — Typus: Brass 24772 (L).

Tree 25–30 m. *Twigs* subterete, towards the apex (1.5–)2–3 mm diam., at first with minute brown-grey tomentum, hairs less than 0.1 mm, early glabrescent; bark of twigs lower down coarsely striate, \pm longitudinally fissured, not flaking, lenticels scarce. *Leaves* coriaceous; blades ellipsoid-oblong or obovoid-oblong, broadest at or \pm above the middle, 7–17 by 3–9 cm, base (short-)attenuate, top acute-acuminate, the very tip usually bluntish; upper surface drying (bright or dark) brown, lower surface pale brown or brown-grey, at first with minute open tomentum of scale-like pale brown hairs less than 0.1 mm, glabrescent, not papillose; not dotted; midrib rather broad, flat or but slightly raised above; nerves 12–15 per side, flat or sunken above, at an angle of 45–60° to the midrib, lines of interarching not distinct; tertiary veins distinct or not; petioles (12–)15 by 2–3.5 mm; terminal leaf bud medium, acute, 10–15 by 2–3 mm, densely appressed pubescent with pale brown(-greyish) hairs 0.1 mm

or less. *Inflorescences* sessile, of the *Knema*-type, i.e. sessile, wart-like, simple or ± forked, woody, scar-covered brachyblasts to c. 5 mm diam., rusty short-pubescent; flowers short-pubescent with dull rusty hairs 0.1–0.2 mm, bracteoles caducous; male inflorescences dense with clusters of 10–20 flowers; *female inflorescences* and *flowers* not seen; infructescences sessile, 1- or 2-fruited. *Male flowers*: pedicel 4–6 by (0.6–)0.8 mm; bracteole ± ovate, acute, sometimes faintly 3-topped, 2.5–3 mm long, caducous, the scar situated at the transition of pedicel and perianth or c. 0.5 mm below; mature male perianth in bud oblong or ellipsoid-oblong, top rounded (broadly obtuse), not angular in transverse section, base ± rounded or tapering, 4–6 by 2–2.5 (–3) mm, lobes (1–)1.5 mm, opening the perianth for c. 1/4; androecium broad-cylindrical, (3.5–)4–4.5 mm; androphore cylindrical, c. 2 by 0.8–1.2 mm, glabrous or appearing glabrous because of extremely minute scattered pale hairs less than 0.1 mm, synandrium oblong, obtuse or truncate, 1.8–2.5 by 1–1.5 mm, sterile apex 0.1 mm or absent; anthers 5 or 6 (i.e. with 10–12 thecae), not tightly contiguous. *Fruit* 1 or 2 per infructescence; fruit stalk (fruiting pedicel) 5–8 by 3.5–5 mm, with coarse lenticels and the scar of the bracteole at the apex; fruit (immature) globose, 2.5(–3) cm diam., (dry) pericarp c. 7 mm thick, with (grey-)rusty 'mealy' tomentum with hairs c. 0.1 mm; mature seed not seen.

Distribution — Papua New Guinea, Milne Bay Prov., Goodenough I. and possibly Sudest I. (Tagula) (see note 3).

Habitat & Ecology — Canopy or subcanopy tree of montane oak forest and foothill forest, heavily mossed forest of ravines; at c. 1600 m altitude (see also note 3); fl., fr. Aug., Oct.

Notes — 1. Fieldnotes: Diameter of trunk to 35 cm. Leaves grey below.

2. This species is closely related to the variable *M. globosa* and to *M. laevifolia*. The former is mainly a lowland species, with thinner leaves and flowers with thinner perianth, with narrower androecium, smaller bracteole, and fruit with generally thinner pericarp; *M. laevifolia* has very similar male flowers, with extremely thin tomentum, but fruits quite different by their elongate shape.

3. The present species is primarily restricted to the type collection, *Brass 24772*, with male flowers, and to *Brass 24706*, with (immature) fruit, both from Goodenough Island, at c. 1600 m altitude. Surely the collection *Brass 27918*, with male flowers, from Sudest I. (Tagula I.) at 300 m altitude, belongs in the close vicinity, according to almost identical male flowers; however, the latter specimen differs in its general appearance, and leaves with not-contrasting veins.

4. The specimens cited above were identified by Sinclair as *M. sulcata*, *M. aff. sulcata*, and *M. globosa*.

5. The present species may also be related to *M. tenuivenia* subsp. *lignosa*, from about the same area, with similar globose thick-walled fruit, but this species has a (more or less) persistent tomentum on the lower leaf surface and a more conspicuous fruit coat.

Myristica pseudo-argentea Warb., Monogr. Myrist. (1897) 483, t. 19, f. 1–2; K. Schum. & Laut., Fl. Schutzgeb. Südsee (1900) 326; Markgraf, Bot. Jahrb. 67 (1935) 170; Sinclair 481 = doubtful species.

Myristica psilocarpa* W.J. de Wilde, *spec. nov.

Affinis *Myristicae hooglandii*, in perianthio masculi parviore, 7–7.5 mm longo, anthera 8 vel 9, fructu 5–5.5 cm longo, decrescenti basin versus, glabro, differt. — Typus: (*Foreman*) LAE 52394 (L).

Tree 18–22 m. Twigs of medium stoutness, towards the apex subterete, c. 3 mm diam., at first with pale brown minute hairs less than 0.1 mm, early glabrescent, bark of twigs lower down striate, older bark not seen. Leaves thinly chartaceous; blades oblong-lanceolate, 14–24 by 4–7 cm, base subcuneate or narrowly rounded, top subacute or mostly blunt; upper surface drying olivaceous or bright brown, lower surface grey-brown or pale greenish brown, glabrous, i.e. glabrescent, at first with extremely minute inconspicuous tomentum consisting of widely scattered scale-like minute, pale brown or greyish hairs less than 0.1 mm; the midrib \pm flat above, nerves 15–20 per side, slender, flat or sunken above, on lower leaf surface a little raised, reddish brown, contrasting in colour, lines of interarching indistinct, tertiary veins reticulate, \pm sunken and faint above, reddish brown, contrasting below; lower leaf surface not papillose; scattered dots absent; petiole 15–25 by 2–2.5 mm; terminal leaf bud straight, acute, c. 15 by 2.5–3 mm, densely dull brown appressed-pubescent with hairs 0.1(–0.3) mm. Inflorescences peduncled, at first with minute scattered hairs, (early) glabrescent; flowers glabrescent, with thin tomentum of pale, scattered, appressed hairs c. 0.1 mm; bracts small, c. 2 mm, caducous; male inflorescences: peduncle (15–)20 mm long, c. 2 mm wide, ending in a subumbel of (2–) 3–5 flowers (flower buds) of various sizes and ages, or ending in (one or) two subsessile scar-covered brachyblasts up to c. 5 mm long, ending in similar subumbels of flowers; female inflorescences 5–12 mm peduncled, (according to infructescences) 1-flowered. Male flowers: pedicel distinct, 6–7 by 1.5–2 mm, scar of bracteole conspicuous, at the transition to the perianth; bracteole caducous, in immature bud broadly rounded, 3–3.5 mm diam., appressed to the globose perianth bud; mature perianth leathery, in bud ovoid-ellipsoid, 7–7.5 by 6 mm, top rounded, not angular in transverse section, lobes c. 3.5 mm long, hence splitting perianth to \pm halfway, androecium \pm slender, c. 5.5 mm; synandrium cylindrical, c. 4 by 1.2–1.4 mm, anthers 8 or 9, contiguous (c. 16–18 thecae), sterile apex broad, \pm cushion-shaped, impressed in the centre, c. 0.3(–0.4) mm high; androphore cylindrical (1–) 1.5 by 0.4 mm, glabrous. Female flowers not seen. Fruit solitary; fruiting peduncle 5–12 by 3–4 mm, fissured, with scattered small lenticels, continuing into fruiting pedicel, 5–7 mm long, c. 3 mm thick, striate; fruit obovoid-oblong, c. 5–5.5 by 3 cm, top bluntish or subacute, basal part narrowed, (dry) pericarp very hard, 5(–7) mm thick, glabrous (i.e. very early glabrescent, at first with \pm scattered, appressed, pale hairs less than 0.1 mm); mature seed ellipsoid-oblong, 2.5(–3) cm long, with very hard, bony, yellowish brown testa.

Distribution — Papua New Guinea: endemic of Manus Island: (*Foreman*) LAE 52394 (type); *Argent* NGBF 1097.

Habitat & Ecology — Lowland rain forest, at 150–180 m altitude; fl. June, fr. July.

Notes — 1. Fieldnotes: Small buttresses, or with stiltroots at base. Bark dark brown, scaly. Leaves shiny, dark green above, whitish beneath. Flowers white. Fruit (mature) green, \pm obovoid; seed brown, aril bright red.



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2. The two specimens here described under the new name *M. psilocarpa* were distributed by LAE under the name *M. hooglandii* Sinclair, a species which they resemble, and obviously are taxonomically related to as well; however, *M. hooglandii* is quite distinct in several characters, viz. a stouter habit, leaves with faint or invisible veins, much larger male flowers (the synandrium without sterile apex), and the fruit with less woody and less hard pericarp, glabrescent, at first with a thin 'mealy' tomentum.

***Myristica pumila* W.J. de Wilde, spec. nov. — Fig. 6a–c**

Myristicae tubiflorae et *M. flosculosae* affinis. Arbor ad 8 m alta, ramuli apicaliter c. 1 mm diam., laminae 6–15 cm longae, inflorescentiae (sub)sessiles, perianthium masculinum elongatum c. 9 mm longum sparse pubescens intra verrucosum, pedicellus filiformis bracteola c. 1/3 sub apice affixa fugaci, fructus elongatus pseudopedicello incluso c. 5 cm longus, pedicellus gracilis c. 2 cm longus. — Typus: *Hoogland 3935* (L).

Shrub or treelet, 1.5–8 m. *Twigs* towards apex (faintly) angular, slender, (0.5–)1–1.5 mm diam., at first with tomentum of grey-brown minute hairs less than 0.1 mm, early glabrescent; bark of older twigs dark brown or grey-brown, striate, lenticels inconspicuous; bark not cracking nor flaking. *Leaves* membranous; blade elliptic-oblong or oblong, 6–15.5 by 2–5 cm, base attenuate, top acute-acuminate; upper surface drying olivaceous-brown, lower surface glabrous, i.e. at first with short tomentum of appressed grey-brown hairs less than 0.1 mm, early glabrescent, ± pale greyish brown (rather concolorous with upper surface); not papillate; without brown-black dots; midrib slender, raised above; nerves 9–16 pairs, at an angle of 60–80° to the midrib, sunken (and indistinct) above, bright brown or reddish brown beneath, contrasting, marginal lines of interarching fairly distinct; tertiary venation rather distinct or not; petiole 7–15 by 1–1.5 mm; terminal leaf bud slender, acute, c. 5 by 0.5–1 mm, densely minutely grey-brown appressed hairy with hairs less than 0.1 mm. *Inflorescences* of the *Knema*-type, i.e. a sessile or up to 1 mm peduncled, wart-like, scar-covered brachyblast, in male simple or forked, up to 5 mm long, terminally with 1–4 flowers rather differing in age and size, short-pubescent with brown hairs c. 0.1 mm; female inflorescences consisting of but a single sessile flower; flowers thinly or scarcely minutely (dark) brown pubescent with appressed hairs less than 0.1 mm, appearing glabrous, bracteole ± ovate, caducous, leaving a conspicuous scar on the slender pedicel, far below the perianth. *Male flowers*: pedicel slender, 6.5–10 by 0.4(–0.5) mm, the scar of the bracteole 2–4 mm below the perianth; perianth elongate, tubiform, (6–)7–9.5 by 1.8–2 mm, slightly narrowed or not in the lower half, base ± rounded-attenuate, top bluntish, the apical portion of the perianth not 3-angular in transverse section; lobes 1–1.7 mm long, i.e. in anthesis erect or slightly out-

Fig. 6. Three related small-leaved *Myristica* species with perianth finely warty inside. — a–c. *M. pumila* W.J. de Wilde. a. Habit of male flowering twig, × 0.5; b. lengthwise opened mature male flower, bracteole caducous, × 5; c. apex of leafy twig with one-fruited infructescence, × 0.5. — d. *M. crassipes* Warb., lengthwise opened mature male flower with caducous bracteole, × 5. — e. *M. flosculosa* Sinclair, lengthwise opened mature male flower, × 5 (a, b: *Hoogland 3935*, type; c: *Hoogland 3971*; d: *Carr 16091*; e: *Saunders 175*).

curved, splitting the bud c. 1/6; androecium slender, cylindrical, 6–9 mm; synandrium cylindrical (incl. the subacute, ± elongate, 0.3–0.4 mm long sterile apex), 2.8–4.5 by 0.6–0.7 mm, anthers 5 or 6 (i.e. with c. 12 contiguous thecae), about as long as the androphore; androphore cylindrical, slender, 3–4.5 by (0.3–)0.4–0.5 mm, minutely pale brown pubescent with hairs 0.1 mm or less in the lower 1/2–2/3. *Female flower*: solitary, not known at maturity; pedicel slender, filiform, at least 14 mm long, the scar of the bracteole situated at about the middle, perianth (narrowly) ellipsoid-oblong, at least c. 5 by 1.5–2 mm, perianth lobes c. 1 mm; ovary not seen. *Fruit* solitary, oblong, c. 5 by 1.5 cm, the top rather blunt, at base rather longly and gradually contracted into a narrow pseudostalk about half the total length of the fruit, pericarp (dry) c. 1 mm thick, with very thin greyish brown tomentum of appressed scaly hairs less than 0.1 mm; fruit stalk slender, filiform, 20–25 by 0.5 mm, with the scar of the bracteole below the middle; seed ellipsoid, approximately 2 cm long.

Distribution — E Papua New Guinea, Northern Prov. and Fergusson I. (Milne Bay Prov.): *Hoogland* 3935, 3971, 3972; *LAE* 68720.

Habitat & Ecology — Primary and secondary forest; rather open tall forest, lowland forest by river, fairly dense c. 10 m tall secondary forest; 170–400 m altitude; fl. March, Sept., Nov., fr. Sept.

Notes — 1. Fieldnotes: Shrub or treelet, 1.5–6 m, stem diameter up to 10 cm. Bark grey-brown or brown, faintly longitudinally fissured; inner bark pale brown, colourless exudate turning red; wood straw or straw-brown. Leaves slightly glaucous underneath. Flowers green, pale yellow-brown, pale yellow, cream, or yellow-green. Fruit pale rusty brown, seeds dark brown with bright red aril.

2. Obviously the present species is close to *M. tubiflora* and to *M. flosculosa* and *M. filipes*; with the latter two it shares a typical, warty-fleshy inner surface of the perianth in the lower half, contiguous with the androphore. Another particularly resembling species is *M. sogeriensis*. The specimens assigned to the present species have formerly been included (by Sinclair and by Foreman) in *M. tubiflora* Blume. Generally, the new species appears as a 'small edition' of the above mentioned *M. flosculosa* Sinclair.

3. I have placed *M. pumila* in the key to the species with those species characterized by a sessile, non-peduncled, *Knema*-type of inflorescences; however, some of the inflorescences have a short common peduncle, to c. 1 mm long (which also occurs commonly in *Knema*), usually in specimens with the majority of the inflorescences completely sessile.

Myristica pygmaea W.J. de Wilde, *spec. nov.*

Arbuscula 2–4 m alta, *Myristicae cylindrocarpa* similis, sed in folii gemma pilis longioribus c. 0.5 mm longis, fructu c. 2.5 cm longo 1.5 cm lato, pedicello 2–4 mm longo differt. — Typus: (*Barker & Katik*) *LAE* 66758 (L).

Treelet 2–4 m. *Twigs* subterete or subangular, slender, towards the apex 1.5(–2) mm diam., at first with bright brown, grey-brown, or dark-rusty tomentum, hairs 0.3–0.5 mm, early or rather late glabrescent; bark of twigs lower down striate, with small inconspicuous lenticels. *Leaves* membranous or thinly chartaceous; blades

oblong, 8–15(–17.5) by 3–5(–6.5) cm, base short-attenuate or rounded, top acute-acuminate, often with bluntish tip; upper surface drying olivaceous-brown, lower surface grey-brown or dull cinnamon, at first with rather weak, thin-flossy, brown-grey tomentum, hairs 0.1(–0.2) mm, late glabrescent; lower leaf surface papillose, but not clearly apparent as such; dark brown non-traumatic dots absent; midrib slender, flat or slightly raised above, lateral nerves (4–)7–14 per side, (flat or) sunken above, (light) brown, rather contrasting below, at an angle of 45–60° to the midrib, the lower nerves occasionally steeper, lines of interarching indistinct; tertiary veins not much contrasting; petioles 10–12 by 1.5–2(–2.5) mm; terminal leaf bud rather slender, acute, c. 10 by 2.5 mm, with dense, roughish, dull (grey-)brown tomentum with ± appressed hairs 0.3–0.5 mm long. *Inflorescences (infructescences)* axillary or up to 3 mm supra-axillary; peduncle 3–4 mm long, ending in a small scar-covered brachyblast terminally with flowers; inflorescence pubescent or late glabrescent with dark brown (rusty) hairs 0.3–0.5 mm. *Male inflorescences, male and female flowers* not seen; *female inflorescences* (according to infructescences) few-flowered. *Fruit* solitary; peduncle 3–4 by 2 mm, ± pubescent; fruiting pedicel 2–4 by 2–2.5 mm, pubescent with woolly hairs 0.2 mm, the scar of the bracteole near the apex; fruit (slightly immature) ± ellipsoid, narrowed towards the base, top subacute, 2.5–2.7 by 1.5 cm, dry pericarp c. 2 mm thick, with tomentum of powdery rusty hairs 0.3–0.4 mm; mature seed not seen.

Distribution — Papua New Guinea, Morobe Prov., Mumeng & Lae Subdistricts, local endemic to that area: LAE 62234, 66758.

Habitat & Ecology — Lowland rain forest, logged forest; 100–120 m altitude; fr. Nov.

Notes — 1. Fieldnotes: Small tree, 2–4 m. Outer bark grey, inner bark reddish brown; wood whitish brown; leaves dull dark green or ± shiny light green above, hairy below; fruit yellow or orange-yellow, with brown tomentum.

2. Apparently a local endemic lowland rain forest species, distinct by its small stature, 2–4 m. Superficially the species resembles other small-statured species of Papua New Guinea, possibly most related to *M. cylindrocarpa* or the montane *M. sinclairii* because of the inflorescences with a common peduncle partly above the leaf axils, but quite different in details of indumentum and fruit. The species is as yet only known with fruit; flowers unknown; the female flowers probably with a short pedicel.

Myristica quercicarpa* (Sinclair) W.J. de Wilde, *stat. nov.

Basionym: *Myristica fatua* Houtt. var. *quercicarpa* Sinclair 302, f. 38D–F; Foreman 37; Foreman 196.

***Myristica resinosa* Warb., Monogr. Myrist. (1897) 536, t. 17, f. 1.**

Discussed by Sinclair 348, and placed by him under *M. longipes* Warb.; however, the identity is still uncertain = a doubtful species.

***Myristica rosselensis* Sinclair 205, f. 16; Foreman 207.**

Myristica schlechteri* W. J. de Wilde, *spec. nov.

Arbor parva. Folia 6–8 cm longi. Innovationes et flores cum tomento pilorum 0.5–1 mm longorum, synandrium subsessile, antherae c. 6. — Typus: *Schlechter 17461* (K).

Small tree. *Twigs* slender, towards the apex 1(–1.5) mm diam., terete, at first with conspicuous rusty tomentum, hairs 0.5–1 mm long, glabrescent; bark of twigs lower down dark brown, ± smooth, lenticels not apparent. *Leaves* membranous; blades oblong-lanceolate, 6–10 by 2–3 cm, base attenuate, top acute-acuminate, with slightly bluntish tip; upper surface drying dark, (blackish) brown, lower surface grey, at first with dense rusty(–rufous) tomentum, hairs 0.5–1 mm, early glabrescent, the surface apparently densely grey-white irregularly papillose, and hence appearing non-papillose; non-traumatic dark brown dots absent; midrib slender, flat or sunken above; lateral nerves 6–10 per side, rather wide apart, brown and contrasting below, at an angle of 70–80° to the midrib, lines of interarching and tertiary veins faint or invisible; petiole 6–8 by 0.8(–1) mm; terminal leaf bud short, bluntish, 4–5 by 1.5–2 mm, with dense tomentum of rough-woolly rusty hairs 0.5–1 mm long. *Inflorescences* of the *Knema*-type, i.e. in male consisting of 2 or 3 flowers at the end of a short peduncle c. 1.5 mm long; whole inflorescence, including flowers, densely clothed by reddish brown rough-woolly hairs 0.5–1 mm long; bracts not seen. *Male flowers*: pedicel ± slender, c. 7 by 0.7–0.8 mm; bracteole minute, less than 1 mm, caducous, leaving its scar near the apex, 0.5(–1) mm below the perianth, mature perianth in bud (ovoid-)oblong, top subacute or bluntish, the apical portion not angular in transverse section, base ± rounded; lobes 2(–2.5) mm long, the perianth inside with fine-warty surface; androecium cylindrical, tapering towards the top, largely consisting of the synandrium, (5.5–)6 by 1.2(–1.5) mm, anthers 6 (or 7), ± contiguous, sterile apex narrow, bluntish, (0.3–)0.4 mm; androphore almost absent, (0.1–)0.2 mm long, c. 1 mm wide, at very base with a collar of minute reddish brown hairs 0.1–0.2 mm long. *Female inflorescences, flowers, and fruit* not seen.

Distribution — Papua New Guinea, Waria area, in the forests near Pema: Morobe Prov., 13-iii-1908, only known from the type collection: *Schlechter 17461*.

Habitat & Ecology — Understorey treelet; forest at c. 350 m altitude; fl. March.

Notes — 1. This species is only known from a duplicate specimen of *Schlechter 17461* in the K herbarium. It is characterized by its small stature and habit, with slender twigs and small herbaceous leaves, and with the innovations, inflorescences, and flowers densely clothed by rufous rusty rough-woolly hairs 0.5–1 mm long. It is further distinct by its unique almost sessile synandrium. According to its small habit and the finely verrucose inner surface of the perianth *M. schlechteri* seems related to species as *M. pumila*, *M. sogeriensis*, *M. flosculosa*, *M. crassipes*, and *M. filipes*.

2. The K specimen *Schlechter 17461* was possibly not seen by Sinclair, as it was not annotated by him, and the number is not cited in his monograph (1968). The collection was cited by Markgraf (Bot. Jahrb. 67, 1935, 162) under *M. lepidota* Blume.

***Myristica schleinitzii* Engl., Bot. Jahrb. 7 (1886) 455; Sinclair 202, f. 15; Foreman 207, f. 91.**

Synonyms: *Myristica mas* [non Rumph. (*Nux myristica mas*)] Labill., Relat. du Voy. à la Rech. de la Pérouse. — *Myristica spanogheana* auct. non Miq.: K. Schum., Bot. Jahrb. 9 (1887) 200 (*Hollrung 153*, K, not seen).

Myristica schumanniana Warb., in K. Schum. & Laut., Fl. Schutzgeb. Südsee (1900)
328 = *Myristica globosa* Warb. subsp. *chalmersii* (Warb.) W. J. de Wilde.

Myristica scripta* W. J. de Wilde, *spec. nov.

Laminae ad 16 cm longae tenuiter coriaceae, infra glabrescentes punctatae, nervis lateralibus indistinctis, perianthium masculinum ellipsoideae oblongum 3.5–5 mm longum, androphoro (sub)glabro, antherae 5–7, bracteola apicaliter ad pedicellum affixa minuta caduca, fructus c. 2 cm longus pilis 0.1–0.2 mm longis provisus pedicello c. 1 cm longo. — Typus: *Pullen 7185* (L).

Tree, 4–30 m. Twigs towards the top terete or faintly angular, (1.5–)2–3 mm diam., at first with light rusty tomentum of appressed hairs 0.1(–0.2) mm, glabrescent; bark of twigs lower down dark grey-brown, finely to coarsely striate, later on faintly fissured but not cracking nor flaking; lenticels usually present but not conspicuous. Leaves thinly coriaceous; blade ovate-elliptic or ovate-lanceolate, 6–17(–25) by 2.5–6(–9) cm, base short-attenuate to broadly rounded, top bluntish or short-acuminate (narrowed), often with bluntish tip; upper surface glabrous, drying brown, dark brown, or blackish brown, lower surface at first with thin tomentum of pale brown appressed hairs c. 0.1 mm or less, glabrescent, (\pm inconspicuously) papillate, provided with scattered dark brown dots and dashes (towards the leaf margin best to be seen with a lens); midrib slender, flattish or usually raised above; nerves 12–20(–30) per side, rather closely set, at an angle of 50–80° to the midrib, flat and hardly visible above, (almost) flat and faint beneath, lines of interarching faint or absent; tertiary veins invisible; petiole 8–15 by 1.5–3 mm; terminal leaf bud 8–15 by 2–2.5 mm, densely bright yellowish brown pubescent with appressed hairs 0.1–0.2 mm. Inflorescences of the *Knema*-type, i.e. consisting of sessile (rarely up to 1 mm stalked) woody simple or 2- or 3-partite, wart-like, scar-covered brachyblasts up to 5 mm long, glabrescent, terminally with the flowers in subumbels; male inflorescences (5–) 10–40-flowered, the flowers (flower buds) of different size and stage of development; female inflorescences with (1–)2–5 flowers of about equal size; flowers minutely pubescent with appressed dark brown hairs 0.1–0.2 mm, sometimes partly glabrescent, bracteole rounded, 0.5–1 mm long, caducous, leaving the scar at (or near) the top of the pedicel. Male flowers: pedicel 2–4 by 0.6–0.8 mm, bracteole-scar situated at the transition to the perianth; mature perianth in bud ellipsoid-oblong or oblong, 3.5–5 by 2–2.5 mm, base and top narrowly rounded, lobes 1.5–1.7 mm long, suberect or but slightly out-curved at anthesis, splitting the bud for c. 1/3, in bud the upper portion of the perianth faintly 3-angular in cross section; androecium subcylindrical, fairly slender, 2.5–4.2 mm long; synandrium narrowly oblong, 1.5–2.5 by 0.7–0.8 mm, anthers 5–7 (i.e. with c. 12 thecae), mutually appressed or leaving narrow spaces, sterile apex irregularly rounded, 0.2–0.4 mm long, androphore cylindrical, shallowly irregularly lengthwise grooved, 1–1.7 by 0.4–0.6 mm, glabrous or with few scattered minute hairs in the lower half. Female flowers: pedicel 4–8 by 1–1.5 mm, the scar of the bracteole 0.5–2 mm below the perianth; perianth in bud ovoid(-oblong), narrowed to the top, 4.5–5.5 by 3–4 mm, lobes 1.5–2 mm long, out-curved in anthesis; ovary ovoid or ovoid-oblong, incl. 0.3–0.4 mm long 2-lobed stigma 3.5–4 by 2–2.5 mm, densely appressed bright brown pubescent with hairs c. 0.2 mm. Fruit solitary or 2–5 together in a cluster, ovoid, or

broadly ellipsoid, or subglobose, base rounded, top rounded or slightly narrowed, sometimes minutely beaked, (1.5–)2–2.5 by 1.5–2 cm, dry pericarp 2(–3) mm thick, mealy rusty pubescent with hairs 0.1(–0.2) mm; fruit stalk ± slender or thickish, 5–10 mm long, with the scar of the bracteole 1–3 mm below the fruit; seed ellipsoid, c. 1.5 cm long.

Distribution — Two varieties in Central New Guinea: SE, N, & NE Irian Jaya and Papua New Guinea, the type variety also in the Aru Islands. These varieties represent specimens with rather conspicuously different fruits, but which are apparently similar in vegetative and flower characters.

Habitat & Ecology — Lowland forest, up to 600 m altitude.

Note — Vegetatively, *M. scripta* resembles *M. lancifolia* from the Moluccas and the western part of New Guinea because of its leaves of similar size and appearance, also with rather dense faint nervation. Our present species, however, is readily distinct by its conspicuous brown markings on the lower leaf surface and a number of minor characters in the flowers and the fruit.

var. *scripta*

Fruit stalk slender or medium, 2–3 mm thick, smooth or finely striate, sometimes with minute lenticels. Flowers minutely appressed-pubescent, with hairs 0.1–0.2 mm.

Distribution — Aru Islands and Central New Guinea. Material seen: Aru Islands: *bb* 25461; *Buwalda* 5428 (P. Triangan). Irian Jaya (Biak, Jappen I., Jayapura area) and Papua New Guinea (W Sepik Prov., Western Prov., Gulf Prov.): *Aet & Idjan* 508, 550, 864; *bb* 25049, 25461, 30255, 30696, 30766, 30814, 30872, 30900; *Buwalda* 5428; *BW* 2388, 4062, 8057, 9688, 9701, 9703, 10567; *Cameron* 38; *Hoogland & Craven* 10184, 10253, 10382, 10421; *Jacobs* 8976, 9236; *Kostermans & Soegeng* 58, 901; *LAE* 50047, 51717, 52877, 52971; *Ledermann* 6653; *NGF* 8283, 33606, 49436; *Pullen* 7185 (type); *van Royen & Sleumer* 6447.

Habitat & Ecology — Dryland forest, including clay soil, volcanic soil, once on limestone; locally common; several times recorded from secondary or disturbed forest; also from forest along dry creeks and streamside forest, stony riverbanks; 0–500 m altitude; fl., fr. mainly June–Dec.

Note — Fieldnotes: Tree to 30 m. Recorded without as well as (rarely) with buttresses to 1.5 m high and out. Bark smooth, or finely, irregularly or deeply fissured, often peeling or flaking, sometimes non-flaking or non-peeling. Leaves pale green or grey-green below. Flowers: white, cream, yellow, yellow-brown, or brown; ovary pale green. Fruit yellow-brown, yellow, orange, or brown.

var. *incrassata* W. J. de Wilde, var. *nov.*

Fructus pedicellus crassus 5–7 mm latus longitudinaliter conspicue fissuratus vel lenticellis grossis provisus. Flores tomentosi pilis c. 0.2 mm longis. — Typus: (*Streimann & Lelean*) *NGF* 18306 (L).

Fruit stalk stout, 5–7 mm thick, conspicuously lengthwise fissured, sometimes provided with coarse lenticels. Flowers rather roughly tomentose with hairs c. 0.2 mm long.

Distribution — S Central New Guinea: SE Irian Jaya and Papua New Guinea (Western Prov., W Sepik Prov.): *Jacobs* 9059; *LAE* 52015; *NGF* 18306 (type), 33046, 42537, 42619, 48499; *Soegeng* 269, 511.

Habitat & Ecology — Primary and secondary dry land forest (volcanic soil) and swamp forest; 25–600 m altitude; fl., fr. June–Sept.

Note — Fieldnotes: Tree to 30 m, slender bole, no buttresses; branches verticillate, horizontal; bark smooth or finely fissured; leaves beneath pale green or greyish green. Flowers yellow; fruit yellow-brown, aril red.

Myristica sepicana Foreman 40, f. 2; Foreman 209 = *Paramyristica sepicana* (Foreman) W.J. de Wilde, *Blumea* 39 (1994) 348.

Myristica sericea Warb., *Monogr. Myrist.* (1897) 521 = *Myristica inutilis* Rich. ex A. Gray subsp. *papuana* (Markgraf) W.J. de Wilde.

Myristica simulans* W.J. de Wilde, *spec. nov.

Affinis *Myristicae buchnerianae*, sed in perianthio masculi 8(–10) mm longo, foliis cum tomento persistente infra, pilis c. 0.1 mm, innovationibus et floribus cum tomento pilorum (0.5–)1 mm longorum differt. — Typus: *Brass* 28894 (L).

Tree 15 m. *Twigs* medium, subterete, towards the apex c. 3 mm diam., at first with rufous shaggy tomentum, hairs c. 1 mm long, rather late glabrescent; bark of twigs lower down brightly brown, finely fissured, not flaking, provided with many small lenticels. *Leaves*: chartaceous or thinly coriaceous; blade (ovate-)oblong, 15–22 by 6–8.5 cm, base short-cuneate to broadly rounded, top acute-acuminate; upper surface drying olivaceous, at first with minute greyish tomentum, glabrescent, lower surface pale greyish brown, not papillose, with persistent dense tomentum (in old leaves partly late glabrescent) with short interwoven scale-like greyish or brown-grey hairs c. 0.1 mm long only; midrib slender, flat or slightly raised above; nerves 16–20 per side, flat and faint above, lines of interarching indistinct; tertiary venation faint or invisible on both surfaces; petiole 10–15 by 2.5–3.5 mm, at first with shaggy or flocculose rufous tomentum, hairs c. 1 mm, late glabrescent; terminal leaf bud c. 15 by 4 mm, densely rufous woolly hairs 1(–1.5) mm. *Inflorescences* essentially of the *Knema*-type, i.e. in male inflorescences a sessile or up to 2 mm long, peduncled, wart-like, scar-covered brachyblast of 2–5 mm, bearing (1 or) 2–10 flowers (flower buds) of almost similar size and age; inflorescence late glabrescent or with persistent shaggy rufous hairs c. 1 mm long; flowers with similar tomentum; bracteole small, caducous, attached towards the top of the pedicel. *Male flowers*: pedicel c. 4 mm long, c. 1 mm thick, bracteole short, rounded, c. 1 mm long, caducous, leaving its scar at or up to 1 mm below the top of the pedicel; mature perianth in bud ellipsoid-oblong, c. 8(–10) by 4.5(–5) mm, top blunt, not angular in transverse section; lobes c. 2 mm long, i.e. splitting the perianth in anthesis for c. 1/4, androecium cylindrical, c. 7 mm; synandrium c. 5 by 1.5 mm, anthers 7 or 8 (i.e. with 14–16 thecae, contiguous), sterile apex broadly rounded, 0.2–0.3 mm long, androphore short-cylindrical, c. 2 by 1 mm, glabrous; *female flowers* and *fruit* not seen.

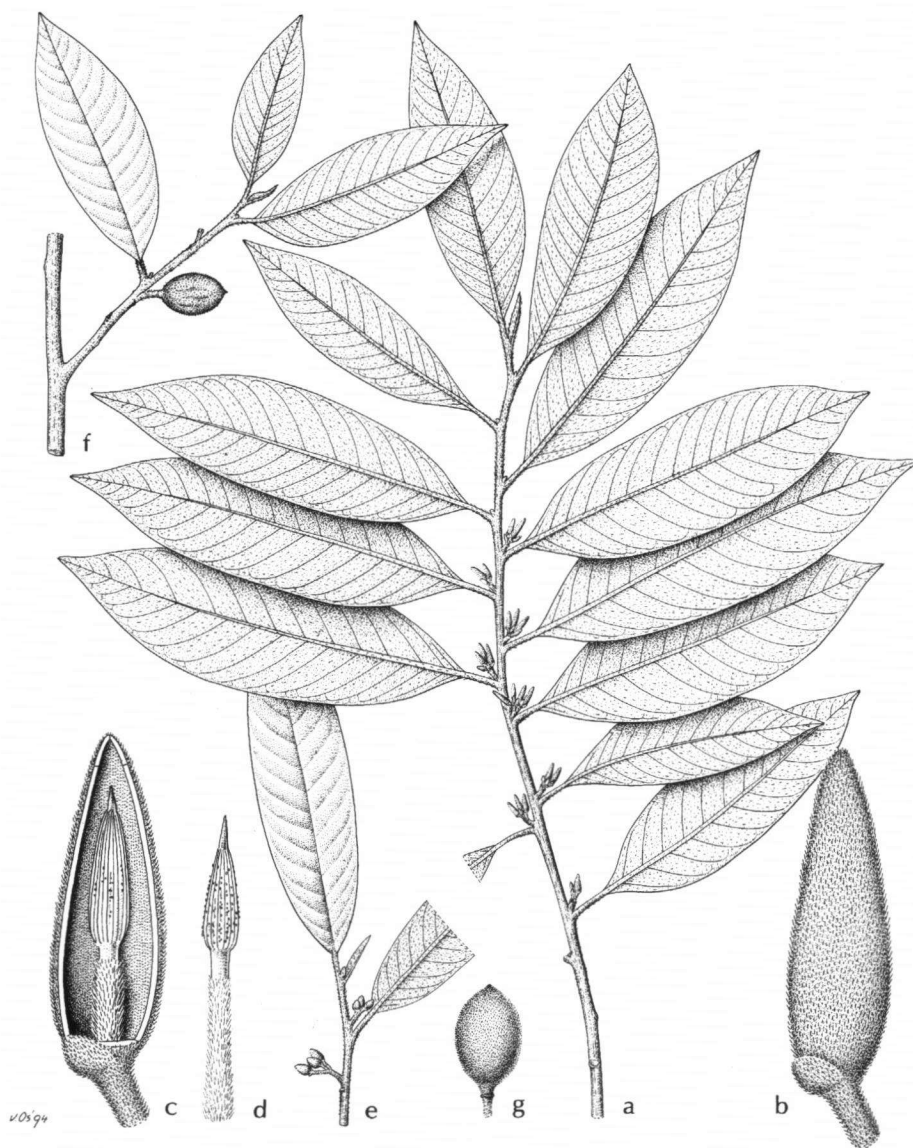


Fig. 7. *Myristica sinclairii* W.J. de Wilde. a. Habit of leafy twig with male inflorescences, $\times 0.5$; b. (sub)mature male flower shortly before anthesis, $\times 6$; c. ditto, lengthwise opened to show androecium; note persistent bracteole, $\times 6$; d. androecium taken from flower in anthesis; note largely pubescent androphore which is longer than synandrium, and conspicuous sterile apex, $\times 6$; e. top of female flowering twig (flowers submature), $\times 0.5$; f. portion of branched twig with submature fruit, $\times 0.5$; g. mature fruit, $\times 0.5$ (a–d: Kairo NGF 44076, type; e, g: Henty & Vandenberg NGF 29302; f: Stauffer, Whitmore & Pennington 5552).

Distribution — E Papua New Guinea, Milne Bay Prov., collected at Gara River, Modewa Bay; only known from the type.

Habitat & Ecology — Riverine rain forest, at sea-level; fl. Dec.

Notes — 1. Fieldnotes: Tree, 15 m tall; leaves at first brown, later grey below; flowers fragrant.

2. The specimen on which the present species is based was included by Sinclair (1968: 321–324) in *M. buchneriana* Warb., although it was separately discussed as somewhat deviating. Actually he, and presumably also Foreman (1978: 187), used the specimen for describing the male flowers of *M. buchneriana*. The male perianth of this latter species, however, is much smaller, 5–6 mm long. *Myristica buchneriana* superficially resembles the present species, but differs clearly by the shorter tomentum of twig apex and inflorescences, smaller male flowers with shorter tomentum, a much weaker and looser tomentum on the lower leaf surface, etc.

3. The present species much resembles in general appearance and in male flowers *M. inopinata* Sinclair, but in that species the synandrium has a distinct, acute, sterile apex, and the androphore has a collar of dense hairs at base. Obviously the present species is closely related.

Myristica sinclairii W.J. de Wilde, *spec. nov.* — Fig. 7

Laminae 6–12 cm longae infra pubescentes ad tarde glabrescentes, gemmae terminales pilis c. 1 mm longis provisae, inflorescentiae masculae pedunculatae, periantho elongato 7–8 mm longo, lobis 0.7–1 mm longis, androphoro 3–4 mm longo pubescenti, synandrio 2–3 mm longo, antheris 4–6 apice sterili acuto c. 0.6 mm longo; bracteola apicaliter affixa persistens. — Typus: *Kairo* NGF 44076 (L).

Tree 4–5 m. *Twigs* slender, towards the apex 1–1.5(–2) mm diam., at first with yellowish brown or rusty shaggy hairs c. 1 mm long, glabrescent; bark of twigs lower down brown-grey, ± striate, not fissuring nor flaking, lenticels not apparent. *Leaves* (thinly) chartaceous; blades elliptic-oblong to oblong, 6–12 by 2–4 cm, base attenuate (acute), top acute or acute-acuminate; upper surface drying olivaceous to brown, lower surface yellowish brown by persistent tomentum of a fine felty layer mixed with appressed stouter hairs c. 0.5 mm, partially late glabrescent and leaving a grey undersurface; papillae not apparent, dark dots absent; midrib slender, flat above; lateral nerves 10–15 per side, at an angle of c. 45(–60)° to the midrib, flat and indistinct above, lines of interarching indistinct; tertiary veins indistinct on both surfaces; petiole 6–15 by 1–2 mm, glabrescent; leaf bud 8–13 by (1.5–)2–2.5 mm, acute, conspicuously shaggy pubescent with yellowish brown or rusty hairs c. 1 mm long. *Inflorescences* in or up to 1.5 mm above the axil, ± rusty pubescent, of a somewhat ambiguous type, i.e. some almost sessile brachyblasts rather of the *Knema*-type, but the majority with a short, smooth, subterete peduncle up to 3 mm long, proceeding in male specimens in a simple or forked scar-covered brachyblast up to 5 mm long, terminally with clusters of 3–5 flowers and flower buds of rather different stages of development; female inflorescences (according to infructescences) with short peduncle bearing 1–3 flowers; bracts minute, c. 1 mm or less, pubescent, caducous. *Flowers* densely minutely pubescent with scurfy hairs of mixed sizes, 0.1–0.4 mm, the

perianth membranous, at apex split into 3 lobes for only c. 1/7; bracteole persistent. *Male flowers*: pedicel \pm oblique, often \pm curved, 1.5–3(–3.5) mm long; bracteole ovate, (0.5–)1–1.5 mm long, persistent or (late) caducous, situated at the transition of pedicel and perianth; mature perianth in bud (ovoid-)oblong, 7–8 by 1.5–2(–2.5) mm, gradually narrowed from about the middle to a narrow bluntish top, base broadly rounded, inner surface smooth or in the basal half finely warty-bullate; lobes 0.7–1 mm long, suberect in anthesis; androecium slender, cylindrical, 6–6.5 mm; androphore 3–4 by 0.4–0.5 mm, densely conspicuously brown pubescent with hairs 0.5–0.8 mm, synandrium 2–3 (–3.5?) by 0.5–0.6 mm, anthers 4 or 5 (or 6), mutually appressed, sterile apex \pm slender, acutish, c. 0.6 mm long. *Female flowers* (according to perianth-remnants under immature fruit of *Stauffer c.s. 5552*): pedicel c. 3 mm long, perianth c. 6 mm long, including lobes almost 1 mm long. *Fruit* solitary, ellipsoid, c. 2.5 by 2 cm, pericarp thin, densely rusty scurfy pubescent with hairs 0.2–0.4 mm long, but with stouter hairs (0.5 mm) towards the base and apex; seed not seen (probably: 1.5–2 cm long, ellipsoid-oblong); fruit stipe slender, c. 5 mm long.

Distribution — Papua New Guinea, endemic of Morobe Prov. (Bulolo), in mountain forest: *Stauffer c.s. 5552, 5553; NGF 19073, 44076; Schlechter 17795*.

Ecology — Understorey tree in Castanopsis forest, or in Castanopsis dominated ridge-forest; at 1000–1600 m altitude; fl. Jan., Aug, fr. Jan./Febr.

Notes — 1. Fieldnotes. Slender tree, branches horizontal; bark smooth, brown, reddish exudate. Leaves yellowish-brownish, greyish, or \pm glaucous beneath (with thin brownish tomentum). Flowers yellowish or brownish. Fruit with bright yellow-brown or brownish orange integument.

2. The specimens assigned here to the present species were formerly determined as *Myristica* 'probably *firmipes*', 'cf. *flosculosa*', *M. globosa*, *M. concinna*, and 'spec. aff. *lepidota*'.

Myristica sogeriensis W.J. de Wilde, *spec. nov.* — Fig. 3h, h'

Similis *Myristicae pumilae*, sed in perianthio masculi parviore, 6–7 \times 0.3–0.4 mm, pedicello gracile c. 6 mm longo, fructu c. 3.5 \times 1.5 cm, pseudo-pedicello incluso, pedicello fructifero 3–4 mm longo, differt. — Typus: *Forbes 396* (L).

Shrub or treelet 2–3 m. *Twigs* slender, towards the apex 0.5–1(–1.5) mm diam., bluntly angular, at first with minute, brown-grey, scale-like hairs less than 0.1 mm, early glabrescent; bark of older twigs (grey-)brown, striate, not longitudinally cracking, nor flaking, lenticels inconspicuous or absent. *Leaves* membranous or thinly chartaceous; blades elliptic-oblong or oblong, 5–12 by 1.5–4 cm, base attenuate or cuneate, top acute-acuminate; upper surface drying olivaceous or brown, lower surface glabrescent, at first with minute tomentum composed of sparse, scattered, brown-grey, appressed hairs less than 0.1 mm, appearing glabrous, leaf surface pale, brownish grey, rather discolorous with the upper surface, not papillose, without brown-black dots; midrib slender, raised above; nerves 10–15 per side, flat or sunken above, at angles of 45–80° to the midrib, bright brown below, contrasting, lines of inter-

arching and reticulate tertiary veins generally distinct; petiole 6–10 by (0.5–)1(–1.5) mm; terminal leaf bud slender, acute, 5–8 by 0.5(–) mm, densely appressed-pubescent with brown-grey hairs less than 0.1 mm. *Inflorescences* almost of the *Knema*-type, i.e. in male a small, slender, simple or forked, scar-covered, glabrescent brachyblast 3–4 mm long, carried on a slender non-scar covered peduncle 1–2 mm long, terminally with 1–3 flowers (flower buds) of about equal size. *Flowers* very thinly pubescent with minute, scattered, pale brown-grey hairs less than 0.1 mm, appearing nearly glabrous, pedicel slender, bracteole persistent. Female inflorescences not seen, according to the infructescences consisting of a sessile or up to 1 mm stalked minute wart, 1–3-flowered. *Male flowers*: pedicel slender, c. 6(–7) by 0.3–0.4 mm, bracteole persistent, ovate, subacute, c. 1 mm long, inserted 1–2 mm below perianth; perianth elongate, tubiform, c. 6.5 by 1(–1.5) mm, top subacute, not angular, the basal half of perianth somewhat narrowed, inside faintly warty-ridged, base \pm attenuate, lobes c. 1 mm, i.e. at anthesis splitting the perianth for c. 1/6; androecium slender, c. 6 mm, androphore c. 3.5 by 0.3 mm, minutely pubescent with pale hairs in the lower half, synandrium 2(–2.2) by 0.5 mm, excluding subacute sterile apex 0.5–0.6 mm, anthers c. 5 (i.e. with c. 10 thecae), contiguous. *Female flowers* not seen. *Fruit* 1–3 per infructescence; fruit \pm fusiform, (3–)3.5 by 1.5 cm, top acute, basal part tapered into a 5–8 mm long pseudostalk, pericarp (dry) 1–1.5 mm thick, minutely dull-rusty 'mealy' pubescent with hairs 0.1 mm or less, fruiting pedicel 3–4 mm long, c. 2 mm thick, faintly fissured and lenticellate, the scar of the bracteole about halfway; seed ellipsoid, c. 1.4 cm long.

Distribution — E Papua New Guinea, endemic of the Sogeri region, Central Prov.; known from two collections: *Carr 16167*; *Forbes 396*.

Habitat & Ecology — Foothill forest at c. 400 m altitude; fl. March.

Notes — 1. Related to *M. pumila*, a species occurring in the same area. The relationship is especially apparent in the general appearance of the plant, i.e. habit and leaves, and in the male flowers, which, however, are larger and longer pedicelled in *M. pumila*, with a caducous bracteole. The male inflorescence is (sub)sessile in *M. pumila*, 1–2 mm stalked in *M. sogeriensis*. The fruit is quite differing, borne on a long thread-like pedicel in *M. pumila*, and with a much shorter fruiting pedicel in the present species. *Myristica sogeriensis* is known from only two collections, one with male flowers (*Carr 16167*) and one with mature fruit (*Forbes 396*; the type). More specimens would prove that both collections definitely belong to one single species. Recent collecting has shown that for Myristicaceae the area harbours several local endemic species, sometimes with strikingly resembling foliage.

2. Sinclair (1968) identified the two specimens mentioned above as *M. tubiflora* and *M. longipes*, respectively.

3. As the (male) inflorescences are only short-peduncled, *M. sogeriensis* has been entered in the key twice, in the group with sessile inflorescences and in that with stalked ones.

Myristica spanogheana auct. non Miq.; K. Schum., Bot. Jahrb. 9 (1887) 200 = *Myristica schleinitzii* Engl.

Myristica sphaerosperma A.C. Smith, J. Arnold Arbor. 22 (1941) 71; Sinclair 247, f. 23; Foreman 42, p.p.; Foreman 210, p.p.

Note — Foreman includes *M. brassii* A.C. Smith, but I prefer to uphold this as a separate species.

Myristica subalulata Miq., Ann. Mus. Bot. Lugd.-Bat. 2 (1) (1865) 47; Sinclair 385, f. 64, 65, p.p.; Foreman 210, p.p.

For synonyms see under the varieties.

Note — Some of the names placed in the synonymy by Sinclair and Foreman are retained as separate good species in the present enumeration, namely *M. bialata* Warb. and *M. velutina* Markgraf.

var. **subalulata** — Fig. 2d

Synonyms: *Myristica macrophylla* Zipp. ex Miq. — *Myristica myrmecophila* Becc. — *Myristica heterophylla* K. Schum.

Note — ?*Myristica costata* Warb., Bot. Jahrb. 18 (1893) 191 (type Hellwig 247, B lost, from Sattelberg): doubtful species, separately presented and briefly discussed in the list; placed by Sinclair and by Foreman in the synonymy of *M. subalulata*, but unlikely to belong here.

var. **hagensis** W.J. de Wilde, var. nov.

A varietate typica in ramunculis sine formicariis distinctis, laminibus perianthisque coriaceis, fructibus c. 2 cm longis differt. — Typus: *Hoogland & Pullen 5831* (L).

Tree 8–15 m. *Leaves* (thinly) coriaceous, comparatively small, the largest 24 by 7 cm, subglabrous, not papillose below. *Twigs* medium or stoutish, at apex 5–7 mm diam., ridged or not, always ± angular; ant-swellings faint and without opening, or absent. *Inflorescences* thick, wart-like, to 1 cm long. *Flowers* rather robust, generally as in the type-variety, slightly varying in stage of development within one cluster; perianth leathery, bracteole c. 2(–4) mm, caducous. *Fruit* solitary or 2 (or 3) together; fruiting pedicel 5–7 by 2(–3) mm, smooth, not or but little lenticellate; fruit broadly ellipsoid, c. 2 by 1.5 cm, apex pointed.

Distribution — Papua New Guinea, Western Highlands Prov., Mt. Hagen and vicinity: *Balmer c.s. (R.N.H.) 103696*; *Hoogland & Pullen 5831, 5850*; *NGF 9609*; *Saunders 707*.

Habitat & Ecology — High mountain forest, *Nothofagus* or *Castanopsis* forest; 1800–2150 m altitude; fl., fr. May, July, Aug.

Notes — 1. Fieldnotes: Small tree, to 15 m. Bark 3–5 mm thick, dark brown or dark purple-brown, with numerous longitudinal fissures; exudes a red sap; underbark purple-brown; inner bark pale brown; blaze straw-coloured; wood pink, or straw with orange dots, or pale brown. Wood easy to cut. Flowers hard, creamy or olivaceous. Fruit reddish brown or light yellow tinged with brown.

2. The status of var. *hagensis* is only provisional. Surely the taxon is close to typical *M. subalulata* as shown by its male flowers, but all specimens (restricted to Mt

Hagen and vicinity) are quite distinct and well recognizable by the absence of perforated ant-swellings in the twigs and coriaceous smallish leaves. Possibly, the ant species normal for *M. subalulata* does not occur at the high altitudes of the present variety.

3. The lower leaf surface appears as non-papillose, but actually it may be so strongly and densely papillose that the separate papillae are difficult to discern.

var. leptantha W.J. de Wilde, *var. nov.*

A varietate typica in perianthio floris masculini gracili 12–15 mm longo 2.5–3 mm lato, androecio gracili 10–12 mm longo 0.5–1 mm lato, synandrio 5–7 mm longo, androphoro 4–5 mm longo, antheribus 4–6 differt. — Typus: *van Royen & Sleumer 7747* (L).

Tree 5–7 m. *Leaves* membranous or chartaceous, the lower surface distinctly papillose or not. *Inflorescences* sessile. Flowers slender; of various size within one inflorescence according to age; bracteole persistent or caducous. Mature male perianth in bud lanceolate-tubiform, 12–15 by 2.5–3(–3.5) mm, base narrowly rounded, top narrowed, bluntish; perianth lobes 1–1.5 mm long. *Androecium* slender, cylindrical, 10–12 by 0.5–1 mm, synandrium slender, cylindrical, 5–7 by 0.5–1 mm, including slender sterile apex c. 1 mm long; anthers 4–6, contiguous or rather spaced; androphore slender, 4–5 by 0.4–0.6(–0.8) mm, almost completely minutely pubescent with rather sparse pale hairs 0.1 mm or less. *Female flowers* not known. *Fruit* not known (see note 3).

Distribution — New Guinea. Known from 3 collections of widely scattered localities: Irian Jaya: Vogelkop (840 m); Papua New Guinea, Western Prov., Palmer R. (100 m), and Sepik Prov. (c. 200 m) (see note 2).

Habitat & Ecology — Forest of mountain slope, forest undergrowth on lower ridge and forest on steep river bank; c. 200–840 m altitude; fl. July, Nov.

Notes — 1. Fieldnotes: Slender tree with few short, excurrent branches. Leaves slightly glaucous below. (Male) flowers creamy or white, brown suffused.

2. Known from only three collections, with male flowers. *Var. gracilantha* is characterized by very typical slender male flowers, which after microscopical analysis appear surprisingly similar in all three collections. In general habit the specimens are also rather similar, but fall completely within the wide variation as accepted for the type-variety.

Of the three collections the type (*van Royen & Sleumer 7747*) from the Vogelkop Peninsula has rather membranous leaves, with the lower surface not distinctly papillose; *Darbyshire & Hoogland 8274* from Sepik Prov. has rather chartaceous(-subcoriaceous) leaves, non-papillose beneath; *Brass 7273* from Western Province has chartaceous leaves, with very distinctly and regularly papillose lower surface. The bracteoles in *Darbyshire & Hoogland 8297* are persisting in well developed mature (but not yet open) flowers.

Although the male flowers in the three collections mentioned are very similar, it remains uncertain whether *var. leptantha* is monophyletic; the three localities are wide apart and at rather differing altitudes, and possibly plants with these slender flowers have locally developed independently.

3. Fruiting specimens are not known; most likely these merge with those as accepted for the type variety, var. *subalulata*.

var. **paucifructa** W. J. de Wilde, var. nov.

A var. *subalulata* in fructu longiore 2.5–3 cm longo differt. — Typus: Vink BW 11441 (L).

Tree 5–15 m. *Leaves* membranous or subchartaceous, the lower surface not or indistinctly papillose, glabrous or (\pm) pubescent. *Flowers* (flower buds) within one inflorescence somewhat varying in size, depending to age; bracteole caducous. *Male flowers* not known. *Fruit* 1–3 per infructescence; (ovoid-)jellipsoid, 2.5–3 by 1.7–2 cm; fruiting pedicel 3–9 mm long.

Distribution — Widely scattered in Irian Jaya and Papua New Guinea, including the Papuan and Kai Islands (cf. *Jaheri* 91 = 712).

Habitat & Ecology — Mountain forest of gullies, slopes and ridges; 800–1200 m altitude; fl., fr. throughout the year.

Notes — 1. Fieldnotes: Locally common. Slender trees; bark smooth or vertically cracked. Leaves glaucous or coppery green below.

2. The variety *paucifructa* is described to accommodate specimens with few fruits per infructescence, the fruits being large in comparison to those of the majority of the specimens as included in the type variety. Male flowers are not known because vegetatively the specimens of the present var. *paucifructa* merge with those of var. *subalulata*, and the male (and female) flowers obviously do the same. Possibly, the var. *paucifructa* has developed polytopical, and does, in itself, not represent a natural taxon. All specimens are from mountain areas.

3. Twigs reported as hollow, full of small black ants producing an unpleasant smell.

var. **pedunculata** W. J. de Wilde, var. nov. — Fig. 2e

A varietate typica in inflorescentiae masculinae pedunculo 5–20 mm longo, perianthio floris masculini gracili c. 15 mm longo 2–2.5 mm lato differt. — Typus: Sands (& Pattison, Wood) 1483 (K).

Tree 4 m. *Leaves* thinly chartaceous, not papillose below. *Inflorescences* worm-like, the scar-covered portion unbranched to 4 cm long, common peduncle glabrous (glabrescent), somewhat flattened, 5–20 mm long. *Flowers* (flower buds) slender, of various size within one inflorescence according to age, bracteole \pm 3-topped, c. 3 mm long, caducous. *Male flowers*: pedicel slender, c. 11 by 0.5 mm, mature male perianth in bud tubiform, c. 15 by 2–2.5 mm, base narrowly rounded, top acutish, somewhat angular in transverse section; perianth lobes c. 1 mm long. Androecium slender, cylindrical, c. 12 mm long, synandrium slender, cylindrical, 5.5(–6) by 0.7 mm, incl. sterile apex c. 0.3 mm long; anthers c. 6, contiguous; androphore slender, cylindrical, c. 6 by 0.4 mm, almost completely minutely pubescent with sparse pale hairs less than 0.1 mm. *Female flowers* and *fruit* not seen.

Distribution — Known only from the type, collected in Papua New Guinea, Gulf Prov., Kikori sub-prov., c. 200 km upstream Purari River, 6° 58' S, 145° 03' E.

Habitat & Ecology — Small tree to 4 m tall, in lowland rain forest including *Terminalia*, *Elaeocarpus*, *Albizia*, and *Pometia*; growing by small tributary stream; altitude 140 m; fl. Aug.

Notes — 1. Fieldnotes: Bark brown; young wood olive-green, leaves dark green above, paler beneath; inflorescence stiff, pointing downwards from the branches, rachis swollen, coffee-brown; flower buds butter-cream-coloured, on pale green pedicel.

2. For the delimitation of *Myristica* species, especially for the New Guinean ones, I have attached a heavy weight to the presence or absence of a common peduncle in the (male) inflorescences as a character. In the present case, with var. *pedunculata* of *M. subalulata*, it is used for variety distinction only as the specimens, though looking quite different by their peduncled inflorescences, are close in details to most of *M. subalulata* s.l., especially var. *gracilantha*.

3. Mainly in its peduncled male inflorescences, the present variety somewhat resembles *M. cornutiflora*, a species also with long tubiform male flowers.

***Myristica subcordata* Blume, Rumphia 1 (1837) 186.**

var. *subcordata*

Synonyms: *Myristica fatua* Houtt. var. *subcordata* (Blume) Miq., Ann. Mus. Bot. Lugd.-Bat. 2 (1) (1865) 46, p.p.; Sinclair 307, f. 38A–C; Foreman 196. — ?*Myristica wallacea* Warb. var. *keyensis* Warb., Monogr. Myrist. (1897) 531 (Type: Warburg 20720, lost).

var. *gigacarpa* W. J. de Wilde, var. nov.

A *Myristica subcordata* typica in fructibus magnis ellipsoideis 5.5–6 cm longis 2.5–4 cm diam., pericarpio in sicco plus minusve ligneo 7(–10) mm crasso, pedicello in fructu crasso 15–17(–20) mm longo c. 6 mm in diam. plus minusve lenticellato, bracteolae cicatrice c. 6 mm infra pedicelli apicem differt. — Typus: *Streimann 8548* (L).

Medium tree, 12–30 m. Twigs stout, towards apex 5–10 mm diam. Leaf blades chartaceous or subcoriaceous, 28–32 by 8–12 cm, margin flat, lower surface with dense indumentum with hairs 0.1 mm or less. Terminal leaf bud with hairs 0.1 mm or less. Flowers not known. Fruit solitary, axillary to lower leaves, ellipsoid, 5.5–6 by 3.5–4 cm, dry pericarp ± woody, 7(–10) mm thick, hairs of indumentum 0.1 mm or less. Fruiting pedicel stout, 15–17(–20) by 6 mm, ± lenticellate, the scar of the bracteole c. 6 mm below apex.

Distribution — Papua New Guinea, Eastern Highlands Prov.: (*Gideon*) LAE 57432; *Streimann 8548*.

Habitat & Ecology — Primary and advanced regrowth forest; along creek, on slope of limestone; 1200–1800 m altitude; fr. Aug., Sept.

Notes — 1. Fieldnotes: Straight-boled tree; the leaves brown below; fruit rusty brown.

2. The present taxon is described tentatively as a third, new variety of *M. subcordata*, to which it keys out readily. Possibly it deserves the status of a new species, but more material (including flowers) is needed to make a final decision.

var. *morindiifolia* (Blume) W. J. de Wilde, *comb. et stat. nov.*

Basionym: *Myristica morindiifolia* Blume, *Rumphia* 1 (1837) 186 ('*morindaefolia*'). — *Myristica fatua* Houtt. var. *morindiifolia* (Blume) Sinclair 286, f. 34; Foreman 194.

Synonym: *Myristica multinervia* A. C. Smith.

Note — Sinclair and Foreman treated *M. multinervia* as a synonym of *M. fatua* Houtt. var. *papuana* Markgraf.

Myristica sulcata Warb., *Monogr. Myrist.* (1897) 538, t. 19, f. 1–2; Sinclair 396, f. 66; Foreman 42; Foreman 211.

Synonym: *Myristica anceps* Warb.

Note — Foreman treated *M. undulatifolia* Sinclair as a synonym of *M. sulcata*, but in the present enumeration the former is kept as a distinct species.

Myristica tamrauensis W. J. de Wilde, *spec. nov.*

Myristicae brassii affinis, in laminis membranaceis nervis lateralibus in quoque latere c. 20 infra colore discrepantibus, infructescentibus pedunculo brevi, fructu 4.5–5 cm longo, pericarpio 8–10 mm crasso pilis c. 0.1 mm longis proviso differt. — Typus: *van Royen & Sleumer 7587* (L).

Tree 6 m. Twigs medium, towards the apex (sub)terete, 2–3 mm diam., at first with minute grey-brown scales less than 0.1 mm, early glabrescent; bark of twigs lower down coarsely striate, sometimes finely fissured or transversely cracked, with inconspicuous lenticels. Leaves membranous, brittle; blades (ellipsoid-)oblong, 15–23 by 6–9 cm, base (short) cuneate, top acute(-acuminate); upper surface drying (± olivaceous-)dark brown, dull, lower surface pale grey-brown, glabrous (very early glabrescent), not papillose, scattered dark brown or blackish small dots present, just visible with the naked eye; midrib slender, raised above; lateral nerves 15–20 per side, at an angle of 60–80° to the midrib, slender, flat, inconspicuous above, bright brown, rather contrasting in colour below, lines of interarching indistinct; tertiary veins faint above, invisible below; petiole (10–)15 by 3–3.5 mm; terminal leaf bud slender, acute, 10–15 by 2–3 mm, densely covered by grey-brown scales 0.1 mm or less. Inflorescences incompletely known, according to infructescence (*van Royen & Sleumer 7587*) with short peduncle 3–5 mm long. Male and female flowers not seen. Fruit axillary to the lower leaves, solitary, ovoid-ellipsoid, 4.5–5 by 3.5 cm, base broadly rounded, top rather pointed, (dry) pericarp rather woody, 8(–10) mm thick, tomentum of densely set mealy rusty hairs c. 0.1 mm, fruiting pedicel c. 4 mm long; seed ellipsoid(-oblong), c. 2 cm long.

Distribution — W Irian Jaya, endemic on the mountains of the northern Vogelkop Peninsula (Tamrau Range): *van Royen & Sleumer 7587*; *van Royen, Sleumer & Schram 7688*.

Habitat & Ecology — Primary oak forest; 500–800 m altitude; fr. Oct., Nov.

Notes — 1. Fieldnotes: Low tree, 6 m. Leaves greyish green or silvery light green below. Fruit orange or light orange-brown.

2. *Myristica tamrauensis* is described as a separate species within a group of closely related species to which also belong *M. brassii*, *M. neglecta*, *M. millepunctata*, and *M. duplopunctata*, and, more remotely, *M. cucullata*; they are all characterized

by leaves of medium or large size class, by a non-traumatic dark brown or blackish punctation on the lower leaf surface, and by fruits with thick pericarp. *Myristica tamarauensis* is only known with fruit. Mature male flowers are only known in *M. brassii*, *M. neglecta*, and *M. duplopunctata* (subsp. *duplopunctata*). The present new species has the marked, contrasting lateral nerves on the lower leaf surface in common with *M. brassii* (from Central New Guinea), but that species has more coriaceous leaves and sessile inflorescences.

3. The two collections here described as a new species were named by Sinclair as *M. buchneriana*, a rather remote species, without blackish dots on the lower leaf surface.

***Myristica tenuivenia* Sinclair 327, f. 46; Foreman 211.**

subsp. ***tenuivenia***

subsp. ***lignosa*** W.J. de Wilde, *subsp. nov.*

A subspecies typica in ramunculis porcatibus, foliis mediocribus coriaceis, nervis dilutis, infra cum tomento brevi, fructu cum pericarpio sicco lignoso, c. 5 mm crasso differt. — Typus: (Croft et al.) LAE 68655 (L).

Twigs ridged or 2-lined. *Leaves* subcoriaceous; nerves 20–28 pairs, faint on both surfaces. *Fruit* subglobose, c. (2.5–)3 cm diam., dry pericarp granular-woody, 5–7 mm thick, not shrunk on drying; tomentum with hairs (0.2–)0.5 mm long, persistent; fruit stalk 5–7 by 5 mm.

Distribution — Papua New Guinea, Milne Bay Prov. and Papuan Islands; known from the type from S Fergusson Is., and one collection with immature fruit from Rossel I. (LAE 74561, in K).

Habitat & Ecology — Hill forest, at c. 700 m altitude; fl. (female) and fr. March.

Notes — 1. Fieldnotes: Tree small, or up to 30 m, bole 20 m, dbh. 35 cm. Bark red brown or black, fissured and pustular. Leaves glossy dark green above, dull mid-green below with rust-brown bloom, or rusty-grey. Flowers and fruit rust-brown.

2. The specimens on which the present new subspecies is based deviate considerably from the two specimens relegated to the type-subspecies. When more material becomes available it may appear to represent a separate species.

Myristica trianthera* W.J. de Wilde, *spec. nov.

Similis *Myristicae fugacis*, sed in perianthio masculi parviore, synandrio composito 3 antherarum, fructu c. 2 cm longo, differt. — Typus: BW 39 (L).

Treelet, 10–13 m. *Twigs* slender, towards the apex c. 1 mm diam., at first with rather long, setose, red-brown or yellow-brown hairs c. 0.5–1 mm long, early glabrescent, subterete; bark of twigs lower down brown-grey, striate, not tending to crack nor to flake, lenticels not apparent. *Leaves* membranous; blade ovate-elliptic or elliptic-oblong, 6–12.5 by 2–5 cm, base ± rounded to attenuate/acute, top acute-acuminate; upper surface drying grey-green to brown, lower surface pale greyish brown, early glabrescent or with a few longish widely scattered hairs left; papillae

absent; dark dots absent; midrib slender, flat or somewhat raised above; nerves 7–10 per side, flat and very faint above, beneath rather faint, at an angle of 50–80° to the midrib, lines of interarching and tertiary veins not conspicuous; petiole 6–10 by c. 1 mm (glabrous); leaf bud slender, c. 6–8 by 1 mm, acute, densely yellowish or reddish brown appressed-pubescent with hairs (0.5–)1 mm long. Inflorescences paniculate, i.e. in male with a smooth, glabrous peduncle 5–20 by 0.5–0.8 mm, ending in a simple or a forked, densely scar-covered, ± pubescent brachyblast up to 9 mm long, terminally with clusters of 2–5 flowers (flower buds) in rather different states of development; female inflorescences known only from the infructescence, one- or few-flowered, not branched, peduncle c. 9 mm, pedicel 10–12 mm long. *Flowers* rather shaggy pilose with rusty hairs (0.3–)0.5 mm, bracteole at apex of pedicel, persistent. *Male flowers*: pedicel slender, c. 3 mm long, bracteole ± ovate, 1(–1.5) mm, persistent, attached at or towards the top of the pedicel, up to 1 mm below the perianth; perianth inside glabrous, in mature bud ellipsoid-oblong, 4(–4.2) by 1.5–1.8 mm, top and base subacute to obtuse, lobes c. 0.7–1 mm long; androecium slender, c. 3.8 mm long; androphore cylindrical, c. 4 mm long, c. 0.4 mm wide, pubescent with appressed hairs c. 0.4 mm long; synandrium c. 1.8 by 0.5 mm, including minute sterile apex c. 0.1 mm, anthers 3 (6 thecae), mutually not closely appressed. *Female flowers* not seen. *Infructescence* simple, peduncle slender, 8–10 mm long, proceeding into the 12–14 mm long fruiting pedicel. Fruit ± ellipsoid, 2–2.5 by 1–1.3 mm, top shortly apiculate, base contracted into pseudostalk up to 5 mm, (dry) pericarp thin, c. 1 mm thick, minutely dull brown scurfy pubescent with hairs less than 0.1 mm, but with longer shaggy hairs at top and base; fruiting pedicel slender, c. 14 mm long, with the scar of the bracteole 3–4 mm below the scar of the perianth; seed ellipsoid, c. 1.5 cm long.

Distribution — NE Irian Jaya, endemic in the Jayapura (Hollandia) area: (*Versteegh* 58) *BW* 39; *Gjellerup* 274, 264–e (fruit).

Habitat & Ecology — Lowland riverside or temporarily inundated forest, clayey soil; scattered; 2–50 m altitude; fl. July, Oct., fr. July.

Note — Resembles *M. fugax* but distinct by pilose leaf buds, smaller flowers, and smaller fruits; the synandrium has only 3 anthers. The specimens belonging to the present species were by Sinclair included in *M. tubiflora*.

***Myristica tristis* Warb., Monogr. Myrist. (1897) 444, t. 19.**

Note — With Sinclair 379 and Foreman 199 included under *M. globosa*.

subsp. **tristis**

subsp. **ingambitense** W. J. de Wilde, *subsp. nov.*

Distincta intra *Myristicam tristem* sensu lato in cortice ramunculorum rimanti et squalenti, foliis membranaceis, nitidis, fructu c. 2.5 cm longo, pericarpio in sicco 2–3 mm crasso. —
 Typus: (*Henty, Ridsdale, Galore*) NGF 31816 (L).

Bark of older twigs dark brown, strongly flaking. *Leaves* membranous, drying brown, glossy above; midrib above narrow, raised; lateral nerves flat, narrow, faint

on both leaf surfaces, reticulation almost invisible. *Male* and *female* flowers not seen. *Fruit* solitary or paired, subglobose or broadly ellipsoid, c. 2.5 cm long, dry pericarp (2–)3 mm thick, bright rusty pubescent.

Distribution — SE Irian Jaya; SW Papua New Guinea (Western Prov.), in the area of Ingambit village, c. 5° 38' S, 141° 00' E (*Henty, Ridsdale, Galore*) NGF 31816; *Soengeng* 405.

Habitat & Ecology — Regrowth forest, at c. 150 m altitude; fr. June.

Note — Fieldnote: small tree, c. 7 m tall; bark brown, smooth, aromatic; wood white with red exudate. Fruit with brown tomentum.

subsp. *lousiadensis* W. J. de Wilde, *subsp. nov.*

Distincta intra *Myristica* *tristem* sensu lato multinerviis foliis, c. 18 utroque latere, subtus nervis planis et dilutis fructus solitarius subglobosus c. 2.5 cm diametro, in sicco pericarpio 4–5 mm crasso. — Typus: (*Damas & Katik*) LAE 74537 (L).

Bark of older twigs dark brown, longitudinally plicate (striate) or fissured, not flaky. *Leaves* thickly membranous, drying olivaceous, rather many nerved but the nerves faint on both leaf surfaces, reticulation faint; midrib flattish above. *Male* and *female* flowers not seen. *Fruit* solitary, subglobose, c. 2.5 cm diam., dry pericarp 4–5 mm thick, dull brown minutely pubescent.

Distribution — Louisiade Archipelago: Sudest I. (Tagula I.): *Brass* 27813; LAE 74537 (*Damas & Katik*); Rossel I.: *Brass* 28302, doubtful, see note 2.

Habitat & Ecology — Lowland hilly forest subcanopy layer; (50–)100–450 m altitude; fr. March, Aug., Oct.

Notes — 1. Fieldnotes: Tree 8–25 m, of subcanopy layer. Bark black, rough outside. Fruit yellow when ripe, aril red, seed dark brown with strong nutmeg flavour.

2. I mention here the specimen *Brass* 28302 (Rossel Island) for convenience's sake. Vegetatively it agrees with the type, but the fruit deviates by a more ellipsoid shape and thinner pericarp. Possibly it represents a separate taxon not to be described formally, pending more complete material from the area.

Myristica tubiflora Blume, *Rumphia* 1 (1837) 182, t. 56; Sinclair 339, f. 51, p. p.; Foreman 212, p. p. — Fig. 8

Note — Sinclair and Foreman have included under this name several collections which by me have been placed in other species.

Myristica umbrosa Sinclair 147, f. 4; Foreman 42; Foreman 212.

Myristica uncinata Sinclair 150, f. 5; Foreman 212, f. 92.

Myristica undulatifolia Sinclair 400, f. 67.

Note — In Foreman 42 and Foreman 211 this name is a synonym of *M. sulcata* Warb.



***Myristica velutina* Markgraf, Bot. Jahrb. 67 (1935) 165.**

Note — With Sinclair 386 and Foreman 210, this name was treated under *M. subalulata* Miq.

subsp. *velutina***subsp. *breviflora* W. J. de Wilde, *subsp. nov.***

Differt a subspecie typi perianthio floris masculini breve, c. 6×2.5 mm; androphorum circiter longum velut synandrium, sterile apice obtuso, c. 0.3 mm longo. — Typus: (*Henty, Isgar, Galore*) NGF 41677 (L).

Twigs towards apex distinctly angular and provided with two marked lines or low ridges running in-between the insertions of the petioles and scars of petioles. *Male flowers*: pedicel c. 4 by 1 mm; bracteole ovate, rounded, c. 1.5 mm long, persistent; mature male perianth in bud ellipsoid-oblong, c. (5–)6 by 2.5 mm, base and top \pm rounded, not angular, lobes c. 1.5 mm long, at sutures 0.3 mm thick; androecium slender, 5–5.5 mm; androphore slender, cylindrical, nearly as long as the synandrium, 2–2.2 by 0.6–0.7 mm, almost completely minutely pubescent with pale scattered hairs less than 0.1 mm; synandrium cylindrical, c. 3 by 0.8 mm, anthers 5 or 6, contiguous; sterile apex bluntish, c. 0.3 mm. *Fruit* as in the type-subspecies.

Distribution — W Central Papua New Guinea, West Sepik and Western Provinces: *Kalkman 5312; LAE 59570; NGF 41651, 41677, 45803.*

Habitat & Ecology — Mountain forest; 1500–2100 m altitude; fl., fr. throughout the year.

Note — Fieldnotes: Small tree, 4–10 m. Branches short, horizontal. Leaves whitish below. Recorded for: 'rain forest on latasol', 'Fagaceous moss forest', '*Nothofagus* forest on swampy site', 'mountain forest mainly on ridge', 'Fagaceous mossy forest over limestone', 'forest on well drained old volcanic soil'.

Myristica vinkeana* W. J. de Wilde, *spec. nov.

Affinis *Myristicae crassipedis* in perianthio masculi c. 5×2 mm, bracteola c. 2.5 mm, persistenti, ad apicem pedicelli, androphoro circa tam longo quam synandrium, c. 2 mm longo, pubescenti, apice sterile obtuso, 0.3 mm longo vel minus, differt. — Typus: *Eyma 4283* (L).

Tree 17 m tall. *Twigs* slender, subterete, towards the apex 1.5–2(–2.5) mm diam., at first with dull rusty or greyish tomentum, hairs c. 0.1 mm, glabrescent, bark of twigs lower down (coarsely) striate, not flaking, lenticels small and inconspicuous. *Leaves* thinly coriaceous, blades elliptic-oblong, 8–15 by 2–4.5 cm, base (short-)

Fig. 8. *Myristica tubiflora* Blume. a. Habit of leafy twig with male inflorescences, $\times 0.5$; b. mature male flower, the perianth (just before anthesis) opened lengthwise to show androecium, $\times 6$; c. leafy twig of female flowering specimen showing one-flowered female inflorescences and a developing fruit, $\times 0.5$; d. mature female flower just before anthesis; note persisting bracteole, $\times 6$; e. leafy twig with infructescence, consisting of a single fruit, $\times 0.5$ (a, b: *Atasrip 709*; c, d: *Schram BW 1503*; e: *Streimann et al. LAE 51919*).

attenuate, top acute or (long)-acuminate; upper surface drying dark (blackish) brown, lower surface pale grey-brown or dull cinnamon, at first with inconspicuous tomentum, rather spaced minute grey or pale brown scale-like hairs 0.1 mm or less, glabrescent; dark brown non-traumatic dots absent; lower leaf surface not obviously papillose; midrib flat or lying in a groove (and slightly raised) above, lateral nerves 16–18 per side, at an angle of 60–80° to the midrib, flat or sunken, tertiary veins coarsely reticulate, faint or distinct and contrasting below; petiole slender, glabrous (early glabrescent), dark brown, (6–)10–15 by 1.5 mm; terminal leaf bud slender, acute, c. 10 by 1 mm, densely appressed-pubescent with grey-brown hairs c. 0.1 mm. *Inflorescences* densely pubescent with dull rusty hairs c. 0.1 mm, bracts caducous; of the *Knema*-type, i.e. a sessile wart-like scar-covered knob, less than 1 mm long; in *male inflorescences* bearing a 1–3(–5)-flowered cluster of flower buds of varying size according to age; female inflorescences (according to infructescences) 1(–3)-flowered. Flowers minutely pubescent with dull rusty hairs c. 0.1 mm. *Male flowers* (known only from *Eyma 4283*): pedicel slender, c. 3 mm long, the bracteole (sub)persistent, apically to the pedicel, comparatively large, broadly ovate, with acute top, 2–2.5 mm long; mature perianth in bud ovoid(-ellipsoid)-oblong, c. 5(–5.5) by 2–2.5 mm, base rounded, top bluntish, not angular in cross-section, lobes 3 (or 4), 1.5–1.7 mm long, splitting the perianth for c. 1/3, suberect at anthesis, at sutures 0.2–0.3 mm thick; androecium slender, subcylindrical, c. 4(–4.5) mm long, synandrium cylindrical, c. 2 by 0.8–0.9 mm, about as long as the androphore, anthers 6 or 7 (i.e. with c. 12 thecae), mutually appressed, sterile apex irregularly bluntish, c. 0.3 mm long, androphore cylindrical, c. 2 by 0.5 mm, longitudinally ± ribbed according to the thecae, almost entirely pubescent with pale brown hairs 0.2–0.3 mm. *Female flowers* not seen. *Fruit* sessile, solitary, situated just below the leaves; fruiting pedicel c. 10 by 2.5 mm, lenticellate, the scar of the bracteole c. halfway; *fruit* immature, ± (ovoid-)ellipsoid, c. 3 by 1.5 cm, top acutish, base shortly narrowed; pericarp (dry) c. 3 mm thick, with dense very short, grey-brown indumentum, hairs scale-like, c. 0.1 mm; seed not seen.

Distribution — Irian Jaya, Wissel Lake region: *Vink & Schram BW 8792*; *Eyma 4283*.

Habitat & Ecology — Mountain forest on stony sandy-clayey soil; 1600–1800 m altitude. Fl. Jan., fr. May.

Notes — 1. Fieldnotes: Rather common. Inner bark red, with little sap. (Immature) fruit light brown.

2. Close to *M. crassipes*, but different by the smaller male flowers with (sub)persistent bracteole and completely pilose androphore. Both cited collections were named by Sinclair (1968) as *M. cucullata*.

Myristica wallacea Warb., Monogr. Myrist. (1897) 530, t. 19 (Aru Is.) = *Myristica inutilis* Rich. ex A. Gray subsp. *papuana* (Markgraf) W. J. de Wilde.

? *Myristica wallacea* Warb. var. *keyensis* Warb., Monogr. Myrist. (1897) 531 (type: *Warburg 20720*, lost) = *Myristica subcordata* Blume.

Myristica warburgii K. Schum. in K. Schum. & Laut., Nachtr. Fl. Schutzgeb. Südsee (1905) 267.

Note — In Sinclair 343 and Foreman 205 this species was sunk into the synonymy of *Myristica longipes* Warb.

subsp. ***warburgii*** — Fig. 9a–d

subsp. ***hybrida*** W.J. de Wilde, *subsp. nov.*

A subspecie typi nervatura distincta et colore contraria in superficie foliorum inferiorum differt. Fructus (1.5–)2–3 cm longus, pedicellus frugifer 10–16 mm longus, 1.5–2(–3) mm crassus. — Typus: *Jacobs 9396* (L).

Leaves membranous or thinly coriaceous. Nerves and reticulation on lower leaf surface distinct, much contrasting in colour. Female flowers (*Jacobs 9396*): pedicel 9–10 by 1–1.5 mm, the scar of the bracteole (3–)3.5–4 mm below the perianth; mature perianth in bud c. 9 by 3.5 mm, ovary c. 6 by 2 mm. Fruit (broadly) ellipsoid, (1.5–)2–3 cm long, top c. 2 mm beaked, at base with c. 2 mm long pseudostalk; pericarp mealy pubescent with light rusty hairs c. 0.1 mm, when dry 1.5–2 mm thick; fruit stalk slender, 11–15 mm long, 1.5–2.5 mm thick.

Distribution — Papua New Guinea, E Highlands Prov.: *Jacobs 9396*; *Schodde 2291*; possibly also Sepik Prov., see note 2 (*Ledermann 10249*).

Habitat & Ecology — Mixed primary montane forest, at c. 1000 m altitude; mostly on ridges; well-drained volcanic soil; fl. and fr. Sept., Oct.

Notes — 1. Fieldnotes: Leaves pale green beneath. Flowers white; fruit dull brown or orange-brown.

2. Most likely here also belongs *Ledermann 10249*, with female flowers, from Sepik Prov., Lordberg, at c. 1000 m altitude. Its flowers are very much the same as in the type, *Jacobs 9396*.

3. Subsp. *hybrida* belongs only with some doubt to *M. warburgii*: male flowers are unknown, and the seed in the fruit is not yet fully developed. The subspecies differs mainly by the distinct contrasting nervation as seen on the lower leaf surface, and apparently is also closely related to *M. gracilipes*.

subsp. ***siphonantha*** W.J. de Wilde, *subsp. nov.* — Fig. 9e, f

A subs. typica in perianthio floris masculini anguste tubiforme, 13–14 × 2 mm, synandrium apiculo sterile c. 5 mm longo differt. — Typus: *Sands 1048* (L).

Male perianth narrowly ± tubiform, (10–)13–14 by 1.5–2 mm, narrowed in the upper and basal 1/3; androecium 8–9 mm long, sterile apex of synandrium c. 0.5 mm long. Fruit 2.5–3 cm long.

Distribution — Northern New Guinea: Irian Jaya, in the area of Jayapura, and Papua New Guinea, West Sepik Prov.; *BW 2815*; *Kostermans & Soegeng 336*; *LAE 55405*; *Sands 1048, 1073*.

Habitat & Ecology — Locally rather common in sloping terrain, steep slopes, understorey treelet, on sandy clay, heavy clay-loam, also on limestone hills; 15–390 m altitude. Fl. and fr. March, Aug.



Notes — 1. Fieldnotes: Tree to 10 m tall, diam. to 8 cm. Bark recorded as rough, dark rusty, peeling off, 1–2 mm thick, or outer bark crisp, \pm smooth or finely fissured, dark brown or reddish brown. Leaves pale beneath. Flowers pale apricot cream, or creamy green with brown pubescence, or yellow. Fruit (pale) brown or ginger brown, seed dark brown, aril red.

2. *Myristica warburgii* and *M. scripta* have the curious character that the seed is attached considerably above the base of the pericarp, rendering the lacinae of the aril for a large part conspicuously transversely orientated within the fruit.

3. Specimens of the present species were previously identified in the herbarium as *M. lancifolia* or *M. longipes*. The former is a species with similar faint nervation, but differs by smaller fruit, with the seed (and aril) not transversely placed, the leaves papillate beneath, etc.

4. The male flowers of subspecies *siphonantha* have a striking resemblance to those of *M. cornutiflora*, a species which is quite different, by its stalked inflorescences and the punctation on the lower leaf surface.

Myristica womersleyi Sinclair 249, f. 24; Foreman 215, f. 84, 93.

Myristica zippeliana Miq., Ann. Mus. Bot. Lugd.-Bat. 2 (1) (1865) 50 = *Gymnocranthera farquhariana* (Hook. f. & Thomson) Warb. var. *zippeliana* (Miq.) Schouten, Blumea 31 (1986) 482.

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Fig. 9. *Myristica warburgii* K. Schum. subsp. *warburgii*. a. Habit of male flowering twig, $\times 0.5$; b. lengthwise opened immature male flower, the perianth being considerably longer at anthesis, $\times 6$; c. leafy twig with one-fruited infructescence, $\times 0.5$; d. opened mature fruit, showing seed with aril with obliquely or transversely situated lobes, $\times 1.5$. — *M. warburgii* subsp. *siphonantha* W.J. de Wilde. e. portion of twig with male inflorescences, $\times 0.5$; f. lengthwise opened male flower at anthesis; note scar of caducous bracteole, $\times 6$ (a, b: Schram BW 2815; c, d: Kostermans & Soeeng 336; e, f: Sands 1048, type).

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