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## Three New Species of *Capsicum* (Solanaceae) and a Key to the Wild Species from Brazil

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**ABSTRACT.** Three new species of *Capsicum* from eastern coastal Brazil are described and illustrated. *Capsicum pereirae* from Espírito Santo and Minas Gerais is related to *C. flexuosum* and *C. schottianum*. *Capsicum friburgense*, endemic to a restricted area in Nova Friburgo (Rio de Janeiro state) is similar to *C. scolnikianum*, *C. cardenasii*, and *C. mirabile*. *Capsicum hunzikerianum* from São Paulo is closely allied to *C. cornutum*. A key to differentiate the wild *Capsicum* species from Brazil is provided.

*Capsicum* L. (Tribe Solaneae, subtribe Capsicinae) is a small American genus comprising 20–25 species and a few varieties (Hunziker 2001). Five species (*C. annuum* L., *C. frutescens* L., *C. chinense* Jacq., *C. baccatum* L., and *C. pubescens* Ruiz & Pav.) have been domesticated and are well known for their valuable fruits, either the pungent cultivars (“ajíes”, “páprika”, “chilies”, “peppers”) or the sweet types (“sweet pepper”, “bell pepper”, “pimiento”) used as food, condiments, and medicine (Bosland and Votava 2000).

According to Hunziker (2001), four centers of diversity may be recognized: 1. Mexico to western South America; 2. North-eastern Brazil and western coastal Venezuela; 3. Eastern coastal Brazil; 4. Southern Bolivia to northern and central Argentina. The greatest number of species (13) is concentrated in Brazil.

Many authors have focused on the taxonomy of this genus (Hunziker 1950, 1961, 1971, 1998; Heiser and Smith 1953; Eshbaugh 1979; Pickersgill et al. 1979) but Hunziker devoted a great deal of his life to achieve a comprehensive knowledge of *Capsicum*. Unfortunately, he died before finishing the generic treatment, leaving his unpublished manuscripts to one of us (G.E.B.). Thus, with the intention to publish in the near future a complete treatment of this genus, three new species from Brazil are here presented in advance. A key to differentiate the wild Brazilian species is also included.

***Capsicum pereirae*** Barboza & Bianchetti, sp. nov. (Figs. 1, 4 A–D).—TYPE: BRAZIL. Espírito Santo: Mun. Castelo, Castelo-Forno Grande, arbusto, flor branca, interiormente maculada de marrom, 6 Dec 1956 (fl), E. Pereira 2245 (holotype: CORD!; isotypes: HB!, RB!).

A *Capsicum mirabile* Mart. foliis coriaceis et nitidis, pedicellis curvatis ad deflexis non geniculatis, calyce edentato vel 5 dentibus minutis differt.

Shrubs (0.5) 0.8–2 (3) m tall; stems woody at base, few branched, glabrate; young stems striate, with thickened violet nodes. Leaves geminate, generally unequal in size, solitary in each stem dichotomy, 3–5.5 (10) times longer than broad, coriaceous, slightly discolored, elliptical to narrowly elliptical, the margin repand, the apex acute to acuminate, the base shortly attenuate, glabrous and slightly shining on both sides; major leaves (6.1) 9–15 (19) cm long, 2–2.4 (4.5) cm broad, the petioles 0.5–1 (1.5) cm; minor leaves 2.5–3 (5.4) cm long, 0.75–1.5 cm broad, the petioles 0.3–0.5 cm. Flowers solitary or in fascicles of 2–3; pedicels slightly curved, oblique to deflexed, non-geniculate at anthesis, 1.5–2.2 cm. Calyx considerably exceeding the ovary, 1.5–2 (4) mm, toothless or with 5 inconspicuous teeth, glabrous abaxially except for short uniseriate verrucate non-glandular trichomes on the margin. Corolla stellate 9–10 mm long, 8–19 mm diam, lobed nearly to the middle, pure white outside, spotted inside in basal half up to near the base of the tube, each spot bicolored (purple in the lobes, greenish-yellow in the limb and tube), both zones interrupted by white longitudinal stripes; lobes 5–6 mm long, 4.5–5 (6) mm wide, broadly triangular, the tip strongly cucullate, densely papillate on tips and the involute margins. Filaments 3–4 (5) mm; anthers whitish, 1.8–2.1 (3) mm; stamens ca. 1 mm tall. Ovary subconic; style clavate, slightly curved, (3.7) 4–6 (7) mm; stigma somewhat bilobulate. Berry globose, hardly depressed, (6) 8–9 mm × 7–10 mm, green when immature, yellowish-green and deciduous at maturity, the fruiting pedicels pendant (2) 2.3–2.8 (3.5) cm, the fruiting calyx persistent, margin entire, the pericarp translucent or hyaline, lacking stone cells, scarcely hot. Seeds (3) 5–20 per fruit, brownish to blackish, 3–3.7 mm × 2.5–3.4 mm, the testa thick, foveolate with spine-like projections.

**Distribution and Habitat.** Endemic to states of Es-

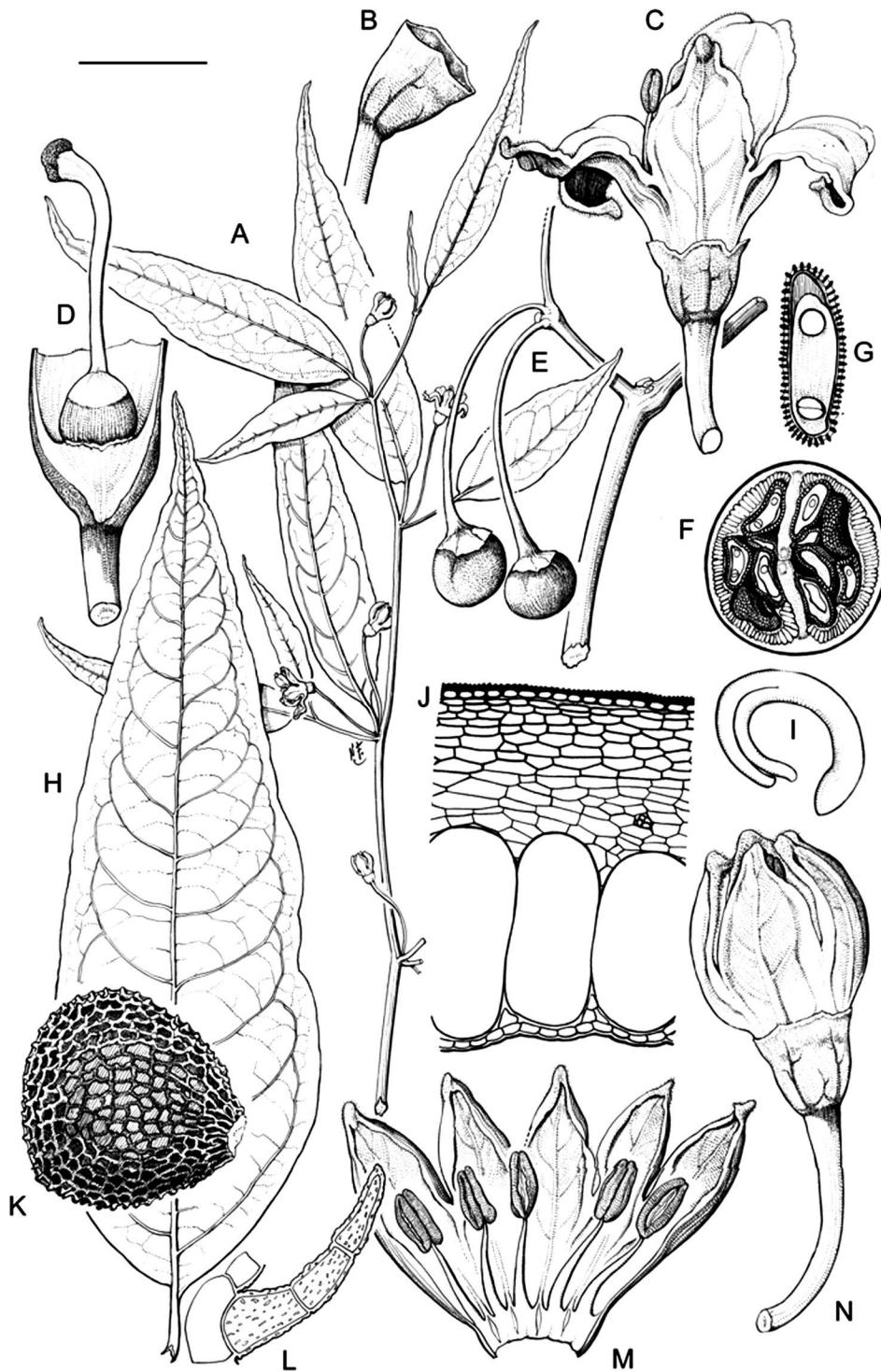


FIG. 1. *Capsicum pereirae*. A. Habit. B. Calyx. C. Flowers. D. Gynoecium. E. Fruiting branch. F. Fruit in cross section. G. Seed in cross section. H. Leaf. I. Embryo. J. Anatomical detail of the pericarp (note the large cells in the mesocarp). K. Seed. L. Simple hair. M. Opened out corolla. N. Flower bud (based on *Pereira* 2245 except J from *Hunziker* 25248). Scale bar = 3 cm (A, H), 4 mm (B, C, M, N), 2 mm (D, G, I, K), 1.5 cm (E), 6 mm (F), 320  $\mu$ m (J), 100  $\mu$ m (L).

pírito Santo and Minas Gerais in the Mata Pluvial Montana and the "Capões" (woods surrounded by grassy vegetation), between 1000–1600 m. It is uncommon growing mostly in shade, in the marginal forest with palms or Cyatheaceae, in aquatic depressions or in highly fertile valleys.

**Etymology.** The new species is named in honor of its collector, Edmundo Pereira (1914–1986), a prestigious self-taught botanist from Brazil.

**Additional Material Examined.** BRAZIL. Espírito Santo: Mun. Castelo, Domingos Martins, a 11.5 km do entroncamento da BR 262/Vargem Alta, estrada para Caxixe Alto, 20°29'S, 40°57'W, 18 May 1992 (fr), *Bianchetti et al.* 1270 & 1273 (CEN); beira da estrada de terra que liga Castelo à Venda Nova do Imigrante, 20°26'43"S, 41°05'32"W, 22 May 1999 (fl, fr), *Bianchetti et al.* 1567 (CEN); Caxixe Alto, cerca del Morro Forno Grande (en la propiedad de R. Uliana, vecina a la Fazenda L. Campos), a 11 km de la ruta BR-262, 1000 m, 28 Mar 1986 (fl, fr), *Hunziker* 25137 (CORD); a 1 km de Caxixe Alto, em estrada de terra, 20° 32' S, 41° 07' W, 28 Mar 1986 (fr), *Lleras et al.* 2179 & 2181 (CEN, CORD); Caxixe Alto, seeds cultivated at Universidade Federal de Viçosa by V. Casali, 7–14 Dec 1986 (fl, fr), *Hunziker* 25247, 25248 & 25249 (CORD). Minas Gerais: Mun. Lima Duarte, Conceição do Ibitipoca, Reserva Florestal do Ibitipoca, Gruta do Pião, 21°42'S, 43°53'W, 29 May 1992, *Bianchetti et al.* 1346, 1347, 1348, 1349 & 1350 (CEN); Conceição do Ibitipoca, Parque Estadual do Ibitipoca, Mata da Gruta do Pião, 21°42'11"S, 43°52'18"W, 16 May 1999 (fr), *Bianchetti et al.* 1558 (CEN); Parque Estadual do Ibitipoca, 1400 m, 17 Dec 1986, *Souza et al.* 9081 (BHCB, RB); Serra de Ibitipoca, Pico do Pião, 1500–1600 m, 15 May 1970 (fl, fr), *Sucre & Krieger* 6863 (CORD, RB).

**Observations.** *Capsicum pereirae* belongs to the group of species with corolla tinged with purple and greenish-yellow spots inside (Fig. 4B) as in some other species growing in eastern coastal Brazil (e.g., *C. mirabile* Mart., *C. schottianum* Sendtn., *C. hunzikerianum* Barboza & Bianchetti). However, the flowers become paler (Fig. 4A) or more rarely the purple spots are lacking completely (Fig. 4C) in some specimens from the Parque Estadual do Ibitipoca.

The coriaceous and shining leaves distinguish *C. pereirae* from the remaining species of the genus. The presence of non-geniculate pedicels, pendant flowers (Fig. 4D), and calyces toothless (Fig. 1B, N) or with inconspicuous teeth relates this new species to *C. flexuosum* Sendtn. It is also near *C. schottianum* by sharing the calyx features and the similar color corolla.

***Capsicum friburgense* Bianchetti & Barboza, sp. nov.** (Figs. 2, 4 G).—TYPE: BRAZIL. Rio de Janeiro: Mun. Nova Friburgo, subindo o Morro da Caledônia, a 6.45 km do Camping Club do Brasil (RJ.2), 1800 m, arbusto de 2.5 m alt., corola totalmente cor de vinho sem manchas e muito campanulada, fruto imaturo cor verde, 6 Apr 1986, *L. Bianchetti, A. T. Hunziker, V. Casali & G. P. Silva* 393 (holotype: CEN!; isotype: CORD!).

A *Capsicum cardenasii* Heiser et Smith corolla urceolata omni rosea vel lilacina, seminibus brunneolis ad nigricantibus differt.

Shrubs 0.8–2.5 m tall; stems hollow, few branched, glabrescent, smooth at the base and striate in flowering branches. Leaves geminate, solitary in each stem dichotomy, 2.6–3.6 times longer than broad, membranaceous, discolored, ovate to elliptical, the margin entire, the apex acuminate, the base shortly attenuate, slightly unequal, glabrescent on both sides, especially on the margins and nerves; major leaves (5.5) 8.5–13 (21) cm long, (1.5) 2.5–4.5 (7.5) cm broad, the petioles 0.6–1.2 (1.5) cm; minor leaves (1.8) 2.2–3.3 cm long, (0.7) 0.9–1.3 (1.7) cm broad, the petioles 0.2–0.3 cm. Flowers solitary or paired; pedicels erect or slightly curved downward, clearly geniculate at anthesis, (1.7) 2.1–4.9 (6.2) cm. Calyx 2–3 (5) mm, with 5 conspicuous and oblique teeth 1.2–3 (3.5) mm long, glabrous abaxially except for short, uniseriate, verrucate, non-glandular trichomes on the margin and teeth. Corolla campanulate to urceolate, (7) 9–12 (15) mm long, 7.5–10.5 mm diam, lobed at the apex, violet or lilac in bud and entirely pink or lilac at anthesis; lobes 2–5 times shorter than the tube, ca. (1.5) 2–3 (4) mm long, (1.5) 2–3 (4) mm wide, broadly triangular, cucullate and densely papillate on tip and margins. Filaments (4) 5–6 (7) mm; anthers yellowish, 1.5–2 (2.5) mm; stapes ca. 1.75 mm tall. Ovary globose; style white, clavate, (5–6) 8–11 mm; stigma green, discoidal-depressed, slightly exserted. Berry globose-depressed, (4) 5–6 mm × (5) 6–8 mm, dark green when immature, light green or yellowish-green at maturity; fruiting pedicels pendulous or usually nodding, geniculate, the fruiting calyx persistent, the pericarp translucent or hyaline, lacking stone cells, scarcely hot. Seeds 4–8 per fruit, brownish to blackish, 2.5–3 mm × 3–3.5 mm, the testa thick, deeply foveolate with spine-like projections.

**Distribution and Habitat.** Endemic to a restricted area along the wet forest of Nova Friburgo (State of Rio de Janeiro), from 1750 to 1920 m growing in transitional vegetation between the Mata Pluvial Montana and grassland at high elevation.

**Etymology.** The new species is named after the type locality.

**Additional Material Examined.** BRAZIL. Rio de Janeiro: Mun. Nova Friburgo, subindo o Morro da Caledônia, a 6.5 km do Camping Club do Brasil (RJ.2), 1820 m, 6 Apr 1986 (fl, fr), *Bianchetti et al.* 391 (CEN, CORD); Morro da Caledônia, a 6.6 km do Camping Club do Brasil, 1750 m, 22 May 1992 (fr), *Bianchetti et al.* 1299 (CEN); estrada do Morro da Caledônia, a 600 m do portão de entrada da torre telefônica, na beira da estrada, 1920 m, 22°21'04"S, 42°35'05"W, 21 May 1999 (fl, fr), *Bianchetti et al.* 1565 (CEN); Pico Nova Caledônia, 14 Jan 1985, *Lima et al.* 2526 (RB).

**Observations.** *Capsicum friburgense* is distinguished from the remaining species of the genus by the combination of both the corolla color and its shape (Fig. 4G). Among the wild species of *Capsicum* with unspotted corollas, *C. friburgense* is the only one with the corolla entirely pink or lilac. In other species lacking corolla spots, the corolla is white (e.g. *C. annuum* L., *C. chacoense* Hunz.), or pure yellow or yellowish



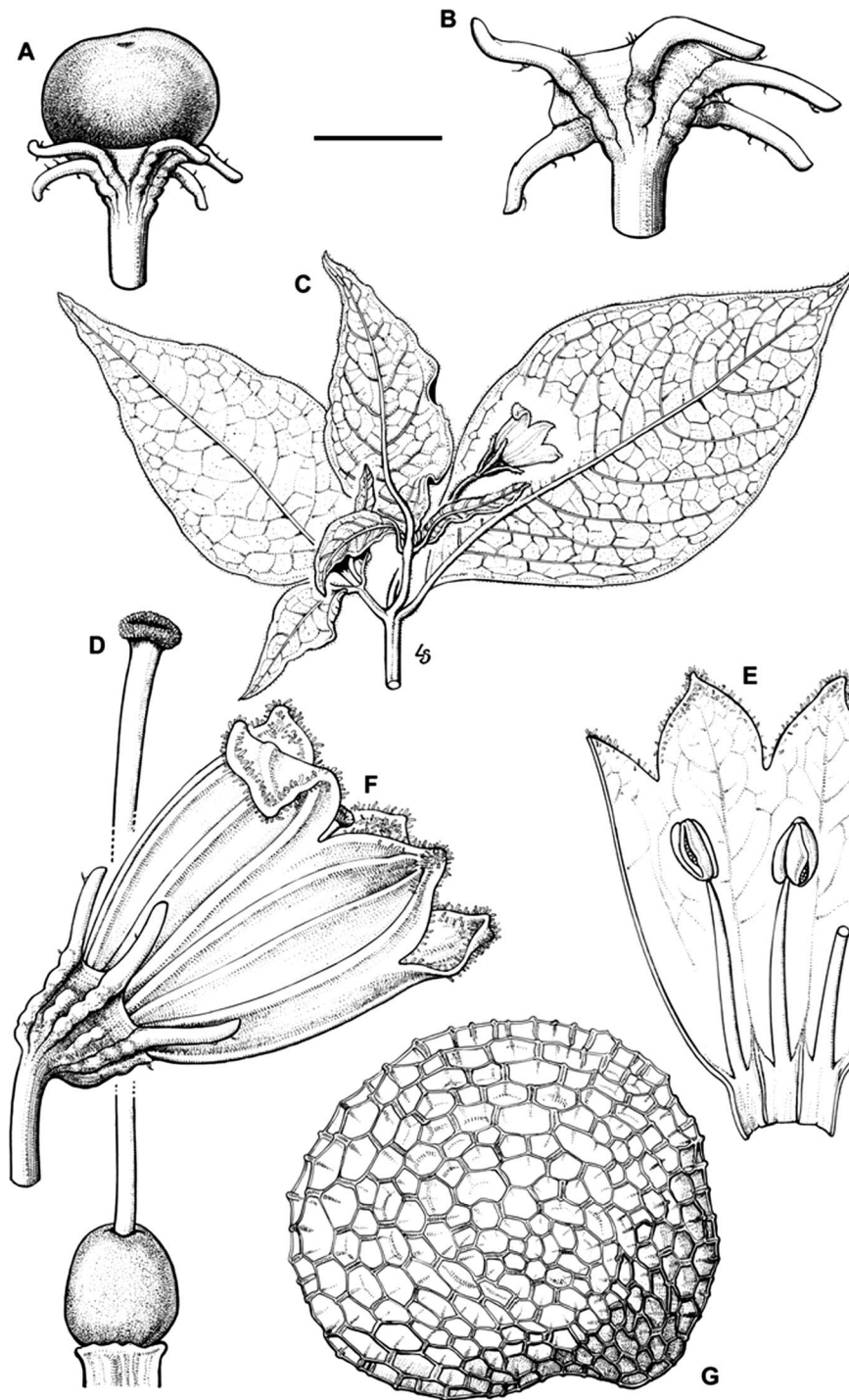


FIG. 2. *Capsicum friburgense*. A. Fruit. B. Calyx. C. Flowering branch. D. Gynoecium. E. Portion of opened out corolla. F. Corolla. G. Seed (based on Bianchetti *et al.* 393). Scale bar = 6 mm (A), 4 mm (B, E, F), 3 cm (C), 2 mm (D), 1 mm (G).

(e.g. *C. scolnikianum* Hunz., *C. rhomboideum* (Dunal) Kuntze, *C. hookerianum* (Miers) Kuntze). The presence of a peculiar campanulate to urceolate corolla is almost unique to this species. In fact, only two other species, *C. scolnikianum* (Hunziker 1961) and *C. cardenasii* Heiser & Smith (Heiser and Smith 1958) have campanulate (but never urceolate) corollas. Other characters that distinguish *C. scolnikianum* from *C. friburgense* are the branched hairs, the narrowly elliptical leaves, the erect fruits and the yellowish-brown seeds in the first species, whereas *C. cardenasii* differs from *C. friburgense* mainly by the corolla and seed color.

*Capsicum friburgense* is also related to *C. mirabile* Mart. in calyx features, the geniculation of the pedicels, the fruit anatomy (Barboza et al., unpubl. data), the color and morphology of the seeds, and its habitat. It differs from *C. mirabile* by the presence of an unspotted, not three-colored, campanulate-urceolate corolla, and its ovate leaves.

***Capsicum hunzikerianum*** Barboza & Bianchetti, sp. nov. (Figs. 3, 4 E, F).—TYPE: BRAZIL. São Paulo: Salesópolis, Boracéia, 30 Nov 1951, M. Kuhlmann 2785 (holotype: CORD!; isotypes: SP!; CEN!).

A *Capsicum cornutum* (Hiern) Hunz. caulibus et foliis glabrescentibus, corolla longiore differt.

Shrubs 1–3 m tall; stems hollow, few branched, entirely glabrous; young stems striate. Leaves geminate, or solitary and larger in each stem dichotomy, (2.5) 3–4 (4.2) times longer than broad, coriaceous, discolored, ovate to elliptical, the margin slightly revolute, the apex acuminate, the base attenuate and unequal, glabrous on both sides; major leaves (7.5) 9.5–20 (25) cm long, 2.5–7 (8.5) cm broad, the petioles (0.5) 0.8–2 (3.5) cm; minor leaves 2–4.5 cm long, (0.8) 1–2 cm broad, the petioles 0.2–0.5 cm. Flowers in fascicles of (1) 2–3 (4); the floriferous pedicels erect, geniculate at anthesis, (1.3) 2–3.8 (4.8) cm. Calyx (3.5) 5.5–6.5 mm, with 5 (6–10) conspicuous teeth 2.5–4.5 (5) mm long, the 5 main teeth longer than the commissural teeth. Corolla stellate, 10–14 (16) mm long, (8) 10–18 mm diam, lobed nearly half way, pure white outside, the inner surface of each lobe greenish with a striped violaceous spot in the limb, greenish-yellow in the tube; lobes as long as the tube, ca. 6–8 mm long, (3) 3.5–5 (6) mm wide, broadly triangular, the tip strongly cucullate, papillate on the tips and the involute margins. Filaments (1.5) 2–3 (3.5) mm; anthers yellowish, ca. (2) 2.5–3 mm; staminal tube 1.5 mm tall. Ovary globose, ca. 1–1.5 mm high; style clavate, 5–6 mm; stigma somewhat bilobulate, slightly exserted. Berry globose, slightly depressed, (4)

6–8 (8.5) × (6) 7–9 (10) mm, green when immature, yellowish-green and deciduous at maturity, the fruiting pedicels curved or pendant, the fruiting calyx persistent, the pericarp lacking stone cells, scarcely hot. Seeds 10–20 per fruit, brownish to blackish, (2) 2.5 mm × 2.5–3 mm; testa thick, foveolate with spine-like projections.

**Distribution and Habitat.** This species is known only in Salesópolis and Biritiba Mirim (São Paulo). It is the only species of *Capsicum* growing in wet, shady, and marshy places at the Mata Atlântica.

**Etymology.** The new species is named in honor of the late Armando T. Hunziker, an eminent botanist who devoted a great deal of his life to the study of *Capsicum*.

**Additional Material Examined.** BRAZIL. São Paulo: Salesópolis, Estação Experimental Boracéia, 21 Nov 1940 (fl, fr), *Da Silva s.n.* (SP 5824 & 5851); Boracéia, 27 Nov 1940 (fr), *Lima & Silva s.n.* (SP 5870, LIL); Estação Biológica de Boracéia, perto do Rio Coruja, 29 Nov 1966 (fl, fr), *Mattos & Mattos 14254* (CORD, SP); Boracéia, Estação Biológica, 22 Nov 1957 (fl), *Kuhlmann 4311* (CEN, SP, SPSF); Estação Biológica de Boracéia, 23°38'–39'S, 45°52'–53'W, 890–950 m, 14 Nov 1983 (fl, fr), *Custódio Filho 1849* (CEN, SP, SPSF); Casa Grande, Reserva Florestal, Guaratuba, 23°39'S, 45°52'W, 890–950 m, 4 Feb 1988 (fr), *Franco & Custódio Filho 448* (SPSF); Estação Biológica de Boracéia—trilha da bomba, 23°39'15"S, 45°53'23"W, 6 May 1999 (fl, fr), *Bianchetti, Silva & Bustamante 1537* (CEN); Biritiba Mirim, Estação Biológica de Boracéia, 23°38'–39'S, 45°52'–53'W, 890–950 m, 14 Nov 1983 (fl), *Custódio Filho 1860* (CEN, SP); Estação Biológica de Boracéia, 23°38'–39'S, 45°52'–53'W, 890–950 m, 24 Nov 1983 (fl, fr), *Custódio Filho 1914* (CEN, SP, SPSF); Estação Biológica de Boracéia, 23°38'–39'S, 45°52'–53'W, 890–950 m, 9 Dec 1983 (fl), *Custódio Filho 2056* (CEN, SP, SPSF).

**Observations.** *Capsicum hunzikerianum* is a very distinct species in having the largest flowers of the genus (reaching up to 1.6 cm long), in its habit (shrubs up to 3 m tall) and its habitat (always growing in marshy places). The number of calyx teeth varies from 5 to 10, found in only other two species, both also from Brazil: *C. recurvatum* Witas. and *C. cornutum* (Hiern) Hunz. In the remaining species, the calyx is toothless (e.g., *C. dimorphum* (Miers) Kuntze, *C. campylopodium* Sendtn., *C. flexuosum* Sendtn., etc.) or with 5 (*C. mirabile*, *C. rhomboideum*, etc.) or 10 teeth (*C. hookerianum*, *C. chacoense*, etc.).

*Capsicum hunzikerianum* is closely allied to *C. cornutum* from which it differs by its habit, its marked glabrescence, its corolla size, and its habitat.

The following key to the wild species from Brazil is based on fieldwork and an extensive analysis of herbarium collections. However, it is not definitive since we suspect that new taxa may be described as a result of ongoing studies.

1. Style cylindrical, equal in width from the base to the apex. Fruit red, generally elliptical, ovoid, or sometimes globose. Seeds yellowish-brown, the epispem smooth. Corolla 4–7.5 mm long.
2. Corolla stellate, unspotted, white or cream-colored, the lobes generally oblong and more or less the same length as the limb



FIG. 3. *Capsicum hunzikerianum*. A. Flowering branch. B. Calyx. C. Stigma. D. Fruit. E. Seed. F, G: Anther, ventral and dorsal views respectively. H. Portion of opened out corolla. I. Flower (based on Kuhlmann 2785 except D and E from Mattos & Mattos 14254). Scale bar = 3 cm (A), 5 mm (B), 1 mm (C), 7.5 mm (D, H, I), 2 mm (E, F, G).



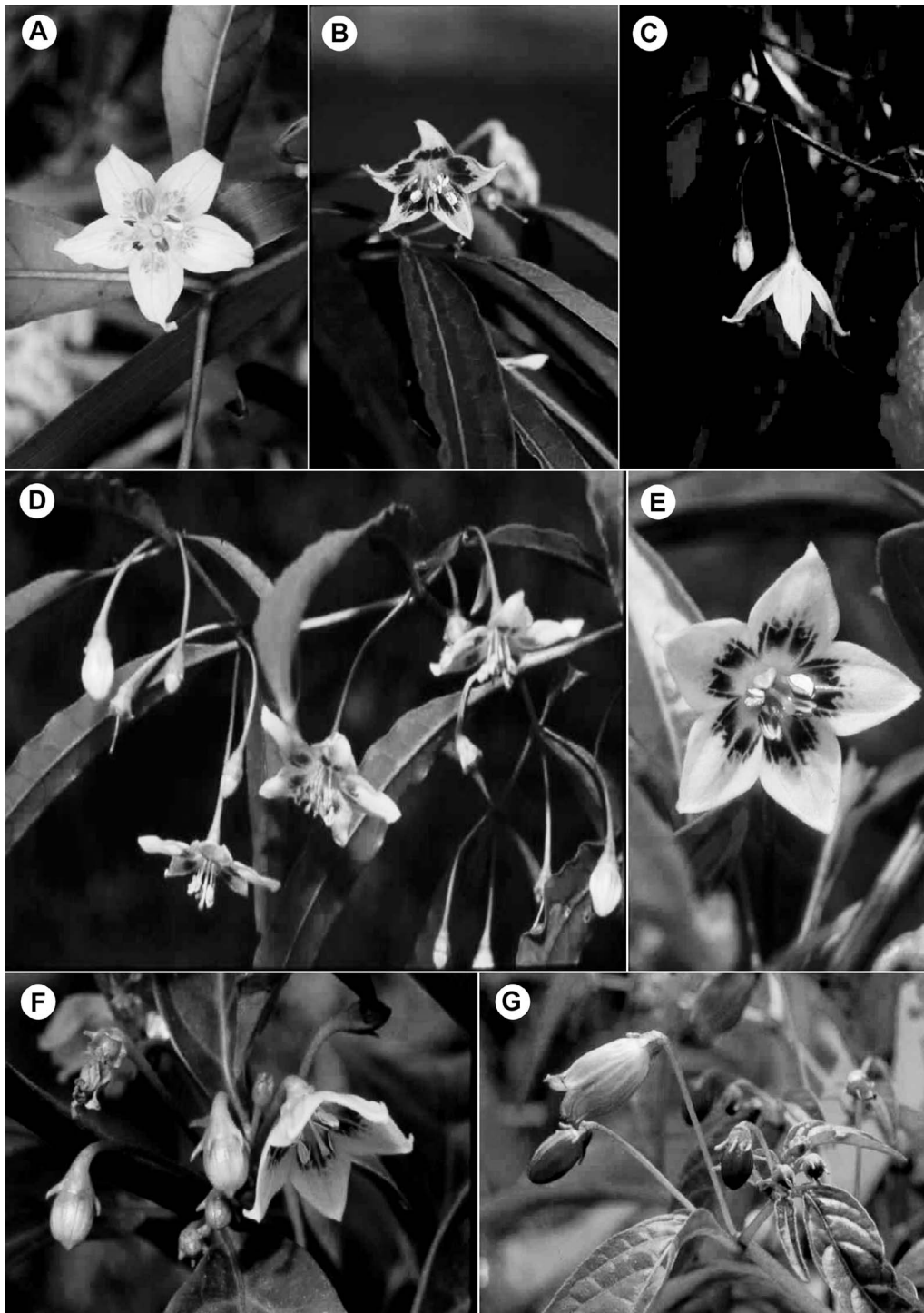


FIG. 4. A–D. *Capsicum pereirae*. E, F. *C. hunzikerianum*. G. *C. friburgense*.



- and tube. Filaments as long as or shorter than the anthers. Northern and north-eastern Brazil (Acre, Amazonas, Maranhão, Rondonia, Roraima) . . . . . *C. annum* var. *glabriusculum* (Dunal) Heiser & Pickersgill
2. Corolla rotate, white with greenish-yellow spots on the lobes and limb inside, the lobes broader than long and markedly shorter than the limb and tube. Filaments generally 1.5 times or more longer than the anthers.
  3. Corolla with the inside margin white. South and south-eastern Brazil (Espírito Santo, Mato Grosso do Sul, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Santa Catarina, São Paulo) . . . . . *C. baccatum* L. var. *baccatum*
  3. Corolla with the inside margin lilac or violet. South-eastern and west-central Brazil (Goiás, Minas Gerais, Paraná, Santa Catarina, São Paulo) . . . . . *C. baccatum* var. *praetermissum* (Heiser & Smith) Hunz.
  1. Style clavate, widening from a moderately narrow base to a gradually broadened apex. Fruit generally yellow or yellowish-green at maturity, rarely red-colored, globose or globose-depressed or globose-compressed. Seeds generally brownish or blackish (yellowish-brown only in *C. parvifolium*), the episperm foveolate with spine-like projections. Corolla (5.5) 6–15 (16) mm long.
  4. Corolla entirely pink or lilac, clearly campanulate to urceolate, tube (5.5) 7–9 (11) mm. Leaves generally ovate. Eastern Brazil (Rio de Janeiro) . . . . . *C. friburgense* Bianchetti & Barboza
  4. Corolla white with yellowish-green and sometimes also purple spots inside, stellate or rotate, never campanulate-urceolate, tube (2) 2.6–6 (8) mm. Leaves ovate, elliptical or narrowly elliptical.
  5. Pedicels non-geniculate at anthesis, the flowers pendant.
  6. Shrubs or trees up to 4 m tall or more. Fascicles 5–20-flowered. Calyx 5-toothed. Anthers as long as or longer than the filaments. Seeds yellowish-brown. North-eastern Brazil (Bahía, Ceará, Paraíba, Pernambuco, Piauí, Rio Grande do Norte) . . . . . *C. parvifolium* Sendtn.
  6. Shrubs 0.5–2 (3) m tall. Flowers solitary or the fascicles 2–3-flowered. Calyx toothless or with 5 minuscule teeth. Anthers clearly shorter than the filaments. Seeds brownish or blackish.
  7. Corolla white with yellowish-green spots in the lobes and limb inside, 5.5–6 mm long. Leaves membranaceous, ovate, 2–3 (3.5) times longer than broad, glabrescent to pubescent. Fruits red at maturity. South and south-eastern Brazil (Minas Gerais, Paraná, Rio Grande do Sul, São Paulo, Santa Catarina) . . . . . *C. flexuosum* Sendtn.
  7. Corolla white with purple spots followed by an interrupted yellowish-green zone in the lobes and limb, 9–10 mm long. Leaves coriaceous, elliptical to narrowly elliptical, 3–5.5 (10) times longer than broad, glabrate. Fruits yellowish-green at maturity. South-eastern Brazil (Espírito Santo, Minas Gerais) . . . . . *C. pereirae* Barboza & Bianchetti
  5. Pedicels geniculate at anthesis, the flowers twisted 90°.
  8. Corolla lacking purple spots inside.
  9. Calyx toothless. Corolla with yellow or golden spots in lobes and limb. Ovules 2 per locule. Androecium heterodynamous with 3 short stamens and 2 long stamens. Fruits globose-compressed. South-eastern Brazil (Espírito Santo, Minas Gerais, Rio de Janeiro) . . . . . *C. campylopodium* Sendtn.
  9. Calyx with 5, or 6 to 9 horizontal or recurved teeth. Corolla with greenish spots inside. Ovules 5–8 per locule. Androecium homodynamous with all stamens equal in length. Fruits globose-depressed. South and south-eastern Brazil (Paraná, Rio de Janeiro, Santa Catarina, São Paulo) . . . . . *C. recurvatum* Witas.
  8. Corolla with purple or brownish or violaceous spots followed by yellowish-green zones inside.
  10. Calyx toothless or sometimes with 5 tiny teeth. South-eastern Brazil (Minas Gerais, Rio de Janeiro, São Paulo) . . . . . *C. schottianum* Sendtn.
  10. Calyx 5–10-toothed.
  11. Calyx with only 5 short teeth (0.5–3 mm long).
  12. Plants glabrescent, the hairs antrorse. Leaves elliptical to narrowly elliptical. South-eastern Brazil (Minas Gerais, Rio de Janeiro, São Paulo) . . . . . *C. mirabile* Mart.
  12. Plants densely hairy, the hairs flexuous and patent on stems, petioles, pedicels, and sometimes also on the leaf nerves beneath. Leaves ovate. South-eastern Brazil (Minas Gerais, Rio de Janeiro, São Paulo) . . . . . *C. villosum* Sendtn.
  11. Calyx up to 6–10 long teeth (3.2–6 mm long).
  13. Shrubs 1.2–1.8 m tall, densely hairy. Corolla (8) 9–12 (14) mm long. Leaves membranaceous, ovate to broadly ovate. South-eastern Brazil (Rio de Janeiro, São Paulo) . . . . . *C. cornutum* (Hiern) Hunz.
  13. Shrubs up to 3 m tall, glabrate. Corolla 10–14 (16) mm long. Leaves coriaceous, slightly ovate to elliptical. South-eastern Brazil (São Paulo) . . . . . *C. hunzikerianum* Barboza & Bianchetti

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