
New Species and a New Combination in *Mabea* (Euphorbiaceae) from South America

Hans-Joachim Esser

Universität Hamburg, Institut für Allgemeine Botanik und Botanischer Garten Hamburg, Ohnhorststrasse 18, 122609 Hamburg, Germany

ABSTRACT. Five species of *Mabea* new to science are proposed and distinguished from their relatives, based to a large extent on characters of pistillate flowers and leaves. All have a limited distribution. Another species is reduced to a subspecies of *M. fistulifera*.

Mabea Aublet is a neotropical genus of Euphorbiaceae that has its greatest diversity in the Amazon region. It comprises approximately 40 species, some of which are new to science and are described herein. Useful diagnostic characters for the genus are the six-parted calyx of pistillate flowers (other numbers of sepals rarely reported, mostly for single plants), the irregularly but mostly five-parted calyx of staminate flowers, the persistent and dense pubescence of the pistillate flowers and fruits, and the peculiar dendritic type of hairs. Other characters cited in older literature do not cover all species of *Mabea* (e.g., long pedicels and styles) or are not useful at all.

In distinguishing the species of *Mabea*, characters of pistillate flowers (e.g., sepals and color of pubescence) and leaves (e.g., venation and glands) are most useful in many cases. Fruits, seeds, and staminate flowers, on the other hand, often are quite uniform. A revision including a more detailed discussion will be published later.

Mabea arenicola Esser, sp. nov. TYPE: Brazil. Amazonas: basin of Rio Negro, road Camanaus-Uaupés, near Camanaus, 2 Nov. 1971 (fl), G. T. Prance, P. J. M. Maas, P. B. Woolcott, O. P. Monteiro & J. F. Ramos M15993 (holotype, NY; isotypes, F, S, U, W). Figure 1.

Arbor *M. speciosae* Mueller Argoviensis affinis sed thyraxis non nisi 15–20 mm latis (1–)2(–4) floribus femineis instructis, stylis 6–10 mm longis, glandibus bractearum florum masculinorum plerumque distincte elevatis, laminis foliorum glabris differt.

Tree up to 10 m tall, sometimes climbing. Twigs glabrous. Leaf blades elliptical to oblong, (11–)14–19 cm long, (5–)6–8 cm wide, apically acuminate (acumen at least as long as wide, often twice as long

as wide), basally obtuse to rounded, indistinctly serrate to entire; secondary veins below the acumen in 14–17(–19) pairs, clearly brochidodromous; glabrous; abaxially glaucous because of cuticular folds, only larger veins excepted; marginal nectar glands 5–20 on each half of blade, 0.35–0.55 mm diam., situated abaxially a little away and separated from the marginal sclerenchyma. Petioles 11–15 mm long, glabrous. Stipules not known. Thyrses yellowish to reddish, mostly compound; staminate part 4–8 cm long, 15–20 mm diam., axis with few short (≤ 0.1 mm) rarely branched hairs. Glands of bracts of staminate cymules always elevated, mostly by their own length, length of glands 2 mm; cymules 3(–7)-flowered, pedicels 3–5 mm long, free; stamens up to 30 per flower. Pistillate flowers (1–)2(–4); bracts glandless or with glands smaller than those of distal bracts; pedicel 5–8 mm long, in fruit up to 22 mm; sepals glandless, up to 2.5 mm long, not extending beyond ovary, not divided; ovary brownish pubescent; style 6–10 mm, in fruit up to 12 mm long. Fruits 16 mm long; shape unknown. Seeds 9 mm long, 7.5 mm wide, 6.5 mm deep, slightly carunculate.

Mabea arenicola is known from widely separated localities of northwestern Amazonia. It is a species of noninundated, woody vegetation on white sands, i.e., the “caatingas” of the upper Rio Negro. Collected in flower March to May, September, November; in fruit March to May, July, November.

Vernacular names: marima, rebentillo.

Mabea arenicola is most closely related to *M. speciosa* Mueller Argoviensis. Its type specimens have been distributed as *M. caudata* Pax & K. Hoffmann, which is a synonym of *M. speciosa*.

Without flowers *Mabea arenicola* is hardly distinguishable from *M. speciosa*. The leaves are always glabrous and thus are different from typical *M. speciosa*, but fall within the range of variation of that species. *Mabea arenicola* differs from *M. speciosa* most remarkably by the discontinuously narrower diameter of the staminate part of the thyrses. Other differences include: the bracteal glands of the staminate cymules are more elevated from

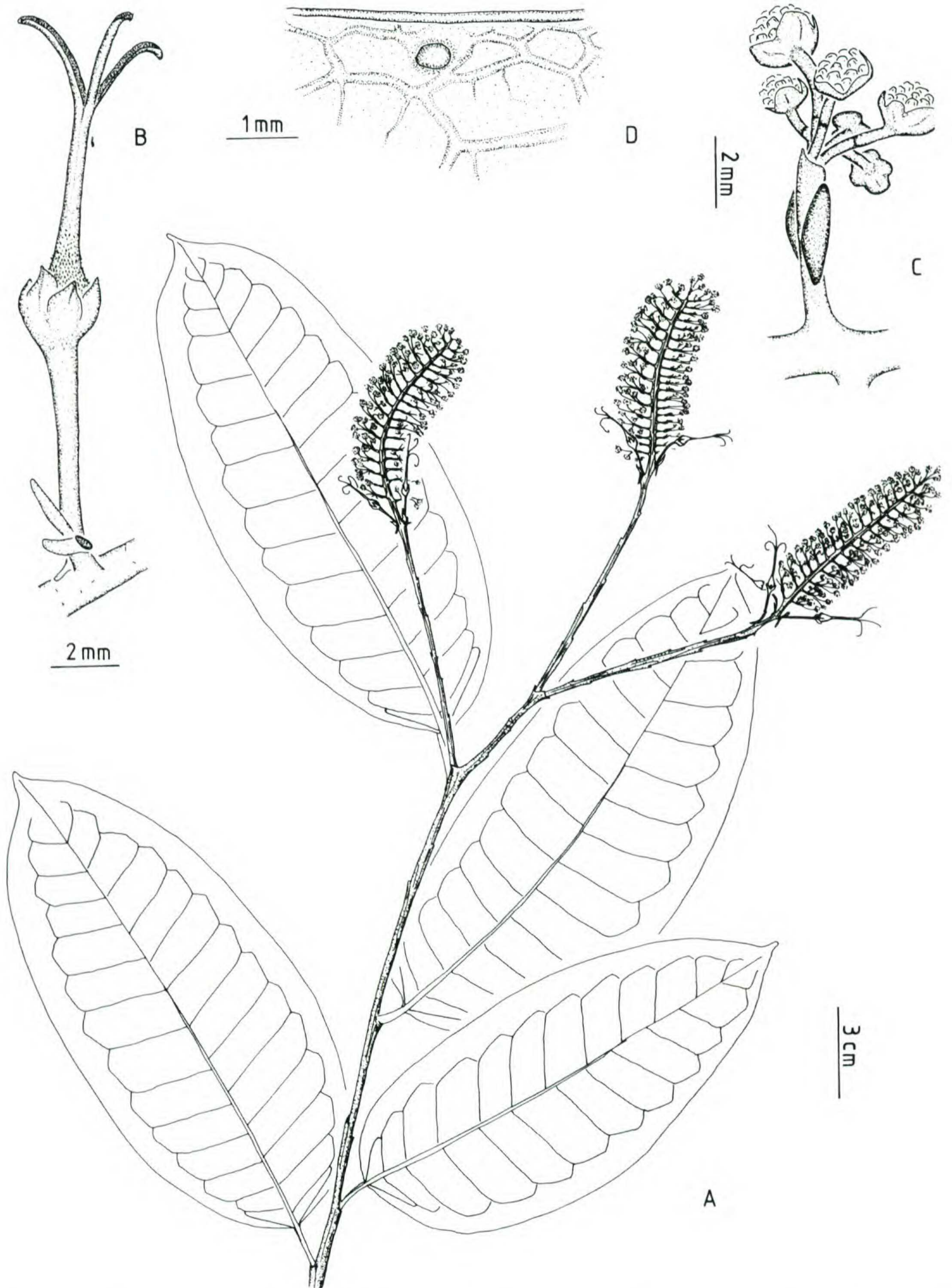


Figure 1. *Mabea arenicola* Esser. —A. Habit. —B. Pistillate flower. —C. Staminate cymule. —D. Portion of abaxial leaf margin showing glands. (All drawn from the type collection, *Prance et al.* 15993.)

the inflorescence axis in *M. arenicola* than in *M. speciosa* (hardly elevated only in *Liesner* 3786); there are fewer pistillate flowers per thyrses in *M. arenicola* than in *M. speciosa*. Whereas many-flowered staminate cymules are rare in *M. speciosa*, they are quite common in *M. arenicola*. This last character occurs in more than half of the specimens of *M. arenicola*, but can vary within one specimen. Furthermore, the number of stamens per staminate flower of *M. arenicola* is smaller than is the case in *M. speciosa* with ca. 40–60 stamens; however, the variability of stamen number has been underestimated in the past and should be used with caution. The apically mucronate to rounded leaves of *M. subserrulata* Spruce ex Benth, which are not glaucous abaxially and do not bear leaf glands, distinguish that species from *M. arenicola*.

The distribution of *Mabea arenicola* is discontinuous, judged by the specimens known; it may be limited by the scattered distribution of white sand localities in Amazonia. It is at least partially sympatric with that of *M. speciosa* (e.g., in Colombia), but not of *M. subserrulata*.

The name of the species refers to the fact that up to now it is only known growing on white sands.

Paratypes. COLOMBIA. **Amazonas:** Río Igará–Paraná, La Chorrera, menant au amont des rapides, 17 Sep. 1973 (fl), *C. Sastre* 2241 (COL). VENEZUELA. **Territorio Federal Amazonas:** 8 km from San Carlos de Río Negro on road to Solano, 125 m, 19 Sep. 1975 (fl, imm. fr), *P. E. Berry* 1428 (NY); Dep. Casiquiare, alrededores de Yavita (río Temi) y cerca de la carretera Yavita–Pimichín hasta el km 5 hacia Pimichín, 125–140 m, 6–19 July 1969 (fr), *G. S. Bunting et al.* 3834 (U); road from San Fernando de Atabapo to Santa Barbara, 12–40 km from San Fernando, 110 m, 24 Mar. 1974 (fl), *A. Gentry & S. Tillett* 10871 (HBG); IVIC Study Area, 4 km E of San Carlos de Río Negro, ca. 20 km S of confluence of Río Negro and Brazo Casiquiare, 120 m, 23 Nov. 1977 (fl, fr), *R. L. Liesner* 3786 (DAV, MO), 4 Apr. 1979 (fl), *R. L. Liesner* 6107 (DAV, MO); 2 km E of San Carlos de Río Negro, 120 m, 7 Apr. 1979 (imm. fr), *R. L. Liesner* 6319 (DAV, MO), *R. L. Liesner* 6358 (DAV, MO); 3–5 km NE of San Carlos de Río Negro, 120 m, 4 May 1979 (fr), *R. L. Liesner* 7197 (DAV, MO); Yavita, 128 m, 2 Mar. 1942 (imm. fr), *Ll. Williams* 14172 (F, G).

Mabea longibracteata Esser, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Depto. Río Negro, along Río Mawarinuma, E of Cerro de la Neblina expedition base camp, 0°50'N, 66°09'W, 140 m, 2 May 1984 (fl), *W. W. Thomas* 3322 (holotype, DAV 104182). Figure 2.

Mabea similaris *M. speciosae* Mueller Argoviensis et *M. occidentali* Benth sed laminis foliorum sparse et perduranter pubescentibus, axe inflorescentiae dense pi-

loso, sepalis florum femineorum longitudinem duplicem ovariae adaequantibus saepe dimidio fassis, bracteis cymularum masculinarum 5–8 mm longis glandibus suis plus quam duplo longioribus.

Tree up to 12 m tall. Young twigs with dense, short pubescence. Leaf blades elliptic, (13–)17–25 cm long, 5.5–10.0 cm wide, apically acuminate (acumen at least twice as long as wide), basally obtuse to rounded, margin hardly serrate; secondary veins below the acumen in 17–23 pairs, distinctly brochidodromous; abaxially clearly and persistently but scattered pubescent, especially near midvein; glaucous only on intercostal fields, not on veins; 0–6 marginal glands on each half of blade, 0.1–0.3 mm diam., situated abaxially on the margin. Petioles (5–)7–10 mm long, pubescent. Stipules 20–25 mm long. Thyrses pale to greenish, not branched; staminate part 13–16 cm long, 3.5–5.0 cm wide, axis with dense indumentum of fairly long (up to 0.25(–0.4) mm), branched, sometimes also shortly papillate hairs. Bracts of staminate cymules 5–8 mm long, more than twice exceeding the bracteal glands, length of glands 2 mm, 0–1 mm removed from axis of thyrses; cymules three-flowered, pedicels 15–22 mm long, free; stamens ca. 40–60 per flower. Pistillate flowers 3–6; bracts glandless, rarely with glands similar to those of distal bracts; pedicel 14–23 mm, in fruit up to 24 mm long; sepals glandless, (3–)4–6 mm long, 2–3 mm wide, twice as long as ovary, often bifid apically; ovary brownish pubescent; style 15–25 mm long. Fruits 15–18 mm long, shape unknown. Seeds hardly carunculate, 10–12 mm long, 7.5–8.5 mm wide, 6–7 mm deep.

Mabea longibracteata is an endemic of the vicinity of Cerro de la Neblina. It grows in lowland rainforests on riverbanks and in swamps of clear and white water. Collected in flower May, December; in fruit July, December to February.

The type specimen of *Mabea longibracteata* has been distributed as *M. saramaccensis* Croizat.

Mabea longibracteata is most closely related to *M. occidentalis* Benth and *M. speciosa* Mueller Argoviensis, both of which occur allopatrically in noninundated primary rainforests of large parts of South and Central America. It differs from both species in the larger bracts of the staminate cymules, which surmount their glands by more than 2 mm, and in its sepal and stipule lengths, which are longer than is the case with its relatives. Correlated with this, the sepals of the female flowers often are a little bifid. Another difference is the persistent but only scattered indumentum of the leaves, which makes this new species distinguishable even without flowers. *Mabea occidentalis* always has glabrous

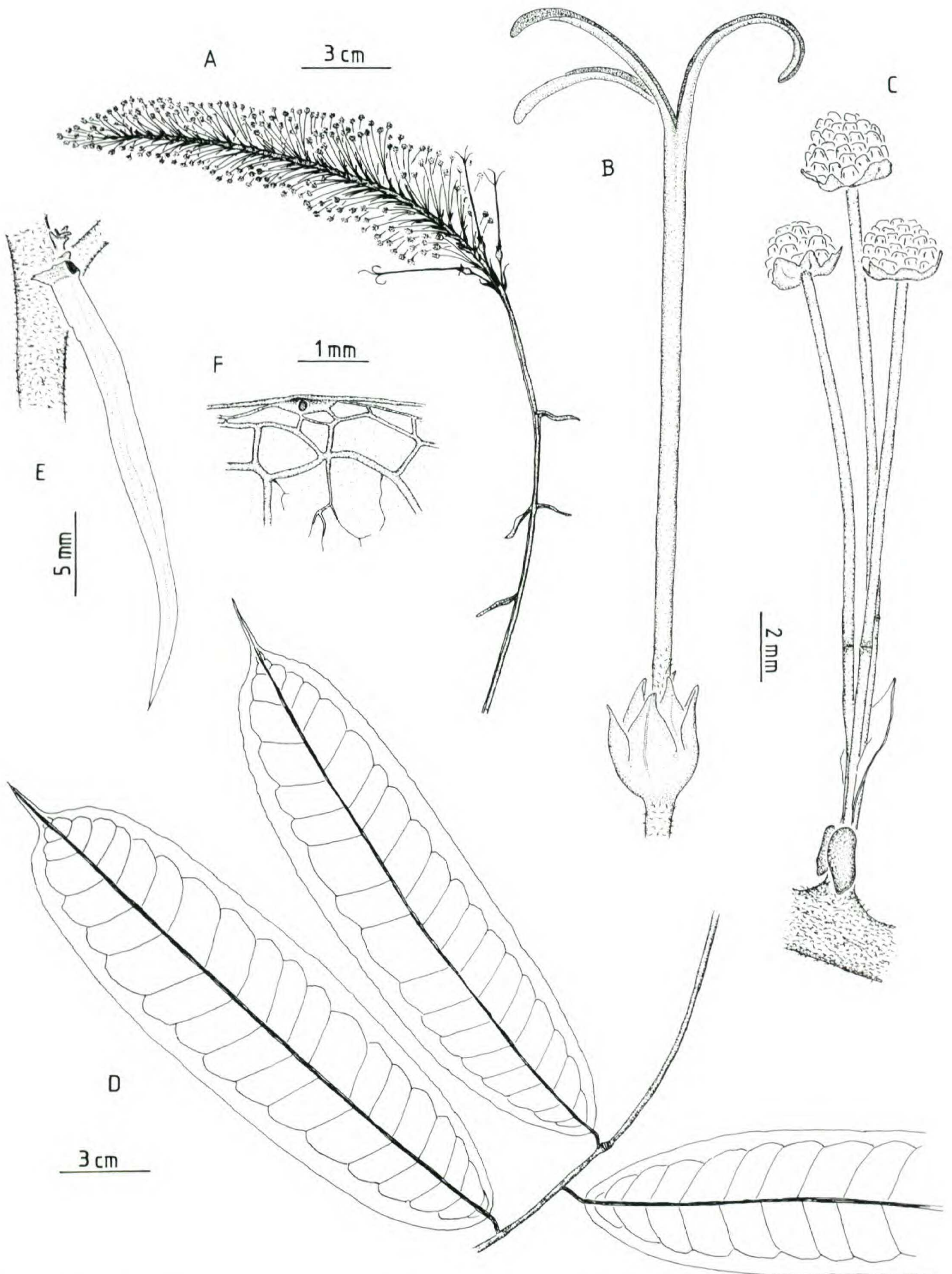


Figure 2. *Mabea longibracteata* Esser. —A. Inflorescence habit. —B. Pistillate flower. —C. Staminate cymule. —D. Leaves. —E. Stipule. —F. Portion of abaxial leaf margin showing glands. (A, D drawn from the type collection Thomas 3322; B, C, E, F from Gentry & Stein 47219.)

leaves, and *M. speciosa* bears a much denser pubescence if it is not completely glabrous.

Conspicuously long bracts, after which the species is named, are found only in species not closely related such as *Mabea klugii* Steyermark and *M. macrocalyx* Esser, which differ by much shorter styles and eucamptodromous leaf venation.

Paratypes. BRAZIL. **Amazonas:** Rios Negro, Cau-aburí, Maturacá, Serra da Neblina, between Missão Salesiana and Serra Pirapucú, 800–1,000 m, 23 Jan. 1966 (fr), *N. T. Silva & U. Brazão* NY 60861 (NY). VENEZUELA. **Territorio Federal Amazonas:** vicinity of Neblina Base Camp along Río Mawarinuma, along whitewater stream E of camp, 140 m, 4 Dec. 1984 (imm. fr), *T. B. Croat* 59606 (HBG, MO); Depto. Río Negro, upper Río Baria, 66°17–22'W, 1°01–0°51'N, 100 m, 20 July 1984 (fr), *G. Davidse* 27544 (HBG); swamp between Río Mawarinuma and headwaters of Río Baria, 66°15'W, 0°52'N, 140 m, 7 May 1984 (fl), *A. Gentry & B. Stein* 47219 (HBG); Depto. Río Negro, along stream to 0–2 km E of Cerro de la Neblina Base Camp, which is on Río Mawarinuma, 140 m, 22 Feb. 1984 (fr), *R. L. Liesner* 16181 (DAV, HBG); 1.5 km E of Cerro de la Neblina base camp, 0–3 km S of main river, 140 m, 2–3 Dec. 1984 (fl), *R. L. Liesner* 17423 (HBG), 2–3 Dec. 1984 (imm. fr), *R. L. Liesner* 17434 (HBG); Depto. Río Negro, along Río Baria (= Río Mawarinuma) just upstream from Base Camp, SW side of Cerro de la Neblina, 140 m, 16 Feb. 1985 (fr), *M. Nee* 30884 (NY, U).

Mabea macrocalyx Esser, sp. nov. TYPE: Venezuela. Apure: Reserva Forestal San Camilo, al suroeste del caserío San Camilo (El Nula), a lo largo de la Quebrada La Azulita, 280 m, 30 Mar. 1968 (fl, fr), *J. A. Steyermark, G. Bunting & C. Blanco* 101594 (holotype, NY; isotypes, DAV—2 sheets, NY, U, US). Figure 3.

Mabea laminae foliorum oblongo-ellipticis glabris non farinosis, sepalis florum femineorum magnis foliaceis pinnatinerviis partialiter pilosis glabrescentibus, fructibus 25–40 mm longis, cetera *M. klugii* Steyermark similis.

Tree up to 15 m. Young twigs with yellowish brown pubescence. Leaf blades elliptic to oblong, 13–21 cm long, 5.0–8.5 cm wide, apically acuminate (acumen less than twice as long as wide), basally obtuse to subcordate, hardly serrate; secondary veins below the acumen in 12–16(–19) pairs, eucamptodromous; glabrous; abaxially not glaucous; marginal glands 15–45 on each half of blade, 0.2–0.3(–0.5) mm diam., situated abaxially and not directly on the margin. Petioles 9–15 mm long, glabrous. Stipules ± 10 mm long. Thyrses not branched, staminate part 11–15 cm long, 3 cm diam., axis with dense indumentum of shortly papillate and longer (0.15–0.2 mm) branched hairs. Bracts of staminate cymules with mostly sessile and seldom ba-

sally elevated glands, length of glands 2 mm; cymules three-flowered, pedicels 12–14 mm long, free; stamens 25–40 per flower. Pistillate flowers 2–3; bracts with or without glands; pedicel 17–20 mm, in fruit up to 35 mm long; sepals leaflike, at anthesis 9–17 mm long, 3–8 mm wide, undivided, totally veiling the ovary, with conspicuous venation, pubescent only near base and on veins, glabrescent, sometimes with numerous minute marginal glands; ovary with lanate indumentum; style 10 mm, in fruit up to 22 mm long. Fruits 25–40 mm long, deeply sulcate, with lanate indumentum. Seeds 9–11 mm long, 6–9 mm wide, 7 mm deep, with large caruncle.

Mabea macrocalyx occurs in the Venezuelan part of the Andes, the Cordillera da Mérida. It grows in primary evergreen rainforests of 180–1,600 m altitude, often on sandy soils. Collected in flower February to April, June, July, September, October; in fruit February to May, July, September to November; sterile February.

Vernacular names: fruto de guacharaca, rabo de mula.

Mabea macrocalyx is easily recognized because of the large leaflike calyx lobes of its pistillate flowers and fruits. Remarkable are the size of these sepals, their conspicuous pinnate venation, their pubescence only near base and veins, and their glands, which resemble the marginal glands of leaf blades, but may be lacking. All these characters are unknown in any other species of *Mabea*. In most other morphological characters and in ecology it resembles *M. klugii* Steyermark and *M. elata* Steyermark. These two are probably the most closely related species and occur allopatrically: *M. klugii* from Costa Rica and Colombia southwards to Bolivia, *M. elata* in Ecuador and neighboring regions. Besides lacking the extraordinary sepals, they both differ by distinctly pubescent leaf blades with more conspicuous marginal serrulation and well-developed cuticular folds on their abaxial surfaces. The fruits of *M. klugii* are smaller (16–19 mm long) than those of *M. macrocalyx* and hardly sulcate; those of *M. elata* are unknown up to now. The bark of *M. macrocalyx* shows more conspicuous lenticels than observed in the other species.

Paratypes. VENEZUELA. **Apure:** Distr. Páez, Selva de Cutufí, between Cutufí on the Río Cutufí and the Río Sanare, 300–350 m, 8–12 Nov. 1982 (fr), *G. Davidse & A. C. González* 21961 (MO); Reserva Forestal San Camilo, Cerro Nulita, a lo largo meridional del Río Nulita, 4½–5 km al N del caserío San Camilo (El Nula), oeste de la carretera, 280 m, 3 Apr. 1968 (fr), *J. A. Steyermark et al.* 101770 (DAV, NY, U); Cerro Nulita, entre el Río Nulita y el caserío San Camilo (El Nula), 1.5 km al N de San Camilo, oeste de la carretera, en las filas y faldas

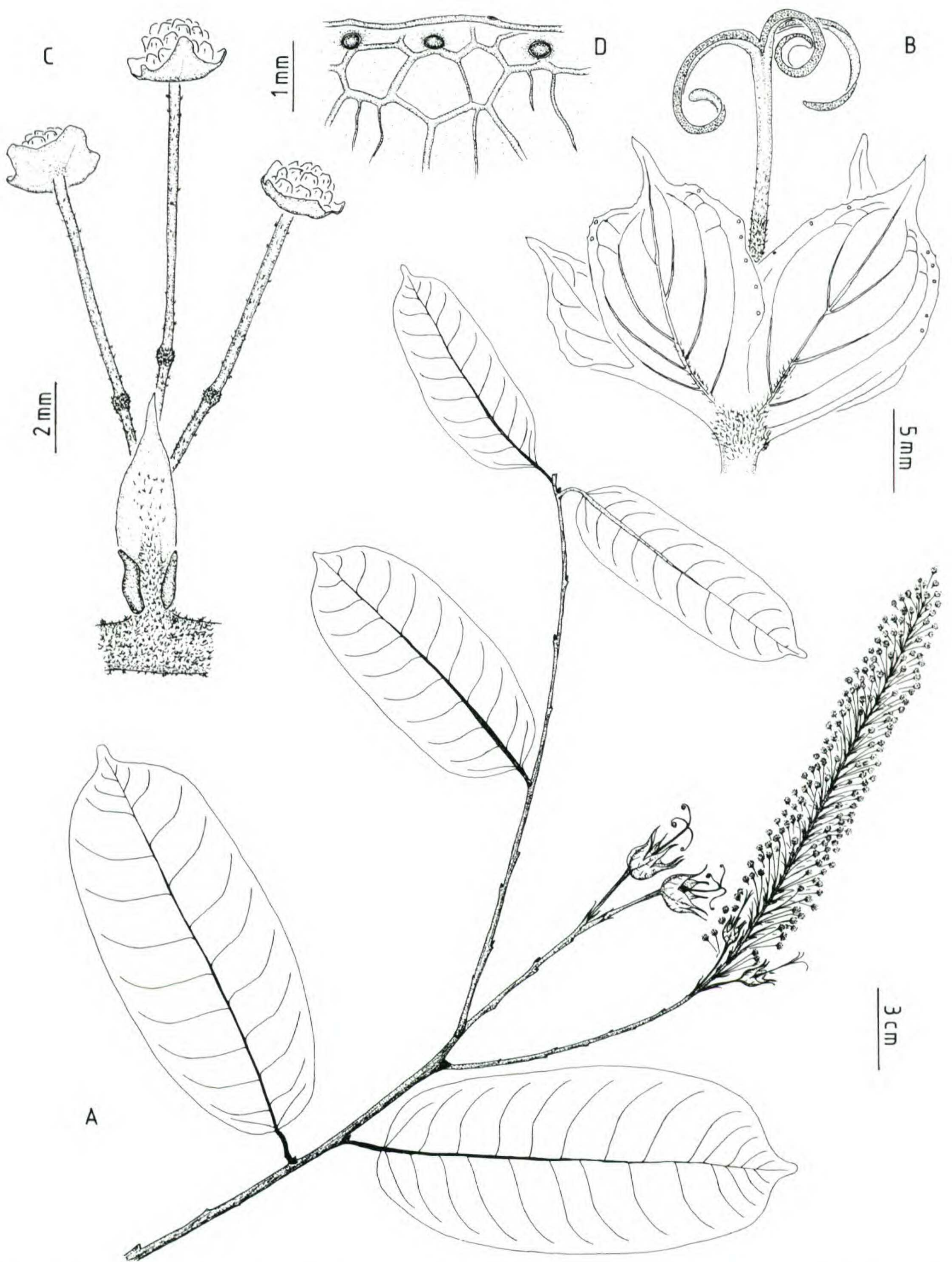


Figure 3. *Mabea macrocalyx* Esser. —A. Habit. —B. Pistillate flower. —C. Staminate cymule. —D. Portion of abaxial leaf margin showing glands. (All drawn from the type collection, *Steyermark et al. 101594.*)

pedregosas, 250–280 m, 4 Apr. 1968 (imm. fl), *J. A. Steyermark et al. 101856* (DAV, NY). **Barinas:** Altamira–Calderas, 850–1,600 m, 31 May 1957 (fr), *L. Bernardi 6857* (MER, NY—2 sheets); Distr. Pedraza, trail from Mesa de Canagua to Alto de La Aguada, ca. 23 km NW of Curbatí, 800–1,400 m, 17 Apr. 1988 (fl), *L. J. Dorr et al. 4764* (HBG); trail from Alto de La Aguada via Mesa de Canagua to El Algarrobo, 20 Apr. 1988 (fr), *L. J. Dorr et al. 4916* (HBG), 20 Apr. 1988 (fl), *L. J. Dorr et al. 4919* (HBG); Distr. Pedraza, trail from Mesa de Canagua to Cerro el Filón, W of the Río Curbatí, 600–880 m, 24 Nov. 1990 (fr), *L. J. Dorr et al. 7827* (HBG); Soledad, 20 km NO de Barinitas, 1,100 m, 28 Sep. 1953 (imm. fr), *E. L. Little, Jr. 15560* (MER); Distr. Bolívar, caserío La Soledad, a orillas de la carretera Mérida–Barinas, 1,600 m, 16 Feb. 1967 (imm. fr), *L. Marcano Berti 1517* (MER); La Soledad, 27 Sep. 1985 (fl), *L. Valverde 305* (MER); carretera rural Barinitas–Cacao, 3 Oct. 1989 (fl, imm. fr), *L. Valverde et al. 1177* (MER). **Lara:** Distr. Torres, Páramo Agua Linda, en la vecindad de las torres de relevo de TV y en el Fundo Orion, arriba de la aldea Palmarito (en la carretera Lara–Zulia ca. 35 km al este de El Venado), en km 12–15 de la vía, 1,100–1,200 m, 6–7 Sep. 1980 (fl, fr), *G. S. Bunting & A. Stoddart 9733* (DAV, NY). **Mérida:** Palmarito–Aguas Calientes, Zea, 800–850 m, 4 Feb. 1954 (fl, fr), *L. Bernardi 1063* (MER, NY); Pueblos del Sur, Sta. Cruz del Quemado, 900 m, June 1955 (fl), *L. Bernardi 2231* (MER, NY—2 sheets); Distr. Alberto Adriani, Munic. El Vigía, 180–200 m, 23 July 1965 (fr), *S. López-Palacios 203* (MER); Palmarito, entre Zea y Los Giros, 16 July 1982 (fl, imm. fr), *L. Marcano Berti et al. 982-116* (MER); Distr. Tovar, Los Giros near El Osa, ± 5 km from previous location, 700 m, 26 July 1983 (imm. fr), *H. van der Werff & R. Ortíz 5710* (HBG, U). **Táchira:** between Rubio and La Muleta, 1,200 m, 15 Feb. 1939 (fl), *A. H. G. Alston 7063* (BM); Distr. Córdoba, Cerro El Mirador, Los Caracaro, 350–510 m, 8 Feb. 1980 (ster.), *E. Ara 42* (MER); on Río San Buena, 10 km W of La Fundación, around Represa Dorada, 700–1,000 m, 13–15 Mar. 1980 (fr), *R. L. Liesner et al. 9569* (DAV); 10 km E of La Fundación (13–23 km by road), around Represa Dorada, 600–1,000 m, 10–13 Mar. 1981 (fr), *R. L. Liesner & A. González 10429* (MO), 30 Apr. 1981 (fl, imm. fr), *R. L. Liesner & M. Guariglia 11608* (MO); Cerro Las Minas, bordering Quebrada Las Minas, 18–20 km SE of Santa Ana, 1,150–1,200 m, 29 July 1979 (fr), *J. A. Steyermark & R. L. Liesner 119033* (DAV, MO); alrededores de la Represa La Honda Campamento Siberia, Complejo Hidroeléctrico Uribante-Caparo, 19 Sep. 1988 (fl, fr), *L. Valverde & I. Peña 1068* (MER).

Mabea ovata Esser, sp. nov. TYPE: Brazil. Pará: Rio Jarí, Monte Dourado, Planalto A, 5 Oct. 1968 (fl), *N. T. Silva 1120* (holotype, IAN 127497; isotypes, NY—2 sheets). Figure 4.

Mabea laminis foliorum ovatis vel ellipticis integris parce pubescentibus, glandulis marginalibus numquam vero abaxialibus, thyrsis 3.5–4 cm diametro, sepalis florum femineorum 6–9 mm longis saepissime divisis.

Tree 10 m tall. Young twigs sparsely pubescent, soon glabrescent. Leaf blades elliptic or ovate, (7–)9–

18 cm long, (3–)4–8 cm wide, apically acuminate (acumen at least twice as long as wide), basally obtuse to cordate, entire; secondary veins below the acumen in 12–15 pairs, brochidodromous, sometimes indistinctly so; sparsely tomentose to glabrous; abaxially mostly without cuticular folds, rarely farinose; marginal glands absent or 3–20 on each half of blade, 0.1–0.15 mm diam., situated not abaxially but directed outwards. Petioles 7–11 mm long, sparsely tomentose to glabrous. Stipules not known. Thyrses with red flowers, not branched; staminate part 8–12 cm long, 3.5–4.0 cm diam., axis with dense pubescence of shortly papillate and dispersed longer (0.2–0.35 mm) hairs. Glands of bracts of staminate cymules not or only for less than half their own length removed from axis, length of glands (2–)3–3.5 mm; cymules three-flowered, pedicels 15–18 mm long, free; stamens at least 50 per flower. Pistillate flowers 3–4; bracts glandless or with glands similar to those of distal bracts; pedicel 9–13 mm long; sepals 6–9 mm long, 2–4 mm wide, much longer than ovary, often bifid and therefore seemingly more than 6, glandless or rarely basally glandulous; ovary without brown indumentum; style 7–10 mm long. Fruits and seeds not known.

Mabea ovata is a species of terra-firme primary forests, known only from one locality in northeastern Amazonia. Collected in flower March, August, and October.

Vernacular name: taquarirana.

Mabea ovata is characterized by the sepals of pistillate flowers and some characters of the leaves. The sepals are unusually long and comparatively narrow and, in contrast to many other species, very often divided their entire length so that they simulate a larger number than six. They are only comparable to those of *M. elegans* Rusby (= *M. prancei* Emmerich, syn. nov.) and *M. uleana* Pax & K. Hoffmann, both of which grow on riverbanks and white sand areas of central Amazonia. These two species differ especially by their much narrower thyrses (diameter less than 2 cm) and characters of their leaves.

The leaves of *Mabea ovata* can be recognized by their shape, which may be elliptic but often is a little ovate, a shape quite unusual within *Mabea*. Therefore, the species is named for this character. Moreover, the leaf margins are unusual. Not only are the margins entire but the marginal glands are not abaxial ones as they are in nearly all other species. They are placed totally on the marginal sclerenchyma, if they are present at all. The secondary venation of *M. ovata* is more or less brochidodromous, sometimes intermediary to eucamp-

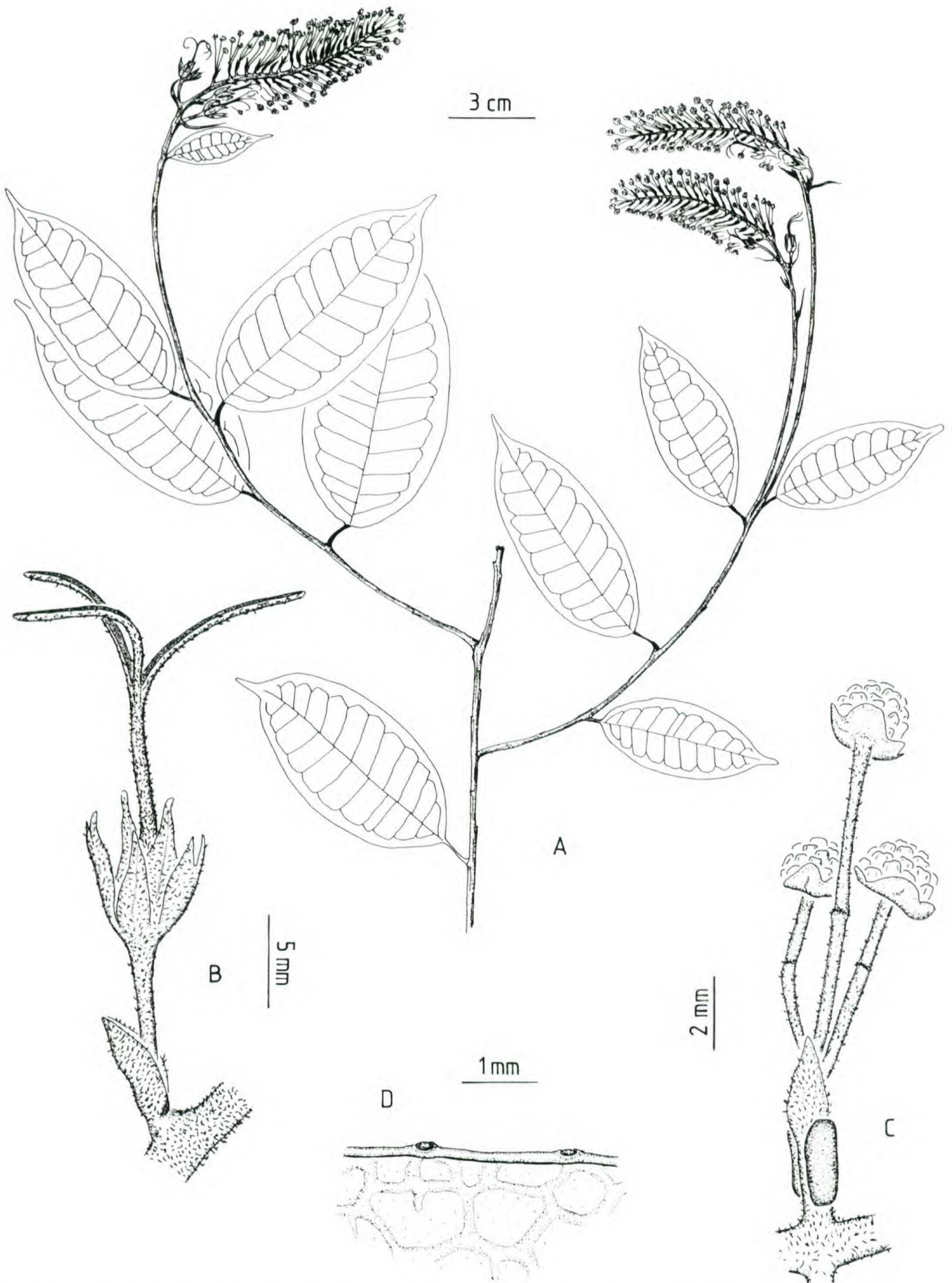


Figure 4. *Mabea ovata* Esser. —A. Habit. —B. Pistillate flower. —C. Staminate cymule. —D. Portion of abaxial leaf margin showing glands. (A–C drawn from Kubitzki 87-4; D from the type collection, Silva 1120.)

todromous; in other *Mabea* the two character states are clearly separate.

Paratypes. BRAZIL. **Pará:** Monte Dourado, Waldrand der Reserva "Água azul," 27 Mar. 1987 (fl), *K. Kubitzki 87-4* (HBG); Rio Jari, Planalto de Monte Dourado, 27 Aug. 1968 (fl), *E. de Oliveira 4799* (NY).

Mabea salicoides Esser, sp. nov. TYPE: Brazil. Amazonas: Estrada Manaus-Itacoatiara km 133, 11 July 1974 (fl), *W. Rodrigues & A. Loureiro 9489* (holotype, RB 222095; wood specimen, INPA Xil 5875 not seen). Figure 5.

Mabea lamini foliorum 11-17 cm longis 5 cm latis integris parce farinosis nervatura quasi brochidodroma glandulis paucis fere latrorsis, thyrso usque ad 8 mm diametro tripliciter ramoso ovarii ferrugineae pubescentibus et glandulis bractearum cymularum masculinarum sessilibus, numero staminum uniuscujusque floris 15 non superante, cetera *M. piriri* Aublet affinis.

Tree, 10 m tall, 18 cm DBH. Young twigs shortly tomentose, otherwise glabrous. Leaf blades elliptic, 11-17 cm long, 5 cm wide, apically acuminate (acumen one to two times as long as wide), basally acute to obtuse, margin entire; secondary veins below the acumen in (7-)9-11 pairs, brochidodromous; adaxially nearly glabrous, abaxially shortly tomentose, rarely totally glabrescent; cuticular folds indistinct to absent; marginal glands 0-3 on each half of blade, up to 0.3 mm diam., situated on marginal sclerenchyma. Petioles 10-12 mm long, glabrous. Stipules not known. Thyrses yellowish, compound with at least three orders of branches; staminate part 4 cm long, 6-8 mm diam., axis with distinct indumentum of hardly branched, 0.1-0.15-mm-long hairs. Glands of bracts of staminate cymules touching the inflorescence axis, length of glands 0.5-1.0 mm; cymules three-flowered, pedicels 1.5-3 mm long, free; (2-)5-15 stamens per flower. Pistillate flowers 0-2; bracts glandless; pedicel 5-9 mm, in fruit up to 25 mm long; sepals glandless, up to 2 mm long, not extending beyond ovary, not divided; ovary brownish pubescent; style 4 mm long. Fruits 15-16 mm long, shape unknown. Seeds 10 mm long, 9 mm wide, 8 mm deep, without caruncle.

This species grows in terra-firme high forest near Manaus in central Amazonia, locally frequent, on soils with fine texture. Collected in flower July, September.

Vernacular name: taquari.

Mabea piriri Aublet (= *M. maynensis* Mueller Argoviensis) exhibits a considerable amount of variation in the diameter of the inflorescences, ranging from 2 to 4 cm. This new taxon, with a diameter of 6-8 mm, however, cannot be included within the

concept of *M. piriri*. Furthermore, the bracteal glands of *M. salicoides* touch the axis on the entire length of the staminate part of the thyrses, a character state not observed in *M. piriri*. Correlated with the minute thyrses is the small number of stamens per flower, but this is a fallible character for *Mabea* at the species level. Characters of fruits and leaves do not differ significantly from those of *M. piriri*, although the pubescence, the wide loops of the secondary veins, i.e., the large distance of the consecutive secondary veins and the small number of them, would be unusual for *M. piriri*.

The other species of *Mabea* with very small thyrses (e.g., *M. pohliana* (Benth) Mueller Argoviensis) exhibit leaves with clearly different indumentum, marginal glands and in most cases, moreover, with eucamptodromous, not brochidodromous, secondary leaf venation.

The thyrses of this new species are reminiscent of catkins of genera like *Salix* L.; it is named for this resemblance.

Surprisingly, a plant collected in French Guiana resembles the cited specimens quite closely: GUYANE FRANÇAISE: Saül, Monts La Fumée Oeste, 53°12'W, 3°37'N, alt. 200-400 m, 30 Oct. 1982 (fl), *S. Mori & Boom 15146* (HBG); same tree, 9 Apr. 1983 (fr), *S. Mori & J. Pipoly 15556* (HBG). This tree differs from the ones from Brazil in greater height (20 m), abaxially clearly farinose leaves with 12-13 secondary veins and 10-18 abaxial glands on each half, and in thyrses with completely glandless bracts. Therefore, it only partially agrees with the diagnosis given for *M. salicoides*. In characters of pubescence, fruits, pistillate and staminate flowers it covers this species very well. Untypically glandless bracts are known from, e.g., *M. taquari* Aublet; the other mentioned differences do not seem to justify separation. The two specimens, therefore, represent *M. salicoides*.

Paratypes. BRAZIL. **Amazonas:** Estrada Manaus-Itacoatiara, km 106, 14 Sep. 1965 (fl, imm. fr), *W. Rodrigues & A. Loureiro 7161* (INPA); BR-174, km 64, depois 27 km leste no ZF-3 na Fazenda Esteio, Reserva 1301 do Projeto Dinamica Biologica de Fragmentos Florestais, 8 Jan. 1986 (fr), *D. D. Ackerly 121* (NY).

Mabea fistulifera C. Martius subsp. **bahiensis** (Emmerich) Esser, stat. nov. Basionym: *Mabea bahiensis* Emmerich, *Bradea* 5: 289. 1989. fig. 2. TYPE: Brazil. Bahia: Espigão Mestre, 34 km W of Barreiras, 710 m, 2 Mar. 1972 (fl), *W. R. Anderson, M. Stieber & J. H. Kirkbride, Jr.* NY 36449 (holotype, R not seen; isotypes, AAU, NY, US).

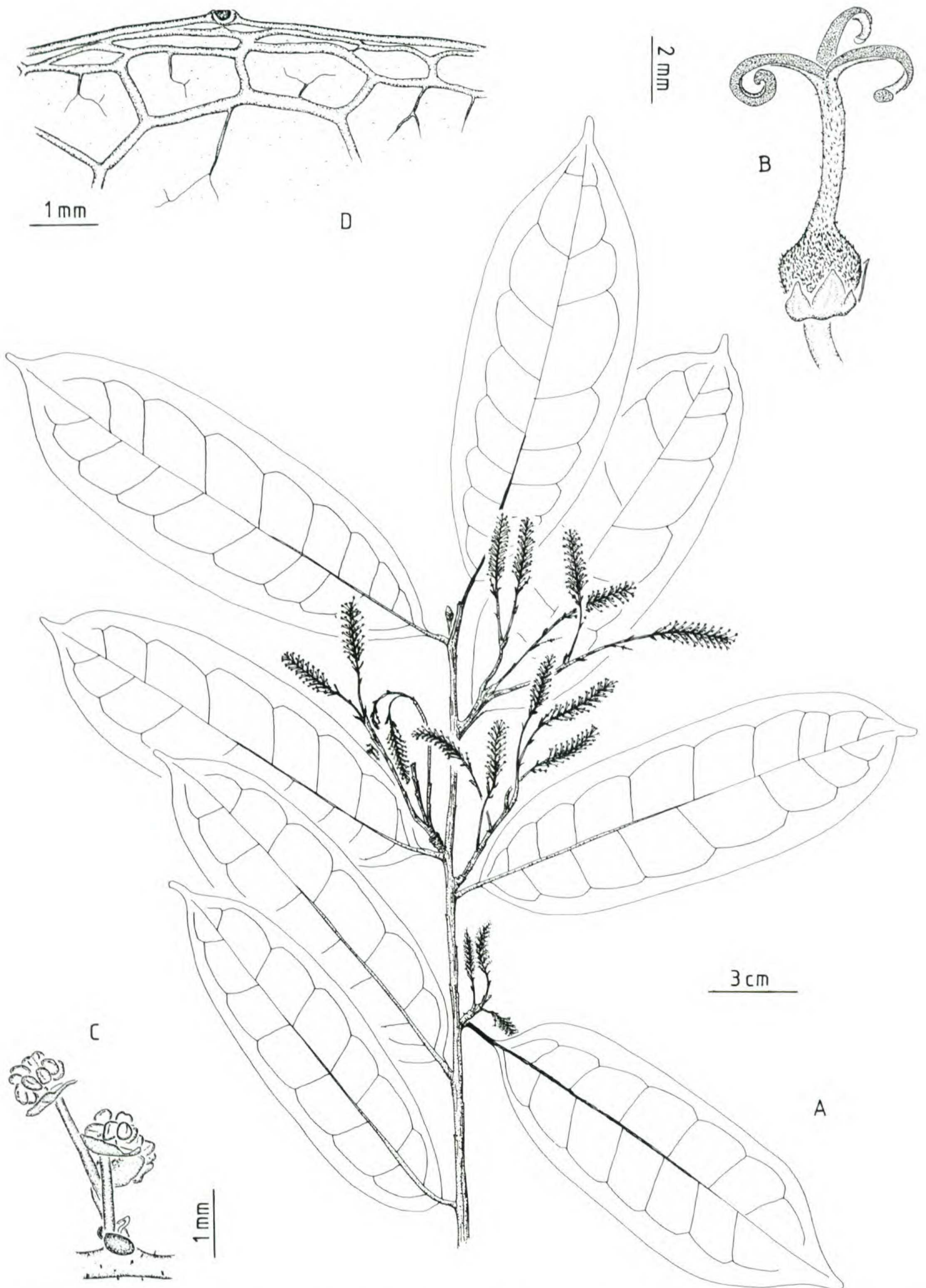


Figure 5. *Mabea salicoides* Esser. —A. Habit. —B. Pistillate flower. —C. Staminate cymule. —D. Portion of abaxial leaf margin showing glands. (A, D drawn from the type collection *Rodrigues & Loureiro* 9489; B, C from *Rodrigues & Loureiro* 7161.)

This taxon should not be accepted as a separate species. It is distributed allopatrically to the typical *Mabea fistulifera* and differs only by the indumentum on the entire abaxial leaf surface and by the nearly crenate, hardly serrate margin of the blades with somewhat larger space between the teeth. Reproductive characters do not differ in any significant way. Because the indumentum of *M. fistulifera* occurs constantly and characteristically only on the median part of the leaf blades, these differing plants should be admitted as separate on the subspecific level.

Additional specimens examined. BRAZIL. **Bahia:** Espigão Mestre, ca. 100 km WSW of Barreiras, 750–800 m, 8 Mar. 1972 (fl), *W. R. Anderson et al.* NY 36830 (F, NY); valley of the Rio das Ondas, slopes of Espigão Mestre, ca. 25 km W of Barreiras, 600 m, 3

Mar. 1971 (fl), *H. S. Irwin et al.* NY 31359 (AAU, DAV, K, NY); Mun. Barreiras, estrada Belém–Brasília, BR 020, 40 km de Barreiras, 45°17'W, 12°05'S, 26 Mar. 1984 (fl), *M. L. Moreira & E. F. Almeida* 11 (RB); São Desidério, margem da BR 020, prox. à divisa Bahia–Goiás, 20 Mar. 1981 (fl), *G. C. P. Pinto* 237/81 (RB); Mun. Barreiras, 45°09'W, 12°07'S, 1,140 m, 22 May 1984 (fl), *S. B. da Silva & R. A. Viegas* 354 (RB).

Acknowledgments. This article is based on a doctoral study by H.-J. Esser at the Faculty of Biology, University of Hamburg. It was supported by the Volkswagenstiftung. I thank the directors and curators of AAU, BM, COL, DAV, F, G, HBG, IAN, INPA, K, MER, MO, NY, RB, S, U, US, and W for the loan of specimens. Further thanks are due to C. Oberprieler for the drawings of the habits; all other drawings were made by the author.