THE CORRECT AUTHOR CITATION OF BUNCHOSIA (MALPIGHIACEAE) AND THREE NEW CENTRAL AMERICAN SPECIES[1]

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Dobson III, Frederick H. (Department of Biology, Saint Michael's College, Winooski, VT 05404). The correct author citation of *Bunchosia* (Malpighiaceae) and three new Central American species. Brittonia **29**: 183–190. 1977.—The genus *Bunchosia* is ascribed to Humboldt, Bonpland & Kunth and should be cited as *Bunchosia* Rich. *ex* H.B.K. Three new Central American species, **B. brevisurcularis, B. ternata,** and **B. tutensis,** are described, illustrated and plotted on a distribution map.

One result of my recent study of *Bunchosia* (Dobson, 1976) was the delimitation of eight new species. Three of these novelties are needed for the completion of the account of the Malpighiaceae for the Flora of Panama, now being written by Cuatrecasas (pers. comm.), and are described below. In addition, authorship of the genus has been incorrectly cited in much of the literature, and it is reviewed here.

The first published mention of *Bunchosia* was made by A. L. de Jussieu (1811) in brief descriptions of two new genera in the Malpighiaceae, *Byrsonima* and *Bunchosia.* He clearly stated that Richard had originally proposed (perhaps through personal communication) that these two genera could be split off from *Malpighia.* Jussieu indicated morphological characters to separate *Bunchosia* and *Byrsonima* from *Malpighia* and mentioned some of the species included in the new genera. He stated (transl.):

> A third genus would unite *Malpighia odorata, M. nitida, M. armeniaca, M. glandulosa* etc. of Jacquin. These possess flowers in axillary racemes or spikes, united styles, and fruits with two planoconvex nuts, similar to some coffee grains. One could name this genus *Bunchosia* from the word 'bunchos,' an ancient Arabic name for coffee. One should realize, however, that some of these characters are not constant or uniform. For example, one finds in these racemose inflorescences some fruits with three nuts and some flowers with three styles. These circumstances could present an obstacle to the division of the genus . . . .

In tracing the history of *Bunchosia* in the literature since Jussieu, one finds that authors attribute the genus inconsistently. For example:

> Kunth (1822)—*Bunchosia* Rich.
> de Candolle (1824)—*Bunchosia* Juss.
> Adrien de Jusseiu (1840, 1843)—*Bunchosia* Rich. et Juss.
> Bentham and Hooker (1862)—*Bunchosia* Rich. et Juss.
> Jackson (1893)—*Bunchosia* Rich. *ex* Juss.

Among the modern authors who have dealt with *Bunchosia,* Niedenzu (1928) follows Jackson's citation in the *Index Kewensis* and Cuatrecasas (1958) follows Kunth.

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[1] A portion of a thesis submitted in partial fulfillment of the requirements for the Ph.D. at the University of Connecticut. Support of travel and field work, provided by the University of Connecticut Research Foundation and the Graduate School, is acknowledged with gratitude.

From these treatments of the authorities for *Bunchosia*, one can see that most of them credited Richard but not all recognized Jussieu.

Jussieu himself mentioned a reservation, as quoted above, about his proposal of generic status for *Bunchosia*. Recently, Robertson (1972) pointed out, in a footnote reference to *Byrsonima*, "The generic name is usually attributed to L. C. Rich. *ex* A. L. de Jussieu (1811). However, Jussieu merely suggested that it might be possible to follow Richard's idea of separating *Malpighia* L. into three genera, *Malpighia*, *Byrsonima* and *Bunchosia*; he does not indicate that he adopts this division." Robertson gives the author citation of the genus *Byrsonima*, as *Byrsonima* Rich. *ex* H.B.K. (1822), and this would also apply to *Bunchosia*; I agree with Robertson. Jussieu did not accept the genera *Byrsonima* and *Bunchosia* as suggested by Richard. Applying Article 34 of the International Code of Botanical Nomenclature (Stafleu, 1972), *Bunchosia* is first validly published by Humboldt, Bonpland et Kunth and should be cited as *Bunchosia* Rich. *ex* H.B.K. (1822).

Two of the following newly described species are endemic to Panama. I wish to emphasize that this is the first time that three (primary, secondary and tertiary) orders of bracteoles have been recognized in describing the morphology of the inflorescence of *Bunchosia*. Paired primary bracteoles (when present) are homologous with foliage leaves and subtend the racemose inflorescence axis (or axes in the case of *B. ternata*); a secondary bracteole subtends each individual flower; and tertiary bracteoles are paired at the articulation of the peduncle or are approximate. A complete description of the morphology of the inflorescence will appear in a future publication.

NEW CENTRAL AMERICAN TAXA

Bunchosia brevisurcularis Dobson, sp. nov. (Figs. 1, 2)

Inflorescentiis simpliciter recemosis axes laterales breves terminantibus, fructu 3-carpellato stylis persistentibus coronato, necnon foliorum apice saepe glanduloso laminaque dorso in tertia parte inferiori glandulis (2) 4–6 rotundatis instructa insignis.

Trees to 8 m high. Branchlets with scattered T-shaped trichomes (0.35–0.77 mm long). Older branches glabrous and lenticellate. Leaf blades 6.5–13.5 cm long, 3.5–8 cm broad, elliptic to obovate, the apex shortly acuminate, frequently glandular, the base shortly attenuate, the blades with (2) 4–6 abaxial circular glands next to the midvein or near the lateral nerves on the lower ⅓, with widely scattered trichomes and 4–6 pairs of evident lateral nerves above, scattered trichomes on the lamina and the midvein beneath. Petioles appressed-pilose, 4–8 mm long, the stipules inconspicuous, up to 1.2 mm long. Inflorescences simple racemose, appressed-pilose or with scattered trichomes, terminal on 2–4-leaved lateral axes, 10–24-flowered, the lateral axes 1–6.5 cm long, the primary bracteoles usually absent or, if present, up to 2 mm long at the base of the 4–8 cm long inflorescence axis, the secondary bracteoles 1–2 mm long, the peduncles 6–15 mm long and articulated 2–6 mm above the base, the tertiary bracteoles up to 1 mm long at the articulation, one of the pair glandular. Sepals ovate, glabrous, ciliate, 3.5–5 mm long, with 8 glands 2.5–4 mm long. Petals, stamens and pistil not seen. Fruits red, glabrous, 3-locular, (10) 11–13 mm long, (9) 10–12 mm diam., the bases of 3 persistent styles at the apex. Seeds 3 or 2 by abortion.

TYPE: PANAMA. DARIEN: Trail between Paya and Pucro, wet, heavily forested area, tree 6 m (20 ft) high, fruits bright red, leaves glossy green above, 12 Jun 1959, *W. L. Stern, K. L. Chambers, J. D. Dwyer* and *J. E. Ebinger 428* (HOLOTYPE: MO!).

Other Specimens Examined: PANAMA. COLÓN: vicinity of San Miguel de la Borda, *Croat 9891* (MO!). DARIEN: road from El Real to Pinogana, *Duke 4882* (GH! MO! UC! US!); vicinity of

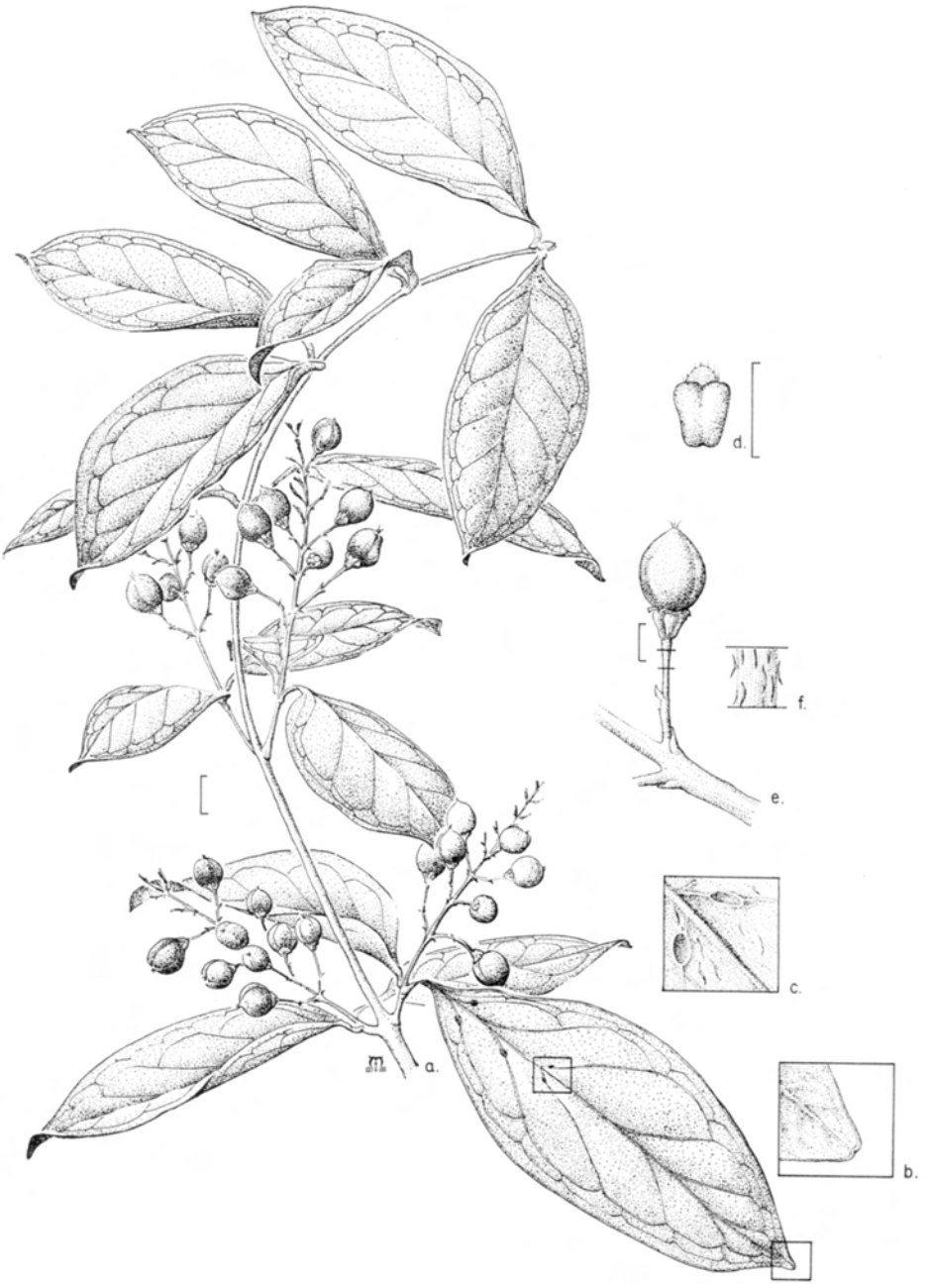

FIG. 1. *Bunchosia brevisurcularis*. A. Habit (scale = 1 cm), note the leaf blade which has been turned to show the pattern of the abaxial glands. B. Detail of leaf showing the glandular apex. C. Abaxial glands and trichomes on the lamina. D. Sepal with glands (abaxial view). E. Fruiting peduncle, note the persistent, distinct style bases. F. Indument on the peduncle. Scale bars for D and E = 5 mm. Drawn from *Duke 4882*, MO (there has been some restoration of fruits to naked peduncles on the specimen).

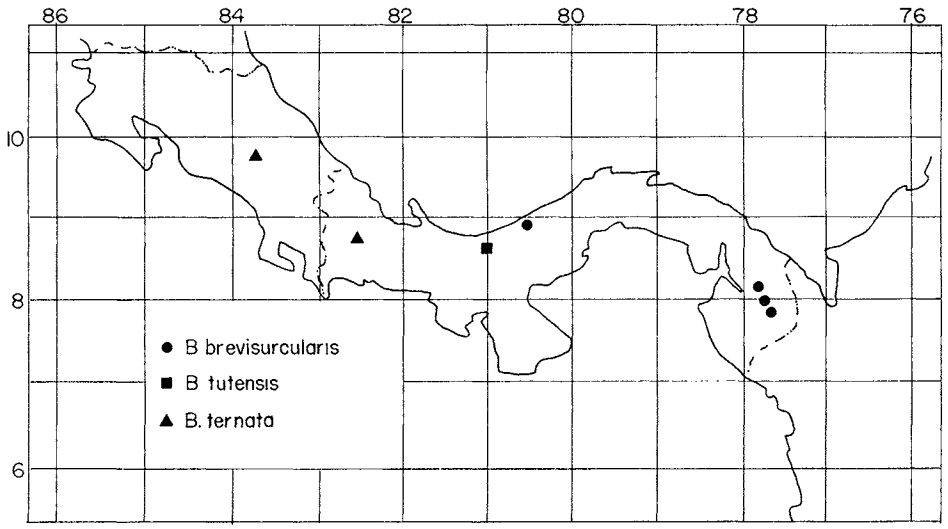

FIG. 2. Map indicating collection sites of the new Central American species of *Bunchosia*: *B. brevisurcularis*; *B. ternata*; *B. tutensis*.

El Real along road to Río Pirre, *Duke 5088* (GH! MO!); *Stern, Chambers, Dwyer & Ebinger 606* (MO!); vicinity of Paya, Río Paya, *Stern, Chambers, Dwyer & Ebinger 373* (MO!); no locality, *Duke 8358* (MO!).

Presumably endemic to Panama, *B. brevisurcularis* occurs in wet, heavily forested areas (Fig. 2). It is named for its short shoots or short, leafy, lateral axes. Its salient characters are simple-racemose inflorescences terminating short, leafy, lateral axes, 3-carpellate fruits with persistent style bases, leaf apices frequently glandular and (2) 4–6 circular glands on the lower third of the abaxial surface of the lamina. All the specimens studied were fruiting. I have not seen flowers.

Primary bracteoles are occasionally present on some individuals such as the holotype and *Duke 8358*. The species is not easily confused with others possessing inflorescences terminating short, leafy, lateral axes except, perhaps with *B. hartwegiana* from which it differs by its generally fewer-flowered inflorescences, longer peduncles, larger fruits, and leaves with usually 4–6 abaxial glands on the lower surface of the lamina.

Bunchosia ternata Dobson, sp. nov. (Figs. 2, 3)

Inter omnes congeneres inflorescentia ternatim racemosa praestans, foliis *B. cornifoliam* simulans sed ab ea praeter inflorescentiam ternatum ovario 3-carpellato glabro facile distinguenda.

Shrubs or trees 2–7 m high. Branchlets with scattered T-shaped trichomes (0.35–0.7 mm long). Older branches glabrous and lenticellate. Leaf blades 10–22 cm long, 4–12 cm broad, ovate to elliptic, the apex acuminate, the base obtuse to shortly attenuate, the blades with 2–10 abaxial glands next to the midvein or removed toward the margin on the lower ⅓, glabrescent, with 4–7 pairs of evident lateral veins above, with widely scattered trichomes beneath, these denser along the lateral veins. Petioles glabrescent, 9–20 mm long, the stipules to 1.6 mm long. Inflorescences ternate-racemose or with 3 racemose eglandular axes radiating from a thickened, persistent common peduncle 0.2–4.7 cm long, arising from one or both axils at a node on the main axes, appressed-pilose, the primary bracteoles 1–6 mm long, rarely green

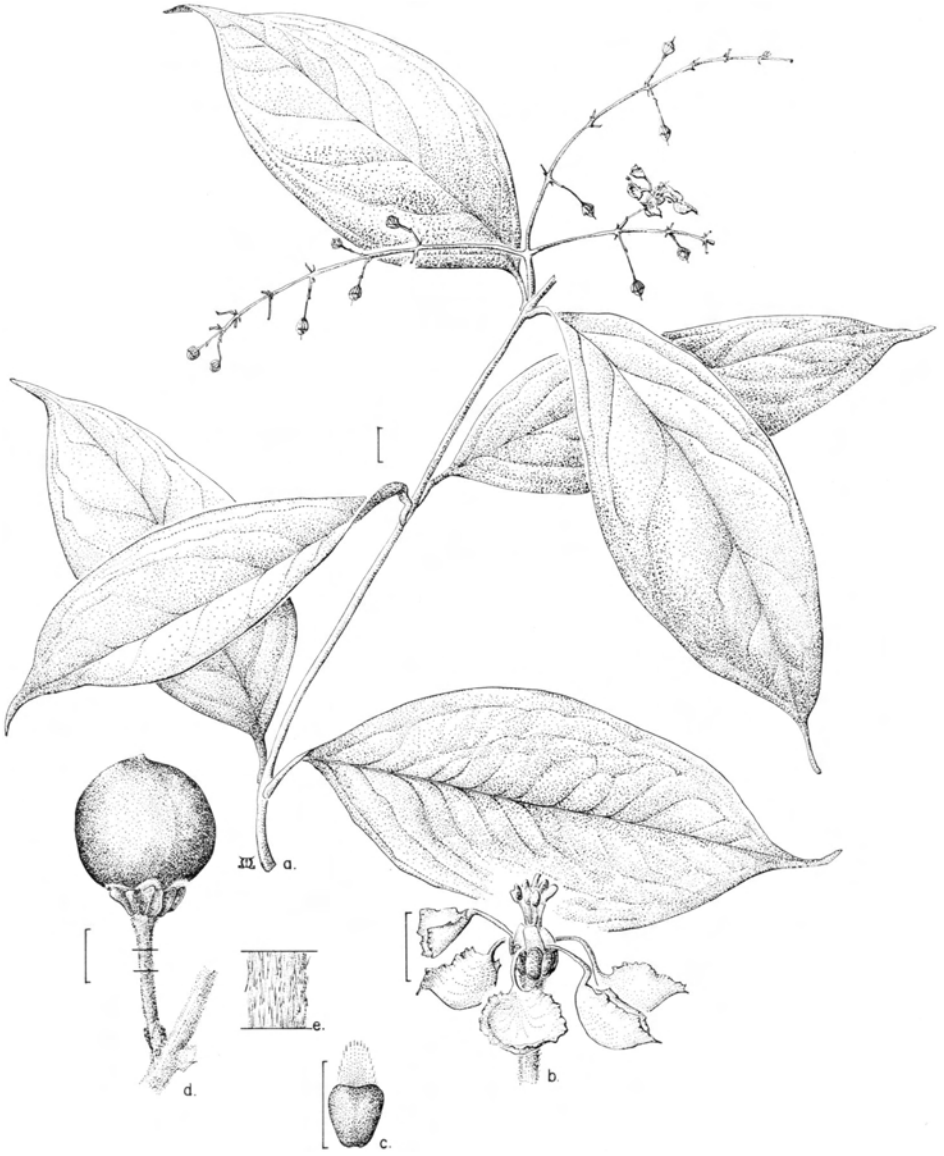

FIG. 3. *Bunchosia ternata*. A. Habit, note the ternate-racemose inflorescence (scale = 1 cm). B. Flowering peduncle. C. Sepal with glands (abaxial view). D. Fruiting peduncle. E. Indument on the fruiting peduncle. Scale bars for B–D = 5 mm. Drawn from the holotype, *M. E. Davidson 52*, GH; fruit from *von Hagen 2036*, NY.

bracteate up to 3.5 cm long, paired at the apex of the common peduncle or approximate, the 3 lax racemose inflorescence axes 4–10 cm long, 8–14-flowered, the 2 lateral racemose inflorescence axes opposite or approximate, the secondary bracteoles 1–3 mm long, the peduncles 6–16 mm long, articulated 0.5–3 mm above the base, the tertiary bracteoles paired, eglandular, 1–1.5 mm long at the articulation. Mature flowers 14–21 mm diam. Sepals ovate or sometimes subtruncate at the apex, 4–5 mm long, glabrous, ciliate, the glands 8–9, 2.5–3 mm long. Petals, all 5 with erose limb

margins, the outermost 4 petals 7–9.5 mm long, the claws 3–4.5 mm long, the limbs 4–5 mm long, 4.5–7 mm diam., the innermost 8–9 mm long, the claws 4–4.5 mm long, the limb, 4–5 mm long, 4–5 mm diam. Stamens 4–5 mm long, connate for ⅓ to ½ their length, the anthers 1.2–1.4 mm long, the connective yellow. Pistil 4–5.5 mm long, the ovary 3-loculate, glabrous, 1.5–2 mm long, 1–1.5 mm diam., the styles connate. Fruits orange, 11–12 mm long, 13–15 mm diam. Seeds 3, or 2 by abortion.

TYPE: PANAMA. CHIRIQUÍ: Boquete distinct, Bajo Chorro, rain forest, 1830 m (6000 ft) elev., tree 2–6 m (6–20 ft), flowers yellow, 6 Jan 1938, *M. E. Davidson 52* (HOLOTYPE: GH!: ISOTYPES: F! MO! US!).

Other Specimens Examined: COSTA RICA. CARTAGO: Río Villegas, valley of Río Grande de Orosi, *Lent 1851* (F!); S of Tapanti, *Burger & Liesner 6831* (F! MO! NY!); *Lent 1366* (F! MO!). PANAMA. CHIRIQUÍ: Boquete district, Bajo Chorro, *Davidson 404* (F! GH! MO! US!); Cerro Horqueta, *W. & C. Von Hagen 2036* (MO! NY!), *2171* (MO! NY!). Chiriquicito trail, *Kirkbride & Duke 949* (MO!).

Bunchosia ternata is named for its ternate-racemose inflorescences which are unique in the genus (Fig. 3a). The common peduncle thickens with age and presumably persists in the leaf axils after the 3 racemose inflorescence axes have fallen from it. Its leaves are similar to those of *B. cornifolia*, but its unique ternate-racemose (not simple-racemose) inflorescence and 3-carpellate, glabrous (not 2-carpellate, pilose) ovary easily distinguish it. It occurs on forested slopes at about 1500–2000 m elevation (Fig. 2).

Bunchosia tutensis Dobson, sp. nov. (Figs. 2, 4)

Inflorescentiis axillaribus simpliciter racemosis paucifloris eglandulosis, foliis parvis ellipticis, pedunculis basi articulatis, fructuque 3-loculari glabrascenti distincta, a *B. lindeniana* habitu simili inflorescentiis eglandulosis saltem 10-floris pedunculisque ipso basi, nec supra basin articulatis absimilis.

Trees 2–3 m high. Branchlets appressed-pilose (T-shaped trichomes 0.35–0.7 mm long, barely visible at 10 × magnification). Older branches glabrescent and the lenticels inconspicuous. Leaf blades elliptic, 2.5–9.5 cm long, 1.2–3 cm broad, the apex acute to shortly acuminate, the base shortly attenuate, the blades with 4–12 abaxial glands on or near the lateral and submarginal veins from the base up to ⅘ of the lamina, glabrescent and with 2–3 pairs of evident lateral veins above, with scattered trichomes beneath, the margins barely revolute. Petioles appressed-pilose to glabrescent, 7–11 mm long, the stipules less than 1 mm long, inconspicuous. Inflorescences, axillary, simple-racemose, leafless, eglandular, appressed-pilose or with scattered trichomes, the primary bracteoles absent, the axes 2.5–5 cm long, 6–7-flowered, the secondary bracteoles 1–1.5 mm long, the peduncles basally articulated, 12–13 mm long, the tertiary bracteoles paired, eglandular, 1–1.2 mm long from the articulation. Sepals ovate, 4–4.5 mm long, glabrescent, ciliate, the glands 8, 3–3.5 mm long. Petals, stamens and pistil not seen. Fruits 12 mm long, 9 mm diam., reddish-orange, 3-locular, glabrescent to glabrous.

TYPE: PANAMA. VERAGUAS: NW of Santa Fe, 2 km from Escuela Agrícola Alto de Piedra, cloud forest on ridge top below Cerro Tute, tree, 2 m tall, 8 cm dbh, 28 Mar 1975, *S. Mori & J. Kallunki 5263* (HOLOTYPE: MO!).

Other Specimen Examined: PANAMA. VERAGUAS: Santa Fe, Cerro Tute, *Mori 6761* (MO!).

This Panamanian species is known only from the vicinity of Cerro Tute (whence the epithet) in the Province of Veraguas (Fig. 2). It occurs in a cloud forest just above 1000 m. The specimens studied were fruiting. I have not seen flowers. The distinctive features (Fig. 4) of this species are few-flowered, eglandular, simple-

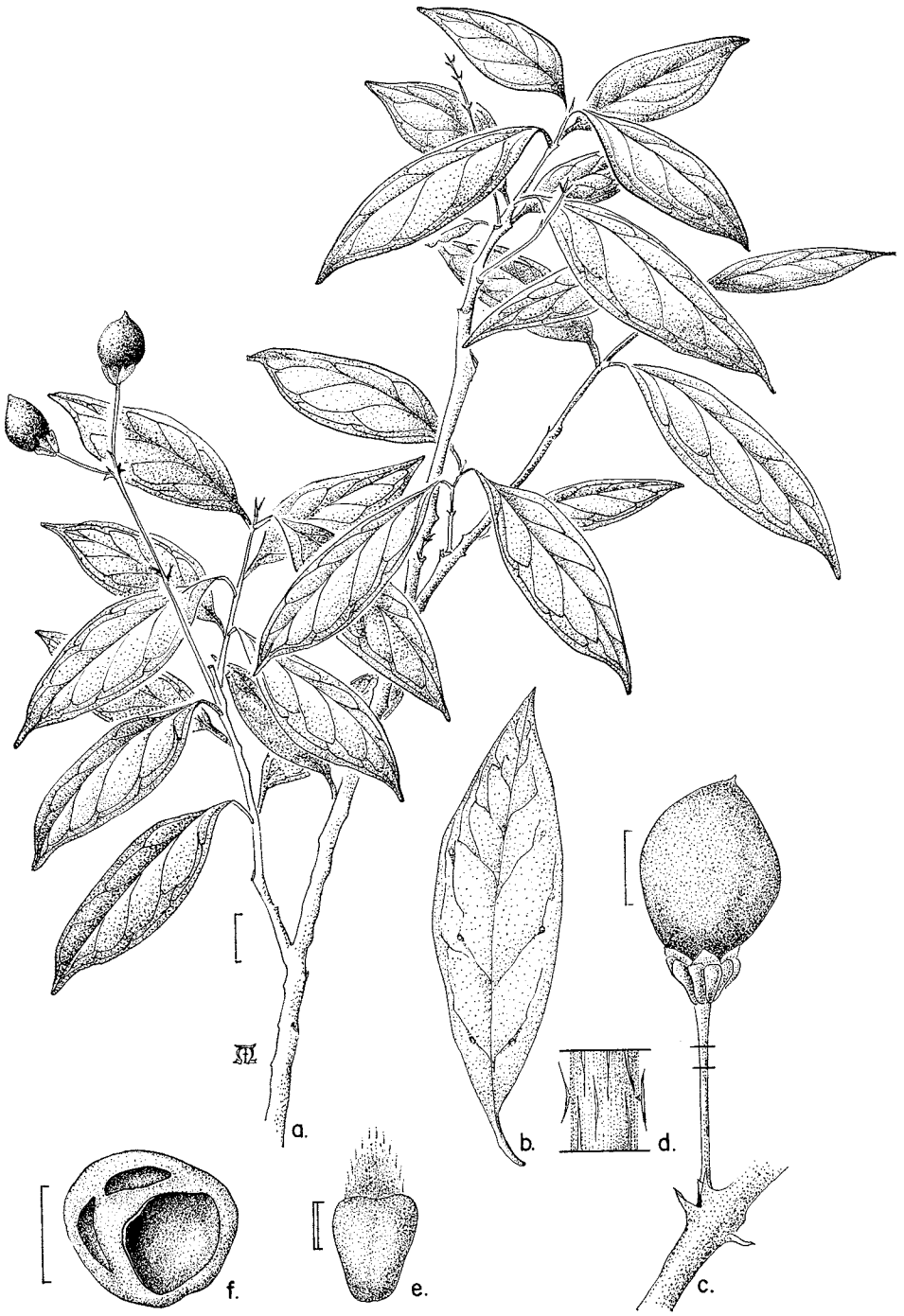

FIG. 4. *Bunchosia tutensis*. A. Habit (scale = 1 cm). B. Abaxial leaf surface showing the pattern of the glands. C. Fruiting peduncle. D. Indument on the fruiting peduncle. E. Sepal with glands (abaxial view). F. Transverse section of the 3-carpellate fruit, note the two aborted carpels. Scale bars for B–F = 5 mm. Drawn from the holotype, *Mori & Kallunki 5263*, MO.

racemose, axillary inflorescences, small elliptic leaves with a distinctive pattern of submarginal abaxial glands, basally jointed peduncles and 3-loculate glabrescent fruits. It is not easily confused with other 3-carpellate Panamanian species. It is superficially similar to *B. lindeniana*, but the latter has glandular, 10- or more-flowered inflorescences and peduncles consistently articulated above the base.

ACKNOWLEDGMENTS

I would like to thank Howard W. Pfeifer for his help with the manuscript; Mary Jane Gallo for the illustrations; and Ellie DeCarli and Pat Dubos for typing the manuscript.

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