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CONSPECTUS OF MYRISTICA (MYRISTICACEAE) INDIGENOUS IN THE MOLUCCAS

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SUMMARY

An account of the 19 taxa (16 species and 3 subspecies) of *Myristica* recognized for the Moluccas is given. Two keys are presented. Four new species and one new subspecies are described; five new combinations are proposed.

INTRODUCTION

Anticipating a revision of the whole genus *Myristica* (with descriptions of all c. 100 species), as part of the Flora Malesiana treatment of the family Myristicaceae, keys for identification of specimens and an enumeration of species for the Moluccas are presented. These islands take up a comparatively small land area, but are rich in *Myristica* species; there are 19 taxa, 16 species, of which three are represented with two subspecies. One can say that the island group of the Moluccas has been a minor craddle of species development. There are several endemics, some apparently with a very restricted distributional area. The Moluccas also include the original area of the nutmeg of commerce, and this asks for more intensified modern research in Moluccan *Myristica,* to which the present account may be helpful.

Apart from the new species at present described, there are some differences with the taxonomy as given by J. Sinclair in his overall treatment of the genus *Myristica* in Gard. Bull. Sing. 23 (1968) 1–540. These are briefly indicated in the notes to the species.

Myristicas, like most Myristicaceae, are dioecious trees, and hence any fertile field collection contains generally either flowers of one of the sexes – and flowers of the two sexes may be rather different in appearance – or fruits only. Although these latter are quite characteristic and distinctive for an experienced botanist, they may be confusing as well, because in the fresh state all fruits are ellipsoid or subglobose and the various species overlapping in size, while in the herbarium they become irregular in shape because the pericarp shrinks considerably on drying, whereas the seeds may do so only a little. To facilitate identification, two keys to the species are given, one chiefly using characters of male inflorescences and flowers, the other mainly using vegetative characters of female flowering and fruiting specimens. Sometimes, the combining of male and female individuals may be troublesome, and then scrutinizing

the vegetative characters (bark of twigs, leaves, and indumentum) should settle the matter, because vegetatively both sexes are practically always identical.

Except for the new (sub)species, I have decided not to give descriptions of the species in the present account, as the main characters of the species can be found in the two keys presented here.

KEYS TO THE SPECIES

Key to the Moluccan species of *Myristica* based primarily on male flowering specimens.

1a. Male inflorescences panicula-like, i.e. ramified and provided with a smooth main peduncle, or inflorescences like in *M. fragrans*: slender, simple or branched; inflorescences lasting one or a few flowering seasons only 2
b. Inflorescences of the *Knema*-type, i.e. consisting of a sessile or subsessile scar-covered simple or 2–4-furcate thickish woody short-shoot (brachyblast), lasting several flowering seasons, and each season producing a number of new flowers at the top 6
2a. Mature male perianth in bud conspicuously elongate, 4.5–8 mm long, with the apical portion markedly angular, the top (sub)acute. N Moluccas: Sula Is., Bacan, Buru (also Borneo, Sulawesi, and Philippines) **13. M. simiarum** subsp. **celebica**
b. Male perianth various, not angular, top rounded 3
3a. Male perianth small, 3–4.5(–5) mm long, rough-pubescent. Nerves on upper leaf surface flat or impressed; lower leaf surface papillose. N Moluccas (and Vogelkop Peninsula) . . . . . **2. M. bifurcata** (with 2 subspecies)
b. Male perianth 5–11 mm long 4
4a. Male perianth conspicuously pubescent. Leaves large, 25–45 cm long, lateral nerves 25–30 pairs, impressed above. Bark of older twigs longitudinally cracked. N Moluccas: Bacan . . . . . **4. M. fissurata**
b. Male perianth either glabrous, or early glabrescent, or short-haired. Leaves smaller; lateral nerves few, above flat or but little impressed 5
5a. Male pedicel stoutish, c. 1 mm thick. Flowers thinly pubescent. Leaves subcoriaceous, 9–22 cm long, beneath late glabrescent with minute tomentum. Twigs stoutish, towards the top 2–3.5 mm diam. N Moluccas. (For *M. argentea*, see the notes.) . . . . . **15. M. succedanea**
b. Male pedicel slender, less than 1 mm thick. Flowers glabrescent with sparse, very minute tomentum. Leaves chartaceous, 6–13 cm long, early glabrescent. Twigs slender, towards the top 1–2 mm diam. Originally from Banda I. (Moluccas); at present only known from cultivated specimens . . . **5. M. fragrans**
6a. Mature male perianth in bud elongate, (10–)13–15 mm long 7
b. Male perianth less than 10 mm long 8
7a. Twigs ridged or winged; inhabited by ants. SE Moluccas: Kai Is. (and New Guinea) . . . . . **14. M. subalulata**
b. Twigs not winged. N Moluccas: Obi, Halmaheira . . . . . **10. M. pubicarpa**

8a. Twigs stout, towards the top 4–7(–10) mm diam. Leaves large, (15–)17–40 cm long 9
b. Twigs slender, towards the top 1–4(–5) mm diam. (4–5 mm in part of the material of *M. fatua*). Leaves generally smaller 11
9a. Lower leaf surface early glabrescent or with tomentum with scattered (not contiguous nor interwoven), minute, scale-like hairs less than 0.1 mm (lens!). Male perianth 8–8.5 mm long. N Moluccas: Bacan ..... **11. M. robusta**
b. Lower leaf surface densely tomentose (hairs may be minute)..... 10
10a. Male perianth c. 6 mm long. [Fruit 5.5–8.5 cm long, dry pericarp 10–15 mm thick, with scurfy tomentum, hairs 0.1–0.2 mm long.] N Moluccas **12. M. sangowoensis**
b. Male perianth 4–6 mm long. [Fruit 4–7 cm long, dry pericarp thinner, with tomentum with hairs 0.5–1 mm long.] Moluccas (and Sulawesi, Philippines) **3. M. fatua** subsp. **fatua**
11a. Lower leaf surface of mature leaves densely pubescent; hairs may be short and scale-like, but they are densely set or interwoven (lens!) 12
b. Lower leaf surface glabrous or early glabrescent or with minute scattered (not densely set) hairs 13
12a. Twigs stoutish, towards the top (2.5–)4–5 mm diam. Leaves large, c. 20 cm long or more. Male perianth 4–6 mm long. Moluccas (and Sulawesi, Philippines) ..... **3. M. fatua** subsp. **fatua**
b. Twigs slender, towards the top 1–2 mm diam. Leaves 15 cm long or less. Male perianth 2–2.5 mm long. SE Moluccas: Aru Is. (and SW New Guinea) **8a. M. lepidota** subsp. **lepidota**
13a. Male perianth ± cylindrical, i.e. parallel-sided, narrow; androphore about as long as the synandrium 14
b. Male perianth proportionally broader, ± ovoid, or ellipsoid, or ellipsoid-oblong; androphore about as long as or shorter than the synandrium; androphore mostly pubescent, at least at base. Lateral nerves not particularly dense... 16
14a. Androphore glabrous. Lateral nerves comparatively dense 15
b. Androphore densely pubescent; male perianth small, 3.5–4 mm long. Leaves pale beneath, lateral nerves not particularly dense. N Moluccas: Bacan, Obi, Buru ..... **1. M. alba**
15a. Leaves membranous; tertiary venation (reticulation) distinct beneath. Male perianth 2.5–3 mm long. [Fruit 2.2–3.6 cm long, minutely scurfy.] NE Moluccas (and Vogelkop Peninsula) ..... **8b. M. lepidota** subsp. **montanoides**
b. Leaves chartaceous; tertiary venation faint beneath. Male perianth 4–6 mm long. [Fruit 1.5–2.5(–3) cm long, minutely scurfy.] Moluccas (and W New Guinea)..... **7. M. lancifolia** (with 2 subspecies)
16a. Male perianth c. 2.5 mm long. N Moluccas: Sula Is., Halmaheira, Obi **2b. M. bifurcata** subsp. **sulaica**
b. Male perianth more than 3 mm long 17
17a. Twigs stoutish, towards the top 2–2.5 mm diam. or more. [Fruit 2.5–4.5 cm long, with tomentum with hairs 0.1–0.2 mm; sometimes partly glabrescent.] Moluccas (and Philippines) ..... **9. M. mindanaensis**
b. Twigs generally more slender, towards the top 1–2(–2.5) mm diam. ... 18

18a. Tomentum of perianth with hairs c. 0.1 mm. Male flower pedicel about as long as perianth. [Fruit 2.5–3 cm long, with thick pericarp; tomentum with hairs c. 0.1 mm long.] N Moluccas (and W New Guinea) ..... **16. M. tristis**
b. Tomentum with hairs longer, 0.2–0.5 mm long. Male flower pedicel usually shorter than the perianth 19
19a. Male perianth at anthesis splitting open to c. 1/3 to nearly halfway. Inflorescences usually distinctly peduncled. [Fruit 3–4 cm long, with rather thick pericarp; tomentum with hairs short or longer, c. 0.1 mm or c. 0.5 mm long.] N Moluccas (and Vogelkop Peninsula) **2a. M. bifurcata** subsp. **bifurcata**
b. Male perianth at anthesis split to c. 1/4. Inflorescences sessile. [Fruit 2.5–3.5 cm long, pericarp 2–3 mm thick; tomentum with hairs 0.3–1 mm long.] SE Moluccas: Tanimbar Is. (and New Guinea, Australia) ..... **6. M. insipida**

Key to the Moluccan species of *Myristica* for female flowering and fruiting specimens, using mainly vegetative characters and characters of the fruit (sizes used have been measured in the dried state).

1a. Lower leaf surface with persistent dense tomentum; if the hairs are short they may be densely interwoven and sometimes give the impression that the leaf is glabrous 2
b. Lower leaf surface either glabrous or glabrescent, or with a scarce tomentum of either minute scattered (spaced) hairs, or consisting of a very minute cobweb-like covering only visible with a lens 4
2a. Twigs slender, towards the top 1–2.5(–4) mm diam. Leaves small, 4.5–15 × 1.5–6 cm. Fruit 2.5–3 cm long, with a scurfy tomentum, hairs 0.1–0.2 mm long. SE Moluccas: Aru Is. (and SW New Guinea) **8a. M. lepidota** subsp. **lepidota**
b. Twigs stout, towards the top c. 3–6 mm diam. Leaves 20 cm long or more. Tomentum of fruit either with distinct hairs 0.5–1 mm long, or scurfy ... 3
3a. Fruit 4–6.5(–7) cm long, with a conspicuous tomentum of rusty hairs 0.5–1 mm long. Moluccas (and Sulawesi, Philippines) . **3. M. fatua** subsp. **fatua**
b. Fruit 5–8.5 cm long, with a dull cinnamon scurfy tomentum of hairs 0.1–0.2 mm long. N Moluccas ..... **12. M. sangowoensis**
4a. Twigs distinctly ridged or winged; myrmecophylous. Fruit subsessile, more or less ovoid, apiculate, c. 2 cm long, minutely tomentulose. S Moluccas: Kai Is. (and New Guinea) ..... **14. M. subalulata**
b. Twigs neither ridged nor winged 5
5a. Female perianth in bud acutish, much narrowed towards the top, the apical portion sharp-angular in cross section. Leaves small to medium-sized ... 6
b. Apex of female perianth narrowed or not, in cross section ± blunt-angular or not, but not sharply angular. Leaves either small, medium, or large and stout. Fruit glabrous (glabrescent) or pubescent, size various 7
6a. Female perianth 5–6 mm long. Leaves beneath glabrous or subglabrous (with minute scattered hairs). Fruit 3–3.5 cm long, with a thin tomentum of scattered hairs 0.3–0.5 mm long, or glabrescent. N Moluccas: Sula Is., Bacan, Buru (and Sulawesi, Philippines)..... **13. M. simiarum** subsp. **celebica**

b. Female perianth c. 10 mm long, at anthesis opening for only c. 1/8. Leaves beneath with tomentum of fairly dense or scattered scales 0.1–0.2 mm. Fruit 5–6 cm long, densely dark brown short-pubescent (hairs c. 0.2–0.3 mm long). N Moluccas ..... **10. M. pubicarpa**

7a. Twigs generally stout, towards the top 3–5(–10) mm diam. Leaves large, up to 45 cm long. Fruit large, pubescent 8

b. Twigs stout or slender, 1–5 mm diam. Leaves generally smaller. Fruit small, c. 2–5.5 cm long, pubescent, or fruit larger but then glabrous or early glabrescent 9

8a. Inflorescences (in male) c. 20 mm peduncled. Fruit large, (4–)5–8 cm long, with persistent scurfy tomentum with hairs 0.1–0.2 mm long. Bark of twigs conspicuously longitudinally cracking, ± flaking. Lower leaf surface distinctly papillose (lens!). N Moluccas: Bacan ..... **4. M. fissurata**

b. Inflorescences (in male) up to c. 5 mm peduncled (of the *Knema*-type). Female flowers and fruit not known. Twigs and leaves very stout; bark of twigs striate, at most finely cracking and finely flaking. Lower leaf surface not papillose. N Moluccas: Bacan ..... **11. M. robusta**

9a. Fruit glabrous or largely early glabrescent with minute hairs 0.1 mm long or less. Inflorescences (best seen in male specimens) like those of *M. fragrans*, i.e. delicate, few-flowered, without or with a distinct (but slender) common peduncle. Leaves rather elliptic, with a few pairs of lateral nerves 10

b. Fruit with persistent tomentum (the tomentum may be very short and inconspicuous). Inflorescences rather of the *Knema*-type, i.e. with or without a common peduncle, with the flowers in woody scar-covered short-shoots of longer duration 11

10a. Plant rather stoutish: twigs towards the top 2–3.5 mm diam., leaves ± coriaceous, 9–22 cm long, beneath rather late glabrescent. Fruit 4.5–8 cm long. N Moluccas. (For *M. argentea*, see the notes.)..... **15. M. succedanea**

b. Twigs towards the top 1–2 mm diam., leaves chartaceous, 6–13 cm long, beneath early glabrescent. Dry fruit 4–6 cm long. Cultivated (originating from Banda Is.) ..... **5. M. fragrans**

11a. Fruit 3–4 cm long; tomentum of fruit conspicuous, with coarse hairs, (0.5–)1 mm long. Moluccas (and Vogelkop Peninsula) **2a. M. bifurcata** subsp. **bifurcata**

b. Fruit various in size; tomentum either mealy or scurfy, or woolly, with hairs shorter, 0.1–0.5(–0.8) mm long 12

12a. Lower leaf surface pale, greyish or whitish, glabrescent from a rather weak tomentum of which the stouter hairs leave numerous regularly spaced, small, dark point-like scars (lens!; punctation not to be confused with the larger, dark, non-traumatic cork warts as found in some species of *Knema* and *Horsfieldia*, or as in some species of *Myristica* from New Guinea). Fruit short-ellipsoid, 3–4.5 cm long, with tomentum of hairs 0.1–0.5 mm long; pericarp thick and woody, c. 5 mm thick. N & Central Moluccas ..... **1. M. alba**

b. Upper and lower leaf surface more concolorous, or if lower surface pale (i.e. greyish or whitish), then not finely punctate (lower leaf surface sometimes pale but without dark points in *M. lancifolia*) 13

13a. Leaves rather large, elliptic to oblong-lanceolate, 14–35 cm long. Fruit ellipsoid, (2.5–)3–3.5(–4.5) cm long; tomentum short, with hairs 0.1–0.2 mm long. Moluccas (and Philippines) ..... **9. M. mindanaensis**

b. Leaves generally smaller, elliptic to lanceolate, up to c. 20 cm long. Fruit various 14

14a. Lower leaf surface without papillae (lens!). Fruit subglobose, 2.5–3 cm long; pericarp comparatively thick, 4–8 mm thick; tomentum with hairs c. 0.1 mm long or less. N Moluccas (and W New Guinea) ..... **16. M. tristis**

b. Lower leaf surface generally distinctly papillose. Fruit ellipsoid; pericarp thinner; tomentum with short or long hairs (0.1–1 mm long) 15

15a. Male inflorescences generally distinctly peduncled; male perianth small, 2.5–4 mm long. Fruit ovoid-ellipsoid, 3–4 cm, with scurfy tomentum, hairs c. 0.2 mm long. N Moluccas: Sula Is., Halmaheira, Obi
2b. M. bifurcata subsp. **sulaica**

b. Male inflorescences sessile or subsessile; male perianth small or larger, 3–6 mm long 16

16a. Leaves membranous. Tertiary venation on lower leaf surface distinct. Fruit 2–3.5 cm long, with tomentum, hairs 0.1(–0.2) mm long. Male perianth small, c. 3 mm long. NE Moluccas (and Vogelkop Peninsula)
8b. M. lepidota subsp. **montanoides**

b. Leaves generally rather chartaceous. Male perianth 4–6 mm long 17

17a. Tertiary venation on lower leaf surface generally indistinct; lateral nerves 8–20 pairs, rather dense. Fruit 1.3–2.6(–3) cm long, with tomentum, hairs c. 0.1 mm long. Moluccas (and W New Guinea)
7. M. lancifolia (with 2 subspecies)

b. Tertiary venation distinct or not; nerves more lax, 6–17 pairs. Fruit 2.5–3.5 (–3.8) cm long, with tomentum, hairs 0.3–1 mm long. SE Moluccas: Tanimbar Is. (and New Guinea, Australia) ..... **6. M. insipida**

1. Myristica alba de Wilde, *spec. nov.* – Fig. 1: 1.

Habitu foliisque *M. pubicarpae* et *M. impressae* similis, differt tantum floribus masculinis subsessilibus parvis, pedicello 0,5–1 mm longo, perianthio 3,5–4 mm longo, antheris c. 4, androphoro dense pubescente synandrio fere aequilongo. Fructus 3–4 cm longus, basin versus angustatus; pericarpium siccum lignoso-coriaceum, c. 5 mm crassum. — T y p u s: *de Vogel 3975* (L; iso BO, CANB, LAE, MO, n.v.), Moluccas, Obi I.

Tree 4–20 m. Male flower pedicel 0.5–1 mm long, perianth 3.5–4 mm long, anthers c. 4, the androphore densely hairy, about as long as the synandrium. Fruit 3–4 cm long, narrowed in the basal part; dry pericarp woody-coriaceous, c. 5 mm thick.

D i s t r i b u t i o n. Moluccas (Bacan, Obi, Buru): *bb 23157*; *Nooteboom 5369*; *de Vogel 3975, 4098*.

N o t e s. 1. Fieldnotes: Low solitary tree, 4–20 m, bole to 30 cm diam. Leaves whitish glaucous underneath. Flowers yellow. Recorded from limestone. Altitude 100–500 m.

2. Vegetatively, this species resembles *M. pubicarpa* from the same area, *M. nivea* from the Philippines, and *M. impressa* and *M. impressinervia* from Sulawesi, because of their whitish drying leaves beneath, usually with very fine dark punctation by hair-scars, only visible with rather strong magnification. Our present species is easily distinguished by its small, elongate, nearly sessile male flowers. Both the two fruiting collections have the fruits at the base conspicuously contracted into a short pseudostalk (see also note 3). The small male flowers are reminiscent of those of *M. lepidota*.

3. The two fruiting collections assigned to the present species, both with the leaves strikingly similar to the male-flowering specimens from Obi, are *bb 23157* from Bacan and *Nooteboom 5369* from Buru. These collections have rather different fruit: the first has the fruit rather ellipsoid, with dense, curly, woolly hairs c. 0.5(–1) mm long; in the Buru collection the fruit is almost globose, c. 2.5 cm diam. excluding the 3–5 mm long pseudostalk, the pericarp with only very short 'scurfy' tomentum with hairs c. 0.1 mm long. More collections are needed to judge a possible taxonomic significance of these differences.

4. The only specimen seen by Sinclair, *bb 23157*, was identified by him as *M. koordersii*, a species restricted to N Sulawesi.

2. Myristica bifurcata (Sinclair) de Wilde, *stat. nov.*

Myristica lancifolia Poiret var. *bifurcata* Sinclair, Gard. Bull. Sing. 23 (1968) 460 (key p. 81), fig. 80. — T y p e: *Kostermans 944* (K; iso L; A, BO, LAE, PNH, SING, n.v.).

D i s t r i b u t i o n. Two subspecies in the northern Moluccas and Vogelkop Peninsula.

KEY TO THE SUBSPECIES

1a. Tomentum of terminal leaf bud, flowers, and fruit with hairs 0.5–0.8 mm long. Ovary densely pubescent with conspicuous long hairs 0.5–0.8 mm long. Male flower perianth 4–5 mm long; androphore sparsely to rather densely minutely pubescent ..... **a.** subsp. **bifurcata**

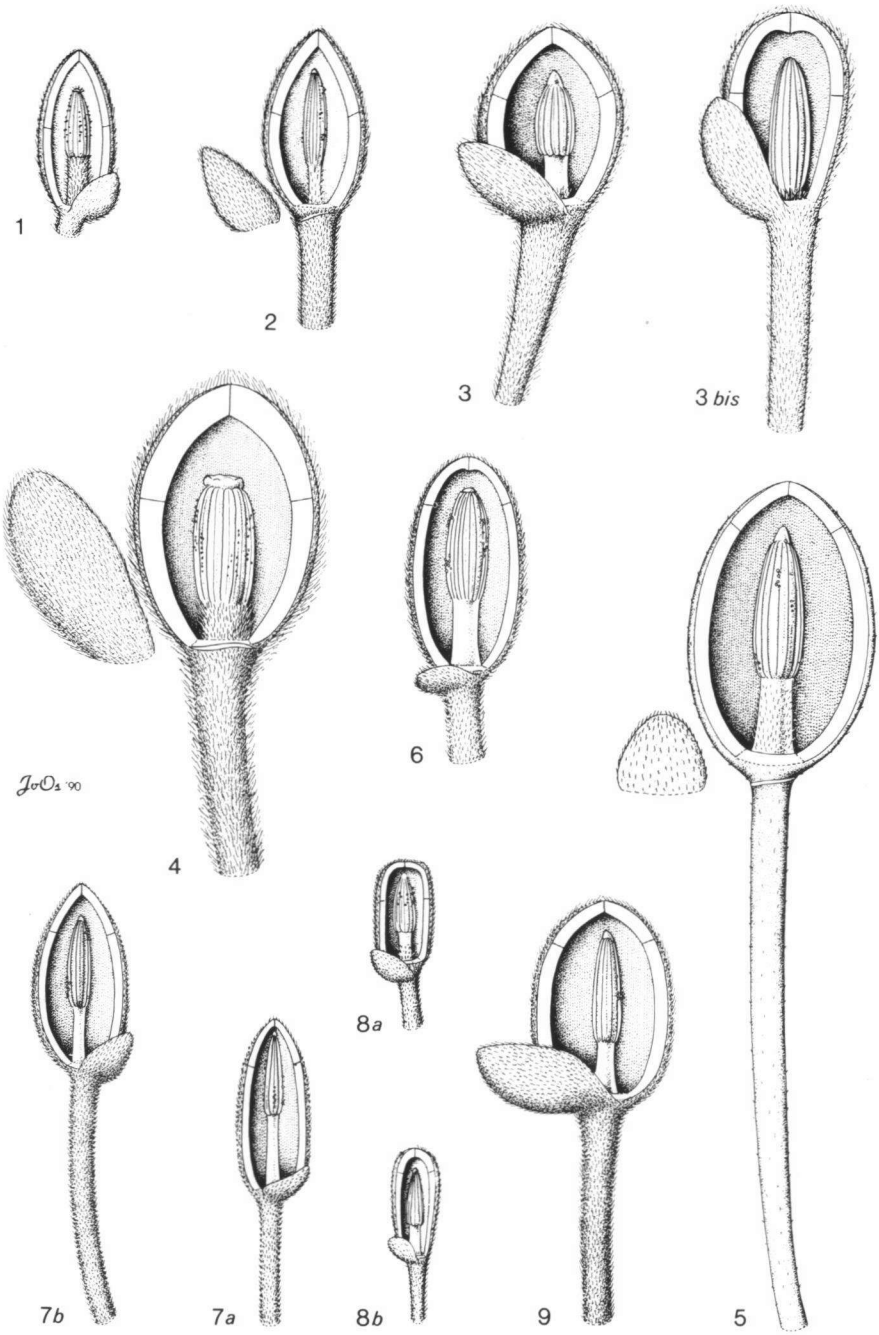
b. Tomentum of terminal leaf bud composed of long or short hairs, those of flowers and fruit short, 0.1–0.2 mm long. Ovary with hairs 0.1(–0.2) mm long. Male perianth c. 2.5 mm long; androphore (sub)glabrous . . **b.** subsp. **sulaica**

a. subsp. bifurcata – Fig. 1: 2.

D i s t r i b u t i o n. Vogelkop Peninsula and N Moluccas (Morotai): *Kostermans 6 (bb 33723), 71 (bb 33767), 944, 1506; Tankilisan 231 (bb 33901)*.

N o t e s. 1. Fieldnotes: Locally common in forest on Morotai. Altitude 30–500 m. Flowers and fruit rusty brown.

2. The species is noteworthy because of the inflorescences which are of a rather singular mixed character, consisting of more or less woody brachyblasts of the *Knema*-type, but these are mostly strongly peduncled; because of this pluriformity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of inflorescences it appears two times in the key to the species based on male flowering specimens.

3. Resembling and closely related species are *M. lancifolia*, and *M. impressinervia* from Sulawesi.

b. subsp. **sulaica** de Wilde, *subsp. nov.*

A subspecies typica florum et fructuum tomento breviore, pilis 0,1–0,2 mm longis differt. Inflorescentiae subsessiles vel normaliter usque ad 5 mm longe pedunculatae. Perianthium masculinum c. 2,5 mm longum. — T y p u s: *bb 28880* (L), Sula Is. (Sanana).

Tree 10–40 m tall. Differs from the type-subspecies by shorter tomentum of flowers and fruit, with hairs 0.1–0.2 mm long. Inflorescences subsessile or usually up to 5 mm long peduncled. Male perianth c. 2.5 mm long.

D i s t r i b u t i o n. N Moluccas (E Sula Is., Halmaheira, Obi): *bb 23800, 28880, 29751*; *de Haan 446* (= *bb 24844*); *Pleyte 339*; *de Vogel 3194, 3343, 4325, 4455*; *Whitmore c.s. TCW 3607.*

N o t e s. 1. Fieldnotes: Well drained forest on volcanic or clayey soil, also over serpentine; locally abundant; 0–600 m altitude. Straight tree, up to 40 m. Bark grey or blackish, very fissured, not peeling off, trunk with or without buttresses. Flowers greenish; fruit yellow or brown(-yellow), aril bright red; mature seed dark brown.

2. This species largely consists of *M. lancifolia* var. *bifurcata* of Sinclair (l.c. p. 460). In spite of that I have recognized two subspecies within my present *M. bifurcata*, subsp. *sulaica* remains rather heterogeneous; thus, the tomentum of the terminal leaf bud in *de Vogel 3343* is composed of quite long hairs, 0.5(–1.0) mm long, whereas those of other specimens, e.g. *Whitmore c.s. TCW 3607*, are conspicuously short, 0.1–0.2 mm long only.

3. Specimens of *M. bifurcata* with sessile or almost sessile inflorescences, i.e. without distinct smooth common peduncle, may be confused with e.g. *M. lancifolia*, *M. tristis*, and others. *Myristica bifurcata* is distinct by its usually conspicuously peduncled inflorescences, by the distinct papillose lower leaf surface, the not-projecting nerves and reticulation of the lower leaf surface, and the fairly large fruit.

Fig. 1. Male flowers with bracteole of Moluccan *Myristica*: mature perianths just before anthesis, lengthwise opened to show androecium; perianths in anthesis cleaving to the depths as indicated by thin lines; all × 5. — **1.** *M. alba* de Wilde (*de Vogel 3975*, type); **2.** *M. bifurcata* (Sinclair) de Wilde subsp. *bifurcata* (*Kostermans 944*); **3.** *M. fatua* Houtt. subsp. *fatua* (Reinwardt s.n.); **3bis.** ditto (*de Vogel 3497*, a specimen from Halmaheira, deviating by a short androphore completely fine-pubescent); **4.** *M. fissurata* de Wilde (*de Vogel 3836*, type); **5.** *M. fragrans* Houtt. (*de Vriese & Teijsmann s.n.*); **6.** *M. insipida* R. Br. (Schodde in *Hartley 13735*, Arnhem Land, N Australia); **7a.** *M. lancifolia* Poiret subsp. *lancifolia* (*Teijsmann 7585*, Vogelkop Peninsula, isotype of *M. papuana* Scheffer); **7b.** *M. lancifolia* Poiret subsp. *montana* (Roxb.) de Wilde (*van Borssum Waalkes 3300*); **8a.** *M. lepidota* Blume subsp. *lepidota* (*Aet 279*, SW New Guinea); **8b.** *M. lepidota* Blume subsp. *montanoides* (Warb.) de Wilde (*Beccari FI 7756*); **9.** *M. mindanaensis* Warb. (*Kuswata & Soepadmo 57*).

3. Myristica fatua Houtt.

Myristica fatua Houtt., Nat. Hist. Pl. 2, 3 (1774) 337; Blume, Rumphia 1 (1837) 185, t. 59; Warburg, Monog. Myrist. (1897) 425, t. 11 fig. 1-7; Sinclair, Gard. Bull. Sing. 23 (1968) 268, p.p. (see note); Nitta & Murata, Acta Phytotax. Geobot. 40 (1989) 167. — For synonyms and typification see under the subspecies.

N o t e. Sinclair accepts *M. fatua* in a very broad sense, including the Indian *M. magnifica* as one of the many varieties, and several varieties in New Guinea. I prefer to restrict the name *M. fatua* to a species confined to the Moluccas, Sulawesi, and the Philippines, containing two subspecies. Thus, still rather heterogeneous, it is closest allied to *M. sangowoensis* and to *M. mindanaensis*, the latter with a slightly different distribution and differing morphologically mainly by leaves ± glabrous (early glabrescent) beneath and smaller fruit.

D i s t r i b u t i o n. SE Kalimantan (one collection), Philippines (Mindanao), Moluccas (subsp. *fatua*), and Sulawesi (subsp. *affinis*).

The two subspecies resemble each other much in general appearance, but differ rather strikingly in minor characters. In the Moluccas only the type-subspecies occurs.

subsp. fatua. – Fig. 1: 3 & 3bis.

Myristica fatua Houtt. var. *fatua*; Sinclair, Gard. Bull. Sing. 23 (1968) 269, fig. 30. — T y p e: see the notes.

Myristica tomentosa Thunb., Act. Holm. Kongl. Vet. Acad. Nya Handl. 3 (1782) 49, t. 1 fig. 2, 5, 6. — T y p e s: probably *Smith 300* (BM), *s.n.* (CAL), from Banda (see Sinclair, l.c. p. 272).

Myristica spadicea Blume, Bijdr. Fl. Ned. Ind. 2, 11 (1826) 277. — T y p e: *Reinwardt s.n.* (L) (culta).

Myristica macrophylla Roxb., Fl. Ind. Carey's ed. 3 (1832) 846 (non Spruce, nec A. Gray, nec Zippelius). — T y p e s: *Smith s.n.* (G, n.v.), *2640* (BR, n.v.), Banda.

Myristica mascula Reinw., nom. nud. ex de Vriese, Pl. Ind. Bat. Or. 2 (1857) 93. — T y p e s: *Reinwardt s.n. (67)*; *1371* (L) (culta).

Myristica fatua Houtt. var. *macrocarpa* Miq., Ann. Mus. Bot. Lugd.-Bat. 1, 2 (1864) 205. — T y p e: *Teijsmann 5148* (BO, n.v.; U).

Myristica plumeriifolia Elmer, Leafl. Philip. Bot. 3 (1911) 1063; Merr., Enum. Philipp. Fl. Pl. 2 (1923) 180. — T y p e: *Elmer 11063* (BM, K, L; A, BO, BP, BRSL, CAL, E, FI, G, NSW, NY, US, Z, n.v.).

D i s t r i b u t i o n. SE Kalimantan (1 coll., a somewhat deviating specimen, *Kuswata 886*), S Philippines (Mindanao), and Moluccas: *Atje (exp. van Hulstijn) 370*; *bb 23201, 25849, 25990*; *Kornassi (exp. Rutten) 990*; *Kuswata & Soepadmo 14, 39, 272*; *Nooteboom 5062*; *Pleyte 175*; *Ramlanto 312*; *de Vogel 3301, 3431, 3495, 3497*; *Warburg 17646*; *de Wiljes-Hissink 127.*

N o t e s. 1. Fieldnotes: Tree of well drained forest, on clay or volcanic soil; low buttresses and prop-roots recorded; 0–500 m altitude.

2. Variation: Specimens from Halmaheira, viz. *Pleyte 175, de Vogel 3301, 3431, 3497,* and possibly *bb 23201* from Bacan, deviate from the rest of the material from the Moluccas and Philippines by 1) the tomentum of the flowers with rather rough and long hairs; 2) the twigs at apex comparatively distinctly 2-angular; 3) smaller fruit, c. 3.5–4 cm long, with short fruit stalk, c. 2–3 mm long; 4) in the male flow-

ers the androphore is short and distinctly short-hairy, whereas it is longer, more slender and almost glabrous in the plants from the rest of the Moluccas.

As compared with *M. fatua* var. *fatua*, as conceived by Sinclair (l.c. p. 269–275) I have excluded the types of *M. nivea* Merr. and *M. mindanaensis* Warb. (both from the Philippines), now regarded as species of their own, characterized by a less developed tomentum or (almost) glabrous undersurface of the leaves, smaller fruit, etc.

3. Typification: Sinclair (l.c., p. 272) noted that Houttuyn did not quote specimens, and that his description is based mostly on pre-Linnean names of Clusius cited by Rumphius, Herb. Ambon. 2, p. 24, with localities Banda, and later Ambon; he did not make a lectotypification from the protologue. Nitta & Murata (l.c.) argue that *M. fatua* should be (lecto)typified (they say: holotype) by the right-hand figure, N 760b, in J.W. Weinmann, Taalrijk Register 7 (1748), as reproduced by them (l.c.) on page 175.

I doubt the correctness of this lectotypification, because Houttuyn for his *M. fatua* clearly described a plant with leaves one foot long or more, whereas the plant of N 760b has leaves of about the same size as N 760a, which clearly is *M. fragrans*, a smaller-leaved species. Nitta & Murata subsequently maintain that the plant of N 760b is a young stage of N 760a, and that, hence, both belong to *M. fragrans*. Next they describe, by consequence, as a new species the 'Pala-lacki-lacki' of Rumphius (Herb. Amb. 2, 1741, 24 t. V) and the "*Myristica fatua* auct. non Houtt.: Blume, Rumphia 1 (1835) 185," of which Nitta & Murata suppose that it was (partly) misinterpreted by Blume: they call it *M. lakilaki* Murata et Nitta, spec. nov., with *de Vogel 3668* in BO as holotype.

As one can see under that species, *de Vogel 3668* belongs to *M. succedanea* Blume [and to that species possibly Rumphius, Herb. Amb. 2 (1741) tab. V belongs as well].

Because Blume (l.c.) when treating *M. fatua* Houtt. did not make a lectotypification, I herewith re-select Clusius, Tab. 14, as cited by Houttuyn and by Blume (l.c.), as lectotype, the figure clearly showing a plant with large leaves and fruit apically on the twigs, features quite distinct for *M. fatua* as I know it, and I also agree with the notion of this well-known species by Sinclair and all foregoing authors.

4. Myristica fissurata de Wilde, *spec. nov.* – Fig. 1: 4.

Ramuli robusti, apicibus 4–7(–10) mm diam., cortice manifeste fisso. Folia subtus distincte papillosa, 25–45 cm longa. Inflorescentiae masculinae haud ramosae, pedunculo communi lanoso-pubescente 15–25 mm longo. Perianthium masculinum crasse carnosum, anthesi usque ad fere dimidiam partem lobatum. Androecium: apex sterilis dilatatus, applanatus, centro minute depresso-cavato. Fructus late ellipsoideus, pilis 0,2–0,3(–1) mm longis pubescenti-squameus; pericarpio sicco 10–15 mm crasso. — T y p u s: *de Vogel 3836* (L; iso K), Moluccas, Bacan.

Tree 25–50 m tall. Twigs stoutish, towards the apex 4–7(–10) mm diam., with the bark conspicuously cracking. Leaves 25–45 cm long, the lower surface distinctly papillose. Male inflorescences unbranched, with common peduncle 15–25 mm long, woolly; male perianth thick-fleshy, at anthesis cleft by the lobes to nearly halfway; sterile apex of androecium broad, flattish, slightly hollowed in the centre. Fruit

broadly ellipsoid, 6.5–7 cm long, scurfy pubescent with hairs 0.2–0.3(–1) mm long, dry pericarp 10–15 mm thick.

Distribution. N Moluccas (Bacan, at G. Tuara, near Amasing Kali): *bb 23183*; *de Vogel 3836, 3954*.

Notes. 1. Fieldnotes: Found in (disturbed) primary, well drained, tall forest with little undergrowth on loamy soil; 100–200 m altitude. Solitary tree, emergent or not, 25–50 m high, recorded as with buttresses or as with prop-roots and buttresses, sometimes branched; outer bark grey-brown, very fissured, slightly peeling off or not. Flowers outside brown, inside pale yellow, anthers brownish yellow; fruit yellow, brown by indument.

2. This species seems closest related to *M. philippinensis* from the Philippines; it is readily distinct by its somewhat *Knema*-type male inflorescences with an unusually long common peduncle, up to 25 mm long, and vegetatively by the cracking-flaking bark of the twigs, and the very distinctly papillose lower leaf surface. The comparatively large male flowers have a thick-fleshy perianth; the synandrium is rather broad, faintly triangular on section, and bears at least 20 closely appressed thecae representing at least 10 anthers.

5. Myristica fragrans Houtt. – Fig. 1: 5.

Myristica fragrans Houtt., (Handl.) Hist. Nat. (Linn.) 2, 3 (1774) 333; Blume, Rumphia 1 (1835) 180, t. 55; Warb., Die Muskatnuss (1897) 1–628; Monog. Myrist. (1897) 458; Sinclair, Gard. Bull. Sing. 16 (1958) 361, fig. 29, Pl. VII B; 23 (1968) 225; Nitta & Murata, Acta Phytotax. Geobot. 40 (1989) 177. — Lectotype: *J.W. Weinmann*, Taalrijk Register 7 (1748) Pl. 760a.

Myristica officinalis L. f., Suppl. Sp. Pl. (1781) 265.

Myristica moschata Thunb., Act. Holm. (1782) 49, t. 1 f. 1

Myristica aromatica Lamk., Act. Paris (1788) 155, t. 5–7.

Myristica amboinensis Gandoger, Bull. Soc. Bot. France 66 (1919) 255, in clavi.

Myristica laurella Gandoger, l.c. 226, in clavi.

Myristica philippinensis Gandoger, l.c. 226, in clavi.

For some more synonyms, more references, and typification see Sinclair, l.c. 1958, p. 363; 1968, p. 226, 231; for pre-Linnean names and literature see Warb., Monog. Myrist. (1897) 459.

Distribution. Banda Is.; widely cultivated in the rest of the Moluccas and in many suitable localities in the tropics all over the world; locally running wild or seemingly wild in abandoned or neglected plantations, or when intentionally planted in wild forest. A lowland forest species, apparently preferably thriving under rather strong seasonal conditions.

I suspect that all collections of *M. fragrans*, also those from the southern Moluccas and including those from Ambon and Banda as cited by Sinclair (1968, p. 226) are from cultivated or running wild specimens. According to Rumphius, Herb. Amb. 2 (1741) 14, t. 4, the species was at the time already amply cultivated in Banda.

Sinclair (l.c.) cited the many specimens from all over the tropics, seen by him for his revision.

Notes. 1. Sinclair (1968) listed *M. fragrans* with *M. argentea* (from New Guinea), *M. succedanea*, and *M. impressinervia* (from Sulawesi) in his series Fragrantes (that is series Speciosae and Fragrans with Warburg, l.c. p. 378). I agree that the

first named two species are to be regarded as very closely related to *M. fragrans*, but I think that *M. impressinervia* has far more remote affinities.

2. *Myristica fragrans* is a homogeneous species, distinct from *M. succedanea* and *M. argentea* primarily by its small leaves, glabrous (early glabrescent) and with few nerves, in combination with its typical slender inflorescences. Rumphius, Herb. Amb. 2 (1741) 14, t. 4, distinguished five varieties.

3. Sinclair described the androphore as glabrous; actually it is thinly appressed-pubescent, at least towards the base, in the specimens studied by me under high magnification, a fact which renders the flowers very similar to those of *M. succedanea*.

6. Myristica insipida R. Br. – Fig. 1: 6.

Myristica insipida R. Br., Prod. Fl. Nov. Holl. ed. 1 (1810) 400; ed. 2 (1827) 256; Benth., Fl. Austr. 5 (1870) 281; Blake, Austr. J. Bot. 2, 1 (1954) 124; Sinclair, Gard. Bull. Sing. 23 (1968) 369 (excl. syn. *M. muelleri*), fig. 61; for more references, see Sinclair, l.c. — *Myristica cimifera* R. Br. var. *insipida* (R. Br.) Warb., Monog. Myrist. (1897) 501. — T y p e s: *Brown 25* (G, P), *3012* (E; K, lecto), *2312* (BM).

Myristica cimifera Soland. ex R. Br., Fl. Nov. Holl. ed. 1 (1810) 400; ed. 2 (1827) 256; Warb., Monog. Myrist. (1897) 499, t. 18 fig. 1-6 (incl. var. *typica*). — T y p e: *Banks & Solander*, dated 1770 (K; BM, iso).

Myristica cimifera R. Br. var. *acutifolia* Warb., Monog. Myrist. (1897) 502 (= var. *kingii* Warb., msc., nom. nud. in sched.). — T y p e: *King s.n.* (BR, G, n.v.).

Myristica macgregorii Warb., Monog. Myrist. (1897) 479. — T y p e: *MacGregor 12* (B, lost; MEL, iso, n.v.), Papua, Milne Bay Dist., Barawara.

D i s t r i b u t i o n. N Australia (NW Australia, E to N Queensland), S New Guinea, and SE Moluccas (Tanimbar Is.): *bb 24416*; *van Borssum Waalkes 3143, 3217*; *Forbes 3368*; *Purwaningsih & Sanusi 87*.

N o t e s. 1. Fieldnotes: Shrub to medium-sized (understorey) tree, occurring (for the whole species) in coastal forest, cliff forest, rain forest behind dunes, deciduous vine thicket, monsoon forest and scrub, riparian and gallery forest, gully forest (in gorges on sandstone), fringing forest of savanna woodland; generally not too far from the coast; on sandstone, sandy soil, lateritic sand, coral sand; locally common; 0–200 m altitude. Flowers yellow green or pale yellow or brown-yellow, column white, anthers light brown, pollen cream. Fruit (greenish) brown, or golden, or rusty; aril red; seed brown.

2. Variation: In the present sense, *Myristica insipida* is more restricted than with Sinclair, because I have reinstated the much resembling and related species *M. muelleri* Warb. from Queensland. Despite this exclusion, the remaining material now going under *M. insipida* is still rather heterogeneous, and roughly three groups can be recognized: 1) material from the Tanimbar Is., which is characterized by very well developed papillae on the lower leaf surface (lens, × 60), and the fruit being rather elongated, covered with dark rusty tomentum of comparatively short hairs, up to 0.5 mm long only; 2) plants at present enumerated for New Guinea deviate by having the lower half of the androphore with scattered pale brown hairs, the androphore of material from Tanimbar and Australia being glabrous; collections from New Guinea may have the tertiary venation on the lower leaf surface raised and distinct as well as flattish and rather indistinct (e.g. *Brass 6430*) and the bracteoles persistent as well as

late caducous (e.g. *Brass 6505*); 3) the northern Australian material contains the type specimens of *M. insipida* and most of its synonyms and is characterized by generally distinct reticulation on the lower leaf surface, persistent bracteoles, a glabrous androphore, and the fruit with generally rather pale brown or bright brown tomentum with hairs to c. 1 mm long.

3. As a whole, *M. insipida* is a species characterized by its subpersistent tomentum of widely spaced hairs on the lower leaf surface, the usually distinct papillae on the lower leaf surface, the rather widely spaced lateral nerves, the rather woolly flowers, the mostly glabrous androphore (partly also pubescent in New Guinean material) and the comparatively long-haired fruit with 'woolly' hairs to c. 1 mm long.

4. Sinclair (Gard. Bull. Sing. 23, 1968, p. 357) accepted *M. insipida* also for the Solomon Is., invalidly described as *M. gualdalcanalensis*; in my present view I prefer to exclude the Solomon Islands material from *M. insipida*.

7. Myristica lancifolia Poiret

Myristica lancifolia Poiret in Lamarck, Encycl. Méth. Bot. Suppl. 4, 1 (= 12) (1816) 35 [non *M. lancifolia* Poepp. ex Warb., 1897; nec *M. lancifolia* Merr., 1923]. — For synonyms, references, and typification see under the subspecies.

Distribution. Two subspecies in the Moluccas and W New Guinea (Waigeo I. and Vogelkop Peninsula). The demarcation of *M. lancifolia* with certain variable material of *M. globosa* s.l. from New Guinea is still unclear.

KEY TO THE SUBSPECIES

1a. Leaves elliptic-oblong to lanceolate. Male perianth narrow, 4–4.5 × 1.5–1.8 mm; pedicel 1–3.5 mm long. Fruit small, 1.3–1.6 cm long. Obi, Waigeo, Vogelkop Peninsula ..... **a.** subsp. **lancifolia**

b. Leaves various but never lanceolate. Male flowers somewhat larger; perianth (4–)4.5–6 × 1.8–2.5 mm. Fruit 2.2–2.6 cm long. Moluccas ..... **b.** subsp. **montana**

a. subsp. lancifolia – Fig. 1: 7a.

Myristica lancifolia Poiret in Lamarck, Encycl. Méth. Bot. Suppl. 4, 1 (= 12) (1816) 35; Sinclair, Gard. Bull. Sing. 23 (1968) 456, fig. 79 (var. *lancifolia*), p.p. (see notes). — Type: *Labillardière s.n.* (B, lost; iso FI, P), Pulau Waigeo.

Myristica papuana Scheffer, Ann. Jard. Bot. Buitenz. 1 (1876) 47; F. v. Muell., Descr. Notes Papuan Pl. 1, 5 (1877) 96. — *Myristica montana* Roxb. var. *papuana* (Scheffer) Warb., Monog. Myrist. (1897) 514. — Type: *Teijsmann 7585* (BO; iso L), Vogelkop Peninsula.

Leaves variable in shape, elliptic-oblong to lanceolate; lateral nerves 8–14 pairs, comparatively rather wide apart, sometimes very faint beneath. Male flower pedicel 1–3.5 mm long; male perianth narrow, 4–4.5 × 1.5–1.8 mm. Fruit ellipsoid or short ellipsoid, small, 1.3–1.6 × 0.9–1.1 cm.

Distribution. NW New Guinea (Waigeo I., Vogelkop Peninsula) and NE Moluccas (Obi): *Saänan 50*; *de Vogel 4034*.

N o t e s. 1. Fieldnotes: Found in hillside forest and riverine forest; humus soil over limestone, sandy clay on limestone; in Waigeo I. common along many creeks; 0–650 m. Small to rather large and straight tree, to 15 m tall. Stem somewhat fluted. Bark brown with numerous longitudinal fissures, not peeling off. Flowers yellowish. Fruit light brown or ochre, (immature?) aril yellow.

2. *Myristica lancifolia* var. *lancifolia* was accepted by Sinclair in a wider sense than I do my present subsp. *lancifolia*. At present most of the material cited by Sinclair from New Guinea, including that from the Aru Is., is relegated to other taxa.

b. subsp. **montana** (Roxb.) de Wilde, *stat. nov.* – **Fig. 1: 7b.**

Myristica montana Roxb., [Hort. Beng. (1814) 105, nom. nud.] Fl. Ind. Carey's ed. 3 (1832) 846; Warb., Monog. Myrist. (1897) 512, t. 15 fig. 1-6. — *Myristica lancifolia* Poiret var. *montana* (Roxb.) Sinclair, Gard. Bull. Sing. 23 (1968) 467, fig. 82. — T y p e: *Wallich Cat. 6792, Smith s.n.* in Herb. Roxb. (from Banda I.; see Sinclair, l.c.).

Myristica diversifolia Miq., Ann. Mus. Bot. Lugd.-Bat. 1, 2 (1864) 205. — T y p e s: *Teijsmann 1951* (Ceram), *1964, 5057* (Ambon); *de Vriese s.n.* (Ambon) (U).

Leaves variable in shape, ovate-elliptic to oblong, not lanceolate; lateral nerves 12–20 pairs, generally rather closely parallel, faint or rather distinct beneath. Male flower pedicel 2.5–7 mm long; male perianth (broader than in subsp. *lancifolia*) 4.5–6 × 1.8–2.5 mm. Fruit ellipsoid-oblong, top narrowly rounded or subacute, 2.2–2.6(–3.0) × 1.0–1.3 cm.

D i s t r i b u t i o n. Moluccas (Halmaheira, Bacan, Obi, Buru, Ceram, Ambon; Banda, no material seen; Tanimbar Is.).

MOLUCCAS. Halmaheira: *Reinwardt (97)*; *de Vogel 3081, 4358, 4404, 4480.* — Bacan: *de Vogel 3528, 3882, 3893.* — Obi: *de Vogel 4136, 4171.* — Buru: *Maskuri 1151*; *Toxopeus 641.* — Ceram: *Binnendijk 138*; *Buwalda 5927*; *Ellen 43*; *Kornassi 954*; *Kuswata & Soepadmo 13, 16, 90*; *Ramlanto 327*; *Rutten 1614, 2097*; *Teijsmann 16751*; *de Vriese s.n. (96)*; *Warburg 17645.* — Ambon: *Buwalda 6115*; *Ramlanto 462*; *Robinson 1877, 2033, 2042*; *Saänan (exp. van Hulstijn) 22*; *de Vriese s.n. (81).* — Tanimbar Is.: *bb 24257, 24304*; *van Borssum Waalkes 3300.*

Culta Hort. Bogor (origin Ceram): *Aya Nitta 15018*; *Rastini 89, 95, 183*; *Sinclair 10030, 10031*; *Sutrisno 123.*

N o t e s. 1. Fieldnotes: Forest on clay and loam soil, over grey schist, limestone, alluvial soils, porous soils, stony soils; 0–900 m altitude. Medium or low tree; bole straight, without or with a few buttresses, bark blackish brown or dark brown, either smooth or slightly longitudinally cracked, rather fissured or not, peeling off or not. Flowers cream, greenish yellow, or yellow, once recorded as fragrant. Fruit brownish yellow (ochre), aril red, seed dark brown or blackish brown.

2. *Myristica lancifolia* subsp. *montana* coincides completely with the var. *montana* as accepted by Sinclair.

8. **Myristica lepidota** Blume

Myristica lepidota Blume, Rumphia 1 (1837) 183, t. 57; Sinclair, Gard. Bull. Sing. 23 (1968) 265, fig. 29. — *Myristica microcarpa* Zipp., nom. nud. in sched. — T y p e: *Zippelius (159a)* (L; iso CAL, P, U, n.v.).

D i s t r i b u t i o n. Two subspecies in E Moluccas and W & SW New Guinea.

KEY TO THE SUBSPECIES

1a. Lower leaf surface with a dense persistent tomentum. Androphore minutely pubescent in the lower half ..... **a.** subsp. **lepidota**

b. Lower leaf surface early glabrescent with a scarce minute tomentum. Androphore glabrous or at base with few very small pale hairs less than 0.1 mm ..... **b.** subsp. **montanoides**

a. subsp. **lepidota** – **Fig. 1: 8a.**

Leaves beneath rather woolly with pale cinnamon or grey-brown interwoven hairs 0.1–0.2 mm long. Male perianth 2–2.5 mm long; anthers 5; lower half of androphore minutely pale grey-white pubescent with hairs c. 0.1 mm or less.

Distribution. Lowland SW New Guinea and Moluccas (Aru Is., Pulau Wokam): *bb 15068, 25255, 25368*; *Buwalda 4906, 5132*.

Notes. 1. Fieldnotes: Rain forest of flat country, on sandy or clayey alluvial soils; 0–150 m altitude. Rather tall tree, 35 m, dbh up to c. 50 cm. Flowers yellow, fruit yellow.

2. This subspecies, identical with *M. lepidota* as treated by Sinclair, is distinct by its slender twigs and small leaves with short but dense persistent tomentum on the lower surface. Both male and female flowers are small, c. 2–2.5 mm long only, with rather short pedicels, on small wart-like inflorescences of the *Knema*-type. The fruits are ellipsoid-oblong or rather pear-shaped or obovoid, subsessile, with comparatively short thick stalks.

3. I agree with the *pro parte* references to this species, as pointed out by Sinclair, l.c. p. 265, 267.

4. Sinclair described the male perianths as 3–5 mm long, but I found them, when fully grown, to be much smaller. Also I do not agree with his statement that there are 10 anthers; actually there are only 5, i.e. 10 contiguous thecae. Furthermore, Sinclair described a short sterile apex at the synandrium, not seen in flowers of subsp. *lepidota* examined by me.

b. subsp. **montanoides** (Warb.) de Wilde, *stat. nov.* – **Fig. 1: 8b.**

Myristica montanoides Warb., Monog. Myrist. (1897) 514. — *Myristica globosa* auct. non. Warb.: Sinclair, Gard. Bull. Sing. 23 (1968) 378, p.p., as for the synonym *M. montanoides* only. — Type: *Beccari FI 7756* (FI) (& photographs).

Leaves beneath early glabrescent from minute dispersed pale hairs less than 0.1 mm long. Male perianth 3(–4) mm long; anthers 5 or 6; androphore somewhat grooved corresponding with the anthers, glabrous or nearly so, with only at base a few very small pale hairs less than 0.1 mm long.

Distribution. Vogelkop Peninsula (W New Guinea) and NE Moluccas (Ternate, Obi, Bacan): *bb 23777*; *Beccari FI 7756*; *de Vogel 3858*.

Notes. 1. Fieldnotes: A low or medium tree of primary and disturbed forest, hill ridge forest; loamy soil with stones; 50–600 m altitude. Bark of trunk recorded as fissured, not peeling off, or scaly. Buttresses few, up to 50 cm high and out.

Flowers yellowish, fruit orange, light brown, or pale brown with abundant ochre-hyaline exudate.

2. Resembles *M. tristis* from the same distribution area, which differs by much larger and differently shaped male flowers and by larger almost globose fruit with thick pericarp.

3. *Myristica lepidota* subsp. *montanoides* is based on *M. montanoides* Warb., a name placed by Sinclair in the synonymy of the widespread *M. globosa*. *Myristica montanoides*, however, is easily distinguished by its very small male flowers and smallish, rather elongate fruit. By these two characters it appeared to be extremely close to *M. lepidota*, which essentially only differs by the conspicuous persistent tomentum on the lower leaf surface. I have treated *M. montanoides* as a subspecies of *M. lepidota*, both taxa having an adjacent but different area of distribution.

4. Warburg (l.c. p. 514) described the male perianth as 4 mm long, but this must be regarded as being a maximum.

9. Myristica mindanaensis Warb. – Fig. 1: 9.

Myristica mindanaensis Warb., Monog. Myrist. (1897) 497, t. 13 fig. 1-2. — T y p e: *Warburg 13300* (B, lost; iso K, L; G, M, n.v.).

Myristica fatua Houtt. var. *morotaiensis* Sinclair, Gard. Bull. Sing. 23 (1968) 292, fig. 36A. — T y p e: *Kostermans 771* (K; iso L; A, BO, LAE, PNH, SING, n.v.).

D i s t r i b u t i o n. Philippines (Mindanao) and Moluccas.

MOLUCCAS. Morotai: *Kostermans 697, 771*. — Halmaheira: *de Vogel 3113, 4386, 4514*; *Whitmore c.s. TCW. 3676*. — Bacan: *bb 16446*; *de Vogel 3721, 3753*. — Obi: *Atasrip 48*. — Buru: *bb 22844*. — Ceram: *bb 25816*; *Kuswata & Soepadmo 57, 71, 125*.

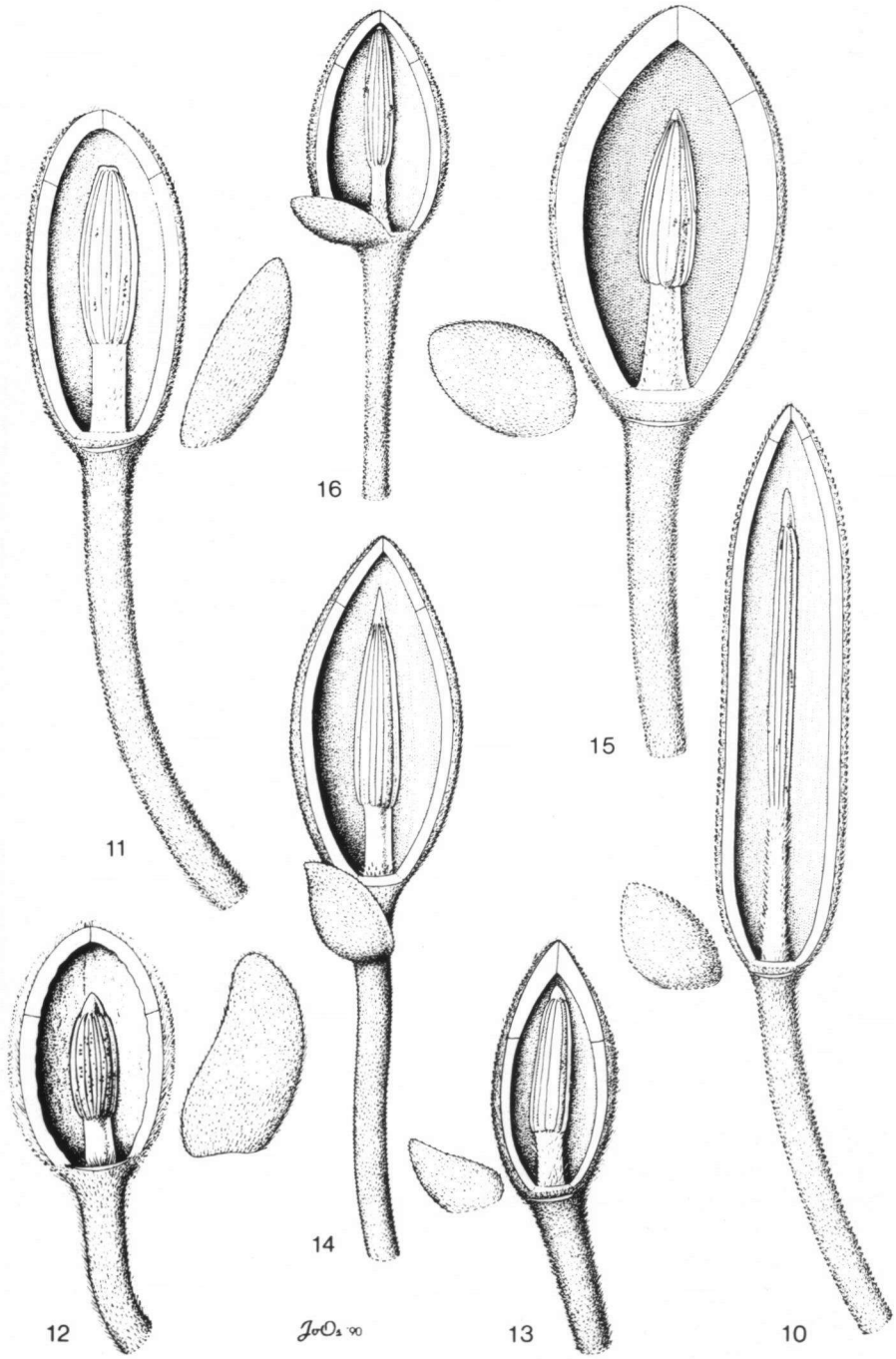
N o t e s. 1. Fieldnotes: Tree of lowland primary and secondary forest, on good soils, alluvial soil (inundated after heavy rains), hill slopes; sandy clay soil, deep clayey soil (bedrock grey schists); 0–250(–700) m altitude. Erect tree; buttresses inconspicuous, low prop-roots once recorded. Bark blackish brown, longitudinally fissured or cracked, or very fissured, not peeling off. Flowers fascicled, rusty. Fruit pale ochre, brown, or yellowish; aril orange-red or red; seed (testa) brown.

2. This is a lowland species, differing from *M. fatua* by its usually distinctly ridged twig-apices, by its much less developed tomentum on flowers and on the lower leaf surface (old leaves glabrescent), short tomentum of leaf buds (hairs c. 0.1 mm long or less), smaller fruit with very short tomentum, and somewhat smaller flowers, opening at anthesis to only c. 1/3 (but see note 3).

3. The material assigned to the present species is homogeneous; only the male perianth in the type and some other specimens from Mindanao seem to split in anthesis as deep as nearly halfway. In other material (e.g. *Kuswata & Soepadmo 57*), the perianth is somewhat more slender, opening at anthesis only to c. 1/4–1/3.

4. Papillae on the lower leaf surface are often conspicuous, especially in specimens from Bacan, Obi, Halmaheira, and Ceram.

5. The circumscription of the present species, including Sinclair's *M. fatua* var. *morotaiensis*, became evident after removing a number of specimens identified in the herbaria by Sinclair as *M. fatua* var. *fatua* 'glabrous form'.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10. Myristica pubicarpa de Wilde, *spec. nov.* – Figs. 2: 10; 3a–e.

Myristica succedaneae relata et simillima, sed gemmis foliorum 0,5–1 mm longe pilosis, foliis subtus tomento inconspicuo e pilis singulis haud intertextis 0,1 mm longis indutis differt. Inflorescentiae typi ut in genere *Knema* invenitur, usque ad 5 mm longae, pauce florigerae; perianthium masculinum elongatum, (10–)13–15 mm longum, apice tantum aperto. Flores feminei sessiles, bracteola caduca, circa ad medium pedicelli instructa. Ovarium dense pubescens. Fructus tomento denso saturate brunneo et persistenti ornatum. — T y p u s: *Pleyte 310* (L; iso BO, K), Halmaheira.

Tree 10–25 m. Related to and much resembling *M. succedanea*, but differing by the leaf bud provided with hairs 0.5–1 mm long, the lower leaf surface with very inconspicuous tomentum with scattered (not densely interwoven) hairs c. 0.1 mm long. Male inflorescences of the *Knema*-type, up to 5 mm; male perianth elongate, (10–)13–15 mm long, opening at the apex only; female inflorescences sessile, without common peduncle, bracteoles caducous, situated about halfway the pedicels; ovary densely pubescent, fruit provided with dense dark brown persistent tomentum.

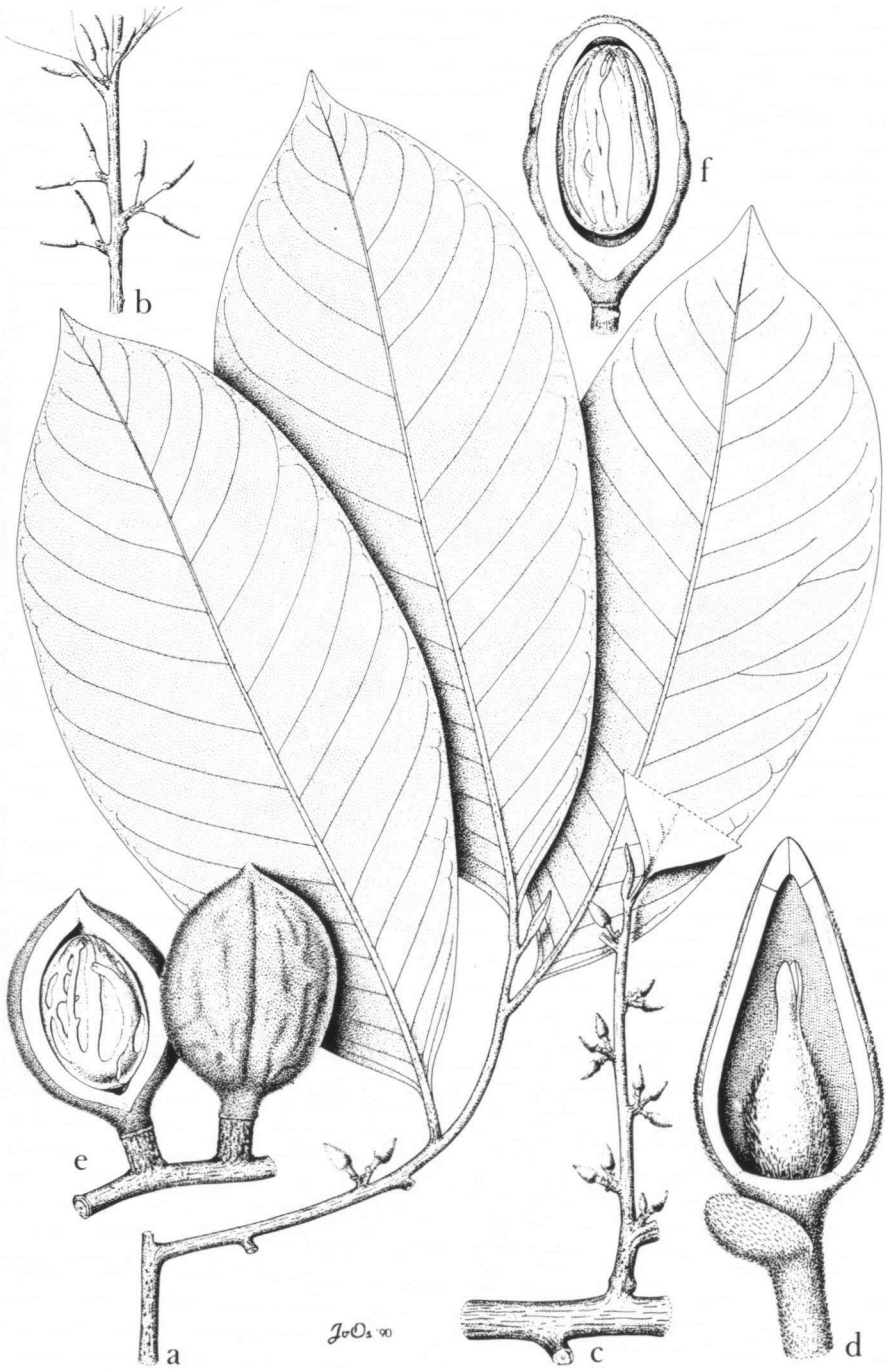
D i s t r i b u t i o n. N Moluccas, apparently endemic to Halmaheira and Obi: *Pleyte 310*; *de Vogel 3979, 4000* (male fl.), *4092* (p.p. for the flowering twigs and part of the fruits only; the other part of the fruits is *M. succedanea*, see there).

N o t e s. 1. Fieldnotes: Solitary trees; locally common in primary open or rather dense foot-hill forest; 500–600 m altitude. Trees to 25 m, bole up to 25 cm dbh, straight; low buttresses or low stilt roots. Outer bark grey-brown or brown, not fissured, slightly peeling off or not at all. Flowers yellow. Fruit dark brown by indument; aril red.

2. This species is easily identified by its large elongate male flowers and *Knema*-type of inflorescences. Obviously, it is closely related to *M. succedanea* from nearby Ternate, Tidore, and Bacan. Our present new species possibly is identical with the 'Pala radja' as originally mentioned by Teijsmann (Natuurk. Tijdschr. Ned. Indië 23, 1861, 337) for Obi, and discussed by Warburg (Monog. Myrist., 1887, 455) under *Myristica speciosa* (in my treatment a synonym of *M. succedanea*).

3. Apart from the strikingly different male flowers (see fig.) and inflorescences, *M. pubicarpa* differs from *M. succedanea* as the latter has 1) a subpersistent very dense (but low) tomentum on the lower leaf surface, having a different leaf-surface structure; 2) usually more coriaceous leaves with somewhat less lateral nerves; 3) much shorter pubescence on twig apex, leaf bud, and flowers; 4) usually distinctly peduncled inflorescences, those of *M. pubicarpa* being sessile; 5) flowers with the perianth not angular at the apex and with a persistent or late-falling bracteole, the latter situated at the top of the pedicel, embracing the base of the perianth; and 6) the

Fig. 2. Male flowers with bracteole of Moluccan *Myristica*: mature perianths just before anthesis, lengthwise opened to show androecium; perianths in anthesis cleaving to the depths as indicated by thin lines; all × 5. — **10.** *M. pubicarpa* de Wilde (*de Vogel 4000*); **11.** *M. robusta* de Wilde (*de Vogel 3918*, type); **12.** *M. sangowoensis* (Sinclair) de Wilde (*Whitmore c.s. TCW 3608*); **13.** *M. simiarum* A. DC. subsp. *celebica* (Miq.) de Wilde (*Koorders 18161β*); **14.** *M. subalulata* Miq. (*Aet 16*, exp. Lundquist, SW New Guinea); **15.** *M. succedanea* Blume (*de Vogel 3626*); **16.** *M. tristis* Warb. (*van Royen 3579*, Vogelkop Peninsula).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fruits and seed somewhat larger, shorter pubescent, and largely glabrescent. See further note 6.

4. Because of the structure of the inflorescences, namely sessile like the *Knema*-type (similar in male and female specimens), it keys out rather apart from its obviously close relative *M. succedanea.*

5. The smallish ellipsoid-oblong seeds in the type, *Pleyte 310* from Halmaheira, are different in shape as compared to those from Obi (*de Vogel 3979, 4092*), which are broadly ovoid-ellipsoid; however, the size of the fruit and structure of the seed are identical.

6. As compared with those of *M. succedanea* the dried fruit of *M. pubicarpa* is somewhat smaller and generally more globose and with a distinct dark brown coarse-mealy tomentum, the pericarp is more woody, the seed broadly ellipsoid to subglobose, somewhat smaller, with a thick fatty aril deeply sunken into the seed, leaving deep grooves when removed; in *M. succedanea* the seeds are larger, probably generally more ellipsoid, almost smooth, and enveloped by a much thinner aril.

The photograph published by Nitta (J. Jap. Bot. 64, 7, 1989, pl. II) under the name *M. succedanea,* 'Pala Tidore', might well represent *M. pubicarpa.*

11. Myristica robusta de Wilde, *spec. nov.* – Fig. 2: 11.

A speciebus ceteris generis *Myristica* differt habitu robusto, ramulis 5–10 mm diam., cortice vetustiore striato vel minute folioloso. Folia basi rotundata vel subcordata, subtus subglabra, papillis obscuris, 30–40 cm longa, 14–20 cm lata; foliorum gemmae pilis 0,1–0,2 mm longis instructae. Inflorescentiae robustae, typo ut in genere *Knema* invenitur; flores masculini magni, pedicello (10–)14 cm longo, perianthio 8,5 mm longo; androecium c. 7 mm longo, apice sterili subnullo. — T y p u s: *de Vogel 3918* (L; iso BO, n.v.), Bacan, N Moluccas.

Tree c. 15 m. Twigs stout, towards the apex 5–10 mm diam., older bark striate or finely flaking. Leaves 30–40 × 14–20 cm, base rounded or subcordate, lower leaf surface almost glabrous, papillae not obvious; leaf bud with hairs 0.1–0.2 mm long. Inflorescences stout, of the *Knema*-type; male flowers large, pedicel (10–)14 mm long, perianth 8.5 mm long, at anthesis split for c. 1/5; androecium c. 7 mm long, sterile apex almost absent.

D i s t r i b u t i o n. Known only from the type.

N o t e s. 1. Fieldnotes: A solitary tree, c. 15 m high, in disturbed, c. 50 m high forest with little undergrowth; alluvial flat with on some places stagnant water; c. 5 m altitude. Outer bark strongly fissured, not peeling off. Flowers in November, yellowish brown by indument.

Fig. 3. *Myristica pubicarpa* de Wilde. a. Habit of female-flowering leafy twig, × 0.5; b. portion of twig with male inflorescences, × 0.5 (for male flowers, see fig. 2: 10); c. portion of twig with female inflorescences, × 0.5; d. mature female flower, the perianth opened lengthwise, cleft at anthesis to the depth as indicated at the top, × 5; e. portion of twig with two infructescences, each with one fruit; one fruit opened to show subglobose seed with thick aril, × 0.5. — *Myristica succedanea* Blume. f. Fruit, opened lengthwise to show ellipsoid seed with thin dried aril, × 0.5 (a *de Vogel 3979*; b *de Vogel 4000*; c, d *de Vogel 4092*; e, f *de Vogel 4092*, p.p.).

2. As noted above this species is known only from the type, collected in a lowland forest type apparently rapidly disappearing. The species is quite distinct by its stout twigs and leaves, and stout *Knema*-type of inflorescences, the male flowers being comparatively large, c. 8 mm long.

3. *Myristica robusta* seems to be most related to the widespread *M. fatua*, which differs by 1) its beneath pubescent leaves and 2) its smaller male flowers. It also comes close to *M. frugifera* from the Philippines, only known in fruit, but that species is distinct by its essentially paniculate type of inflorescence.

12. Myristica sangowoensis (Sinclair) de Wilde, *stat. nov.* – Fig. 2: 12.

Myristica fatua Houtt. var. *sangowoensis* Sinclair, Gard. Bull. Sing. 23 (1968) 304, fig. 36 B, C. — T y p e: *Kostermans 1039* (K; iso L; A, BO, LAE, PNH, SING, n.v.).

D i s t r i b u t i o n. Moluccas (Morotai, Halmaheira, Bacan): *bb 23138*; *Kostermans 1039*; *Whitmore c.s. TCW 3608*.

N o t e s. 1. Fieldnotes: Found as medium-sized tree in submontane and lower montane forest; rain forest on ridge with abundant Fagaceae; volcanic soil; on G. Sangawo (Morotai) many specimens seen; 400–800 m altitude. Bark dark brown, fibrous inside. Leaves golden brown below, becoming grey. Flowers golden yellow in bud. Fruit red.

2. This species is based on *M. fatua* var. *sangowoensis* Sinclair, with as type *Kostermans 1039*, with immature and submature fruits. I have seen two additional specimens, *bb 23138*, with mature fruits, determined by Sinclair as *M. fatua* var. *fatua*, and a recently collected male flowering specimen, *Whitmore c.s. TCW 3608*. It is curious that Sinclair does not comment on *bb 23138*, as it has fruits quite differing from those of *M. fatua*, including those from the area of our present species. The fruit of *M. fatua* subsp. *fatua* is smaller with a thinner pericarp and a tomentum of longer hairs, 0.5–1 mm long; that of subsp. *affinis* (Sulawesi) has a thick pericarp but differs by a much more conspicuous tomentum; the male flowers of *M. fatua* generally are smaller and those of subsp. *affinis* lack a sterile apex on the synandrium.

13. Myristica simiarum A. DC.

Myristica simiarum A. DC., Ann. Sc. Nat. Bot. 4, 4 (1855) 29; Prod. 14, 1 (1856) 192. — *Myristica elliptica* Wall. ex Hook. f. & Thomson var. *simiarum* (A. DC.) Sinclair, Gard. Bull. Sing. 16 (1958) 356; 23 (1968) 62 (key), 190, fig. 12. — T y p e: *Callery 34* (G; iso P, n.v.), Luzon, Manila.

For synonyms and further references see under the subspecies.

D i s t r i b u t i o n. Borneo (NE Kalimantan, W Sarawak), Sulawesi, Moluccas (Bacan, Sula Is.), Philippines.

N o t e. A variable species in which, according to the area of distribution and based on rather weak differences in the fruits, three subspecies can be recognized: subsp. *simiarum*, subsp. *calcarica*, and subsp. *celebica*, only the latter occurring in the Moluccas.

subsp. **celebica** (Miq.) de Wilde, *comb. nov.* – **Fig. 2: 13.**

Myristica celebica Miq., Ann. Mus. Bot. Lugd.-Bat. 2, 1 (1865) 47; Warb., Monog. Myrist. (1897) 395, t. 15 fig. 1-6; Koorders, Fl. Noord-Oost Celebes (1898) 570 [not *M. celebica* Gandoger, 1919 = *M. fatua* Houtt.]. — *Myristica elliptica* Hook. f. & Thomson var. *celebica* (Miq.) Sinclair, Gard. Bull. Sing. 16 (1958) 356; 23 (1968) 194, fig. 12 F. — T y p e s: *Forsten s.n.* (L), Sulawesi; *Teijsmann 5801* (BO, U); *de Vriese s.n.*, Bacan (*M. fallax* Miq., in sched.) (L, lecto; MEL, n.v.); *de Vriese s.n.*, Buru (no specimens seen).

Myristica fragrans Houtt. forma *sylvestris* Miq., Ann. Mus. Bot. Lugd.- Bat. 1, 2 (1864) 205; ibid. 2, 1 (1865) 48 (sub *M. celebica* Miq.). — T y p e: *Teijsmann 5872* (BO, SING, U).

Fruit (broadly) ellipsoid or ovoid, 3–3.5 cm long, pseudostalk stout, 4–5 mm broad; dry pericarp 4–5 mm thick. Leaves glabrescent beneath or with scattered hairs.

D i s t r i b u t i o n. Sulawesi (incl. Moena I.), Philippines (Zamboanga); Moluccas (Buru, no specimens seen; Bacan, Sula): *bb 28806, 28814, 28824, 29828, 29830.*

N o t e s. 1. Fieldnotes: Tree to 30 m tall, recorded for forest on alluvial flat; 10–900 m altitude. Bark much fissured, peeling off or not. No buttresses. Leaves whitish beneath. Flowers (female) golden yellow; fruit green with brown pubescence when immature, golden or orange-brown when ripe; aril bright red.

2. Subsp. *celebica* is closely related to the other two subspecies; it has considerably larger fruits than subsp. *simiarum*; its leaves are less densely pubescent than those of subsp. *calcarea* from limestone in NE Kalimantan; subsp. *celebica* was never recorded from limestone.

3. Sinclair treated this subspecies as a variety of the related variable species *M. elliptica* which was divided by him into three varieties, var. *elliptica*, var. *celebica*, and var. *simiarum*; in Gard. Bull. Sing. 23 (1968) 62 he gave a key separating these varieties. I agree for a large part with the characters used in this key, but I have a different judgement and I use some additional characters.

14. Myristica subalulata Miq. — Fig. 2: 14.

Myristica subalulata Miq., Ann. Mus. Bot. Lugd.-Bat. 2, 1 (1865) 47; Sinclair, Gard. Bull. Sing. 23 (1968) 385. — T y p e: *Zippelius s.n.* (U, holo; K, L; CAL, n.v.).

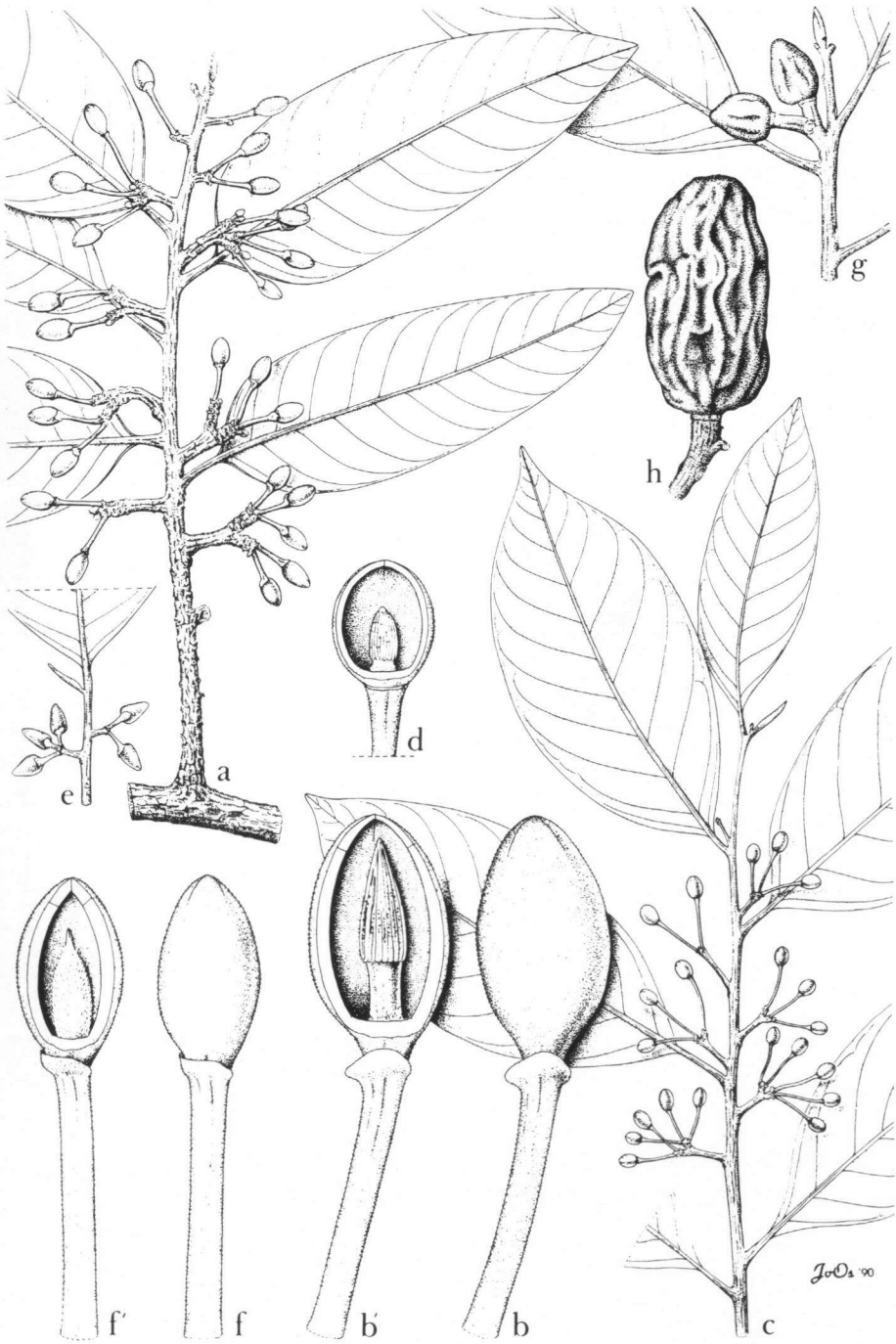
For synonyms and more references see Sinclair, l.c.

D i s t r i b u t i o n. New Guinea, E to d'Entrecasteaux Islands, and SE Moluccas: Kai Is. [*Jaheri 85 (713), 91 (712)*], Aru Is. [P. Wokam: *Beccari FI 7742, 7745* (FI, n.v.)].

N o t e. Small tree, common and widespread in its distributional area, from sea level to (in New Guinea) c. 2200 m altitude. Distinct from all other *Myristicas* by its conspicuous ridged and winged twigs, with swollen portions inhabited by ants.

15. Myristica succedanea Blume – Figs. 2: 15; 3f; 4.

Myristica succedanea Reinw. ex Blume, Rumphia 1 (1837) 186; Warb., Monog. Myrist. (1897) 474, t. 17 fig. 1-4; Sinclair, Gard. Bull. Sing. 23 (1968) 238, fig. 21; Nitta & Murata, Acta Phytotax. Geobot. 40 (1989) 167; J. Jap. Bot. 64, 7 (1989) Pl. II. — T y p e: *Reinwardt s.n.* (L; iso CAL, P, n.v.).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Myristica radja Miq. (non Rumph.), Ann. Mus. Bot. Lugd.-Bat. 1, 2 (1864) 206, p.p.; Warb., Monog. Myrist. (1897) sub syn. *M. speciosa* Warb. p. 453 (*Pala radja* Teijsmann, Natuurk. Tijdschr. Ned. Indië 23, 1861, 337). — T y p e: *Teijsmann s.n.* (culta Bogor, ex Batjan: U), p.p. (see Sinclair, l.c.).

Myristica succedanea var. *brevifolia* Scheffer & Teijsmann, Ann. Jard. Bot. Buitenz. 1 (1876) 61, nom. nud. (*Teijsmann 7586*; BO; iso K, L; MEL, n.v.).

Myristica speciosa Warb., Monog. Myrist. (1897) 453, t. 17. fig. 1-4. — T y p e s: *Beccari FI 7730* (FI), *7731* (FI); *Warburg 18297* (B, lost); *Teijsmann s.n.* (U).

Myristica schefferi Warb., Monog. Myrist. (1897) 477, t. 17 fig. 1-4. — T y p e: *Teijsmann s.n.* (BO, as *Pala onin*; L); *Warburg s.n.* (culta; lost); *Beccari FI 7694–7698* (FI, culta Bogor) (see Sinclair, l.c. p. 241).

Myristica lakilaki Murata & Nitta, Acta Phytotax. Geobot. 90 (1989) 177. — T y p e: *de Vogel 3668* (BO; iso L).

D i s t r i b u t i o n. N Moluccas (Ternate, Tidore, Bacan; said to be cultivated in Halmaheira): Anonymous (cult. hort. Bogor); *Beccari 7698* (male & female), *7730, 7731* (FI); *Beguin 1006*; *Lam 3713*; *Sinclair 10028* (culta); *Teijsmann 7586, 7587*; *de Vogel 3544, 3559, 3628, 3636, 3642, 3668, 4092* (p.p., for part of the fruits only); *Whitmore c.s. TCW 3571*; *Woerjantoro 86* (culta).

H a b i t a t. Lowland and montane primary forest; forest with little undergrowth on level place on ridge; deep clayey soil, bedrock grey schists; on ridges, steep slopes, in ravines; 0–1100 m altitude. Flowers October; fruits July–October.

U s e s. Said to be formerly cultivated on a small scale in Halmaheira; nuts aromatic.

N o t e s. 1. Fieldnotes: Small tree of well-drained lowland and montane primary forest; 0–1100 m altitude. Clear bole to 15 m, straight, no buttresses (but according to Sinclair sometimes with stilt roots). Bark not fissured, either not peeling off, or strongly so with roundish flakes, or bark with longitudinal cracks. Leaves glossy dark green above, silvery beneath. Flowers (female) fragrant, perianth cream, pale yellow, or yellowish green with brownish tinge; ovary minutely rusty pubescent. Fruit yellowish green; aril red.

2. This species is rather homogeneous, characterized among other species with the *M. fragrans*-type of inflorescence (*M. fragrans*; *M. impressinervia*, partly, from Sulawesi; *M. argentea* from New Guinea) by the stoutish twigs and the large flowers. Apparently, it is endemic to the islands W of Halmaheira, viz. Ternate, Tidore, and Bacan. The species seems closely related to and much resembles *M. pubicarpa* from nearby Halmaheira and Obi (for differences see there) and also *M. argentea* (see note 7).

Fig. 4. *Myristica succedanea* Blume. a. Leafy branch with male inflorescences, × 0.5; b, b'. mature male flowers, closed and halved respectively, showing small persistent bracteoles, × 3; c. young leafy branch with male inflorescences with immature flowers, × 0.5; d. lengthwise halved perianth of the same, × 3; e. apical portion of branch with female inflorescences (axillary of fallen reduced leaves), × 0.5; f, f'. lateral view of female flower, respectively lengthwise opened female flower, showing thinly hairy ovary, × 3; g. apical portion of leafy twig with infructescence with developing immature fruit, × 0.5; h. mature fruit (dried), × 0.5 (a, b, b' *de Vogel 3626*; c, d *de Vogel 3544*; e *Woerjantoro 98* (culta Bot. Garden Bogor); f, f' *de Vogel 3642*; g, h *de Vogel 3628*).

3. The fruit of *Lam 3713*, from Tidore, has a rather persisting tomentum of pale brown, scurfy, minute hairs, but this tomentum is not sharply different from that of other fruiting specimens; the persistent tomentum in the closely related *M. pubicarpa* is dark brown with longer hairs. See further under that species.

The fruits belonging to *de Vogel 4092* (a collection from Obi which belongs to the related species *M. pubicarpa*), in L kept separate in the carpological collection, are a mixture of mature fruits of *M. pubicarpa* and very large mature fruits (c. 8 × 4.5 cm, with large seeds, c. 4 cm long) of the present *M. succedanea*. It is not known how these latter fruits, apparently not belonging to any of the other *de Vogel*-collections of *M. succedanea*, got mixed with those of *M. pubicarpa*. They may have been added later, possibly either cultivated or wild specimens from Obi, but complete fruiting collections of *M. succedanea* from Obi are not known.

4. The perianth of female flowers in herbarium specimens opens for only c. 1/5 (–1/4) and falls off as a whole by abscission at its base; male perianths open at apex for about 1/8 only.

5. Female specimens may have the ovary either thinly (pale) brown pubescent or much more densely hairy; the latter is the case with e.g. some specimens collected from trees in cultivation in the Bogor Botanic Garden, and also in *Beccari 7698* (in FI) from Ternate, a syntype of *M. schefferi* Warb. If later study based on more material reveals that within my present circumscription of *M. succedanea* two taxa are involved, this Beccari specimen may serve as a lectotype for *M. schefferi* Warb.

6. Nitta & Murata, J. Jap. Bot. 64, 7 (1989) Pl. II, published a colour photograph of living *M. succedanea* in fruit; I could not check the name by means of a herbarium voucher specimen given.

7. I have seen one collection of *M. argentea* Warb., *Mirmanto & Ruskandi ERI 8* (BO, L), collected in a garden in Ceram. This is a species of W New Guinea, locally cultivated for its mace and seed ('pala makassar'). Taxonomically it is close to *M. fragrans* and especially to *M. succedanea* from which it chiefly differs by membranous, not coriaceous leaves with silvery undersurface caused by minute (sub)persistent scales. It has a glabrous staminal column and an only thinly pubescent ovary which grows into a glabrous fruit otherwise much resembling that of *M. succedanea*. The resemblance and differences are also discussed by Sinclair, Gard. Bull. Sing. 23 (1968) 235–238, fig. 20.

16. Myristica tristis Warb. – Fig. 2: 16.

Myristica tristis Warb., Monog. Myrist. (1897) 444, t. 19. — *Myristica globosa* auct. non. Warb.: Sinclair, Gard. Bull. Sing. 23 (1968) 378, fig. 63, p.p., for most of the material from the Moluccas, Vogelkop Peninsula, and Mios Noem I., incl. fig. 63 A–C, only. — T y p e: *Beccari 96* (FI, acc. nos. *7657, 7657a*; also photographs seen), Vogelkop Peninsula, Sorong.

D i s t r i b u t i o n. W New Guinea (Vogelkop Peninsula, some islands in the Geelvinck Bay, Fak-Fak area) and N Moluccas (E Ceram, Obi, Morotai): *bb 25843*; *Buwalda 5597, 5641*; *Kostermans 7887, 7889*; *de Vogel 4058, 4161*.

N o t e s. 1. Fieldnotes: Locally common as solitary tree in lowland and submontane forest; forest on limestone, clayey or sandy-clayey soil over limestone; 0–600 m altitude. Bark either strongly fissured or strongly flaking. Recorded as with but-

tresses, or prop-roots, or both. Fruit yellow-brown or yellow-green; aril bright red, fresh seed greyish black.

2. This species was included by Sinclair in *M. globosa* Warb., with Sinclair a widespread variable species, comprising various species proposed by Warburg based on type specimens from a wide range from the Moluccas to E New Guinea.

In my present circumscription of *M. tristis* this species contains the specimens from the western part of the large area of *M. globosa* as accepted by Sinclair. Indeed, *M. tristis* is closely related to *M. globosa,* but is distinct and chiefly characterized by 1) its very slender twigs, 2) the membranous leaves drying dark brown or blackish, and 3) the almost completely globose fruit with thick pericarp, 4–8 mm thick.

3. *Myristica tristis,* apart from being close to *M. globosa* (see note 2), is also closely related to or resembles the variable *M. lancifolia* and *M. montana,* both species with thicker and differently shaped leaves with a different venation, more cylindric (not ovoid-oblong) male perianth, and smallish ellipsoid fruit.

For differences with the much resembling *M. lepidota* subsp. *montanoides,* see there. A further resembling species is *M. cumingii* from the Philippines, differing by the male perianth that at anthesis splits to nearly halfway, and by larger fruit.

4. The male flowers of the type specimen, *Beccari 96* (FI), presumably are immature and could become somewhat larger in anthesis.

ACKNOWLEDGEMENTS

I express my thanks to the keepers of the herbaria of BM (Natural History) and K for permission to study their collections, and for a number of specimens that I received on loan for closer examination. Dr. H.O. Sleumer was so kind to provide the Latin diagnoses of new taxa. Mr. J.H. van Os prepared the drawings, as usual.

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The numbers refer to the numbers of the accepted species as given in this account. New species and combinations are printed in **bold**, synonyms in *italics.*