

PITCAIRNIA L'HÉRITIER (BROMELIACEAE) OF RIO DE JANEIRO STATE, BRAZIL

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ABSTRACT. A key, descriptions and illustrations of six species of *Pitcairnia* which occur in the Rio de Janeiro State, Brazil are presented: *P. albiflos* Herbert, *P. carinata* Mez, *P. encholirioides* L. B. Smith, *P. flammea* Lindley, *P. glaziovii* Baker and *P. staminea* Loddiges are presented. Five taxa are considered new synonyms of *P. flammea*: *P. suaveolens* Lindley, *P. beycalema* Beer, *P. lancifolia* Mez, *P. lancifolia* var. *minor* L. B. Smith and *P. pumila* Weber.

Ten species of *Pitcairnia* were recorded for Rio de Janeiro State (Fontoura *et al.* 1991). Examination of the main regional herbaria collections, comparison with the type specimens and with the original descriptions, and field work, led to the conclusion that only six species should be considered as valid taxa: *P. albiflos* Herbert, *P. carinata* Mez, *P. encholirioides* L. B. Smith, *P. flammea* Lindley, *P. glaziovii* Baker and *P. staminea* Loddiges.

Pitcairnia flammea is the most polymorphic among the species studied. Smith and Downs' (1974) monograph lists six varieties and as many synonyms for this species. The new synonyms proposed here are also attributed to *P. flammea*; namely *P. suaveolens* Lindley, *P. beycalema* Beer, *P. lancifolia* Mez, *P. lancifolia* var. *minor* L. B. Smith and *P. pumila* Weber. These taxa, known basically from the type collections, have their characters easily included into the wide morphological variation shown by *P. flammea*. *Pitcairnia flammea* also has the widest geographic distribution of the species studied, occurring in several distinct habitats (TABLE 1).

The Bromeliaceae herbarium collection of the Rio de Janeiro Botanical Garden has *P. flammea* as its best represented species. Despite the large number of exsiccatae available for this study, it is not possible to propose more constant and better defined characters for the delimitation of varieties which occur in Rio de Janeiro State. Only intensive field work, which allows the analysis of the pattern of variation of this taxon within and between plant communities, will provide a clearer definition as to whether certain characters are relevant to the maintenance of the varieties. This aspect, therefore, deserves future study.

Herbarium specimens of *P. albiflos* and *P. staminea* are easily mistaken for *P. flammea*. The symmetrical position of the petals, becoming recurved at anthesis, distinguishes the former two from the latter species. These characteristics are not easily observed in herbarium material

nor in wilting flowers. However, the length of the floral bracts in relation to the pedicels and the position assumed by the pedicels in relation to the floral rachis, are also useful characters in distinguishing these species.

Pitcairnia carinata is also morphologically similar to *P. flammea*. It can be distinguished from the latter and from the other species of Rio de Janeiro State, by its alate-carinate sepals.

Pitcairnia glaziovii is easily distinguished from the other species of Rio de Janeiro State by its deciduous leaves along a straight transverse line above the leaf sheath.

Although *P. encholirioides* is known only from the type collection, it is a well-defined species since it is the sole species in the genus to have a dense inflorescence similar to that found in *Encholirium spectabile* Martius. The species was collected in the still under-explored municipality of Santa Maria Madalena.

TABLE 1 shows the patterns of geographic distribution, preferred habitats and habits of the species studied.

Three out of the six species studied are endemic to Rio de Janeiro State, namely *P. albiflos*, *P. encholirioides* and *P. glaziovii*. Furthermore, the map in FIGURE 1 reveals distribution areas restricted to one municipality: *P. albiflos* (Rio de Janeiro) and *P. encholirioides* (Santa Maria Madalena); or two neighboring municipalities: *P. glaziovii* (Petrópolis and Teresópolis). *Pitcairnia encholirioides* can be considered as a potentially threatened species, since it is known only from the type collection. *Pitcairnia carinata* and *P. staminea* are not restricted to Rio de Janeiro, but also occur in neighboring states. However, they show habitat restrictions: *P. carinata* has only been seen in high altitude fields and *P. staminea* in rocky outcrops by the sea. *Pitcairnia flammea* is again an exception among the species studied in terms of habitat preference. It occurs from high altitude fields to sandy coastal plains ("restingas"). The other species are found either in high altitude fields (*P. carinata*, *P. glaziovii* and

TABLE 1. *Pitcairnia* species of Rio de Janeiro: geographic distribution in Brazil, habitat, and habit.

| SPECIES | GEOGRAPHIC DISTRIBUTION | | | | | | | | | HABITAT | | | | HABIT | | |
|--------------------------|-------------------------|---------|-------|--------------|----------------|----------------|-----------|--------|----------------|----------------------|----------------------|---------------------------|----------------------|-----------|-----------|-------------|
| | CEARÁ | PARAÍBA | BAHIA | MINAS GERAIS | ESPIRITO SANTO | RIO DE JANEIRO | SÃO PAULO | PARANÁ | SANTA CATARINA | HIGH ALTITUDE FIELDS | ATLANTIC RAIN FOREST | ROCKY OUTCROPS BY THE SEA | SANDY COASTAL PLAINS | RUPIGOLDS | SAXICOLDS | TERRESTRIAL |
| <i>P. GLAZIOVII</i> | | | | | | * | | | | ▲ | | | | ★ | ★ | |
| <i>P. ENCHOLIRIOIDES</i> | | | | | | * | | | | ? | | | | | | |
| <i>P. CARINATA</i> | | | | * | * | * | | | | ▲ | | | | ★ | ★ | ★ |
| <i>P. FLAMMEA</i> | * | * | * | * | * | * | * | * | * | ▲ | ▲ | ▲ | ▲ | ★ | ★ | ★ |
| <i>P. STAMINEA</i> | | | | | * | * | | | | | | ▲ | | ★ | ★ | |
| <i>P. ALBIFLOS</i> | | | | | | * | | | | | | ▲ | | ★ | ★ | |

possibly *P. encholirioides*) or in rocky outcrops by the sea (*P. albiflos* and *P. staminea*). *Pitcairnia glaziovii*, *P. encholirioides* and *P. carinata* were under-represented in the collections examined, which is possibly due to the difficulties involved in reaching and collecting these plants in the field.

FIGURE 2 shows the months when flowering and fruiting specimens were collected. Flowering material of *P. flammea* was collected throughout the entire year, but mostly April–June. *Pitcairnia staminea* flowered from April to August; *P. carinata* and *P. albiflos* from September to December and from April to July, respectively. The information displayed on FIGURE 2 about the flowering period of *P. glaziovii* and *P. encholirioides*, and about fruiting of all species studied, is incomplete due to reduced availability of data.

KEY TO THE SPECIES

- 1a. Innermost leaf blades deciduous through a straight transverse line just above the sheath 1. *P. glaziovii*. FIGURE 3.

- 1b. All leaf blades persistent.
 - 2a. Basal floral bracts exceeding the flowers; petals (ca. 2.5 cm long) barely exceeding the sepals (ca. 2.0 cm long) 2. *P. encholirioides*. FIGURE 4.
 - 2b. Basal floral bracts not exceeding the flowers; petals (ca. 5.0–6.0 cm long) definitely exceeding the sepals (ca. 1.5–2.5 cm long).
 - 3a. Sepals alate-carinate 3. *P. carinata*. FIGURE 5.
 - 3b. Sepals not alate or slightly carinate.
 - 4a. Corolla zygomorphic at the anthesis with erect petals 4. *P. flammea*. FIGURE 6.
 - 4b. Corolla actinomorphic at the anthesis with curved petals.
 - 5a. Pedicels (ca. 3.0 cm long), three times longer than the floral bracts, perpendicular to the rachis 5. *P. staminea*. FIGURE 7.
 - 5b. Pedicels (ca. 1.5–1.8 cm long), two times longer than the floral bracts, not perpendicular to the rachis 6. *P. albiflos*. FIGURE 8.

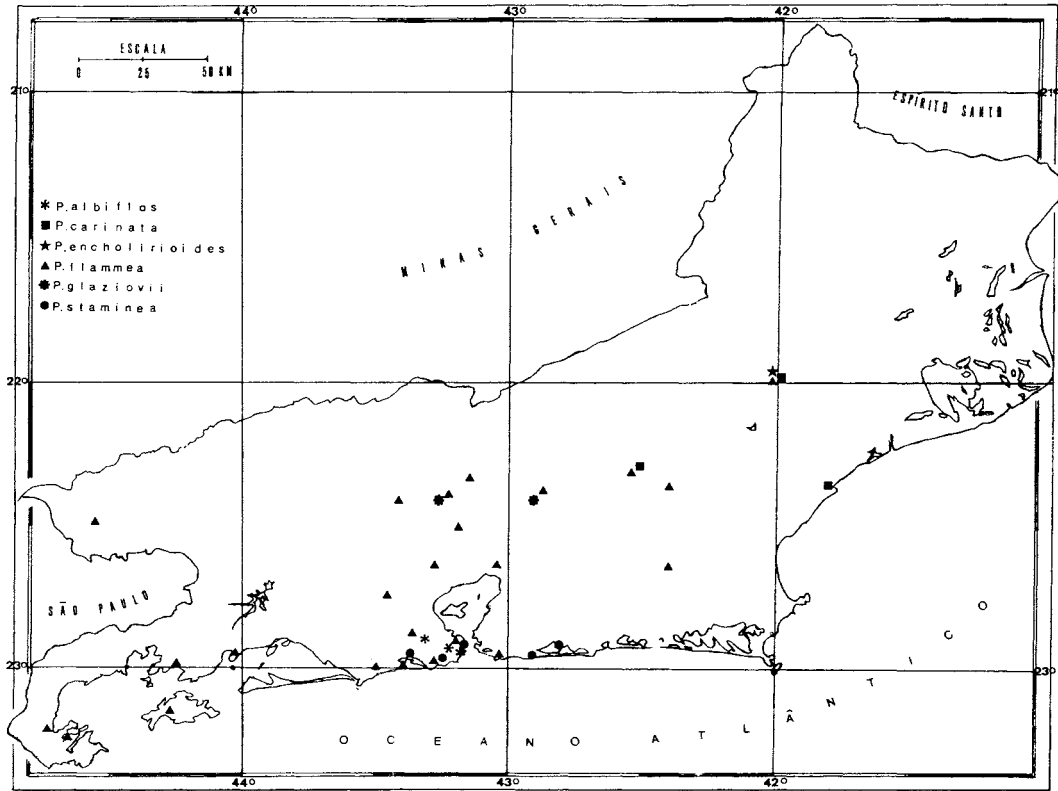


FIGURE 1. Map of the species distribution in the Rio de Janeiro State.

1. *Pitcairnia glaziovii* Baker, Handb. Bromel. 92. 1889. FIGURE 3.

TYPE. Rio de Janeiro, Serra dos Orgãos, *Glaziou 17282* (K, holotype; GH, isotype; photo, HB and RB).

Plant flowering 20.0–80.0 cm tall. Leaf blades dimorphic, the external ones with blades reduced to dark spinulose-serrate spines, 2.0–6.0 cm long, persistent; the innermost leaves with linear attenuate blades, entire, covered beneath with scales, deciduous along a straight transverse line

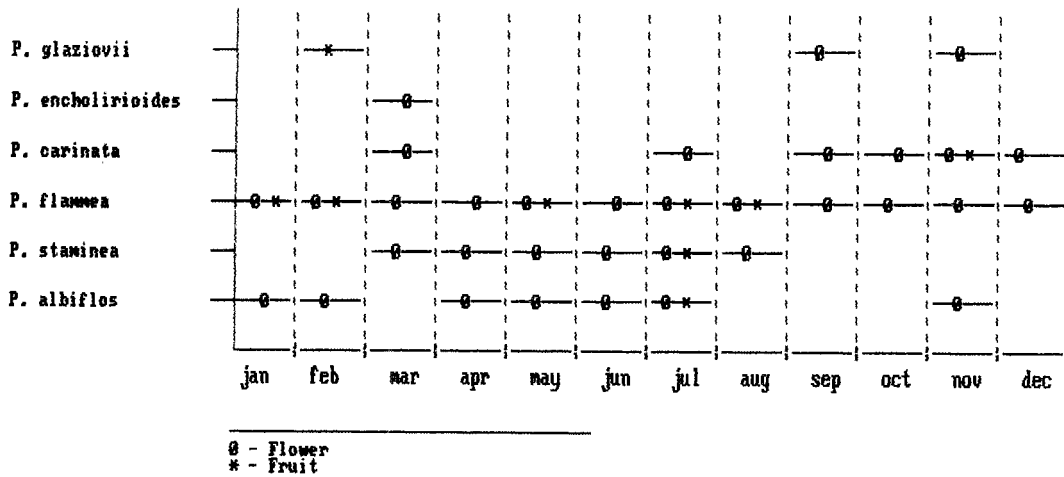


FIGURE 2. Species flowering and fruiting.

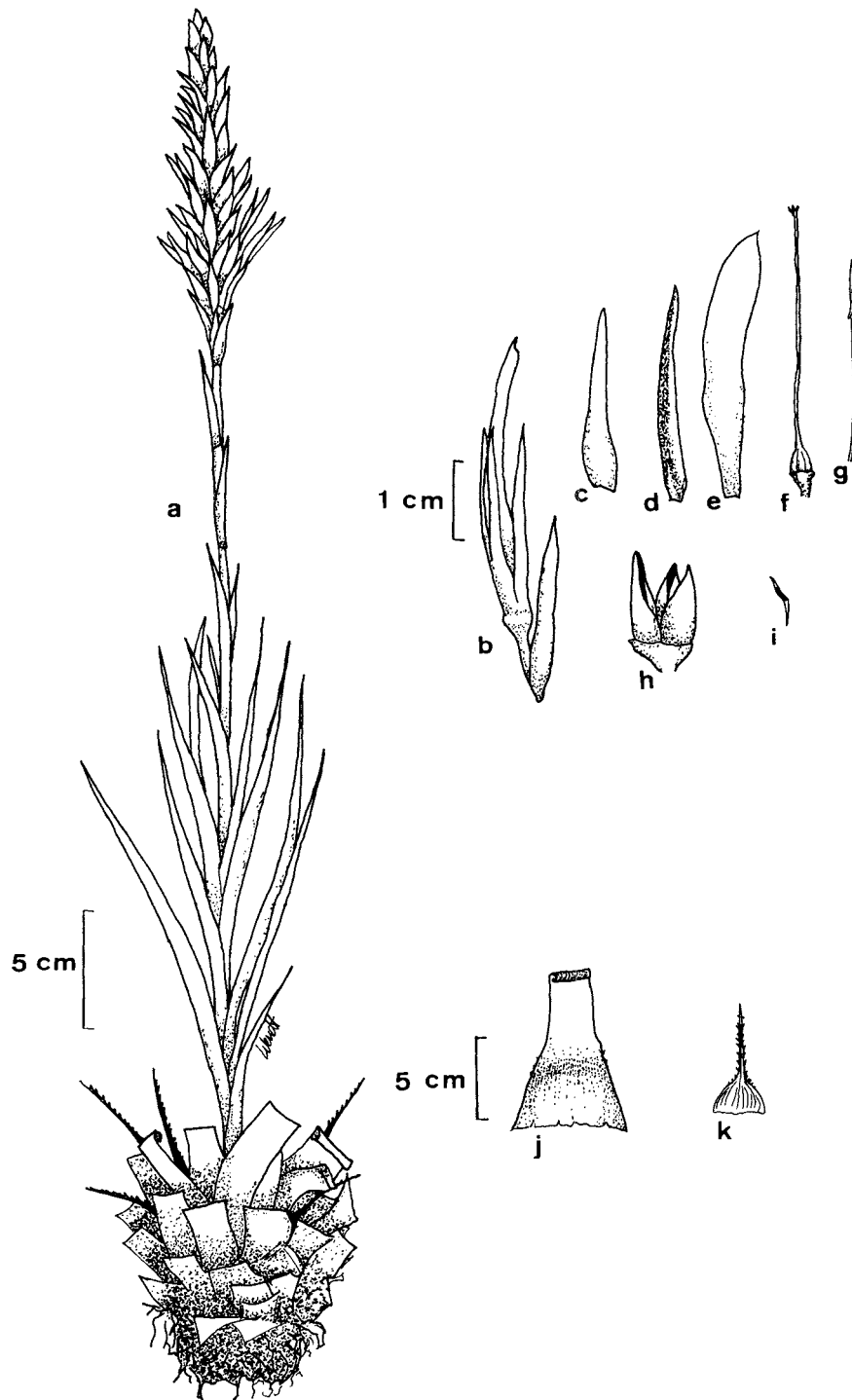


FIGURE 3. *Pitcairnia glaziovii*. A, habit. B, flower and bract. C, floral bract. D, sepal. E, petal. F, gynoecium. G, stamen. H, fruit. I, persistent base of deciduous leaf. J, persistent leaf. Drawn from *G. martinelli* 8755 (RB) and *D. Sucre* 2394 (RB).

just above the leaf sheath, recurving at the broken ends, 0.7–2.0 cm wide, 10.0–50.0 cm long; leaf sheath ovate, dark castaneous, serrate, covered beneath with scales, persistent, forming a thick pseudobulb, 1.0–6.0 cm long. Scape erect, stout, dark red, white-lanuginose to glabrous. Scape bracts acute, rigid, the upper shorter than the internodes. Floral bracts red, lanceolate, acute, equaling or exceeding the pedicels. Pedicels red, slender, lanuginose to glabrous, 0.7–1.0 cm long. Sepals red, triangular acuminate, slightly carinate, lepidote to glabrous, 2.0 cm long. Corolla zygomorphic at anthesis with petals erect, red, unappendaged, 4.0–5.0 cm long. Ovary superior; ovules bicaudate. Fruit capsule septicidal; seed bicaudate.

MATERIAL EXAMINED. Petrópolis—Araras, Pedra do Oratório, 25 IX 1982, fl., *G. Martinelli 8755* (RB). Teresópolis—Posse, morro das antenas de televisão, 12 II 1968, fr., *D. Sucre 2394* (RB); 24 XI 1977, fl., *Beatriz s.n.* (HB).

2. *Pitcairnia encholirioides* L. B. Smith, Arq. Jard. Bot. Rio de Janeiro 10: 146. 1950.

FIGURE 4.

TYPE. Rio de Janeiro, Santa Maria Madalena, Pedra das Flores, 04 III 1934, *Santos Lima & Brade 13249* (RB, holotype).

Plant flowering ca. 70.0–110.0 cm tall. Leaf blades linear, attenuate, persistent, homomorphic, entire, narrowing slightly above the leaf sheath, 0.7–0.8 cm wide, ca. 40.0 cm long; leaf sheaths elliptic, dark castaneous, covered beneath with ferruginous scales, 5.0 cm long. Inflorescence simple, dense, 20.0–40.0 cm long. Scape erect, stout, almost glabrous; scape bracts subfoliaceous, erect, densely imbricate. Floral bracts narrowly triangular, filiform-attenuate, the lower ones exceeding the flowers. Pedicels stout, sulcate, 0.3–0.5 cm long. Sepals linear-attenuate, acuminate, obtusely carinate, 2.0 cm long. Corolla with petals red, unappendaged, slightly exceeding the sepals, ca. 2.5 cm long. Ovary superior; ovules bicaudate. Fruits and seeds unknown.

3. *Pitcairnia carinata* Mez in Martius, Fl. Bras. 3(3): 448. 1894. FIGURE 5.

TYPE. Rio de Janeiro, Nova Friburgo, *Glaziou 13256* (B, holotype; photo, HB and RB).

Plant flowering ca. 15.0–60.0 cm tall. Leaf blades linear, attenuate, green to dark red when young, persistent, often homomorphic, not narrowed above the leaf sheath, entire, but sometimes showing spines on young shoots or on reduced basal leaves, 1.8–2.2 cm wide, 15.0–45.0

cm long; leaf sheath narrow, dark red, 2.0–6.0 cm long. Inflorescence simple, dense, rachis reddish, slightly furfuraceous or glabrous, 8.0–18.0 cm long. Scape erect, stout, glabrous; scape bracts subfoliaceous, erect, longer than the internodes and involute about the scape, reddish-green. Floral bracts broadly ovate, acuminate, rose, glabrous outside, furfuraceous within, the lowest equaling or exceeding the pedicels. Pedicels slender, 1.0–2.5 cm long. Sepals lanceolate, acute, strongly alate-carinate, 2.0–2.5 cm long. Corolla zygomorphic at the anthesis with petals erect, red, acute, unappendaged, 5.0–5.5 cm long. Ovary superior; ovules bicaudate. Fruit capsule septicidal; seed bicaudate.

MATERIAL EXAMINED. Santa Maria Madalena—Serra da Furquilha, 04 III 1935, fl., *Santos Lima & Brade 14180* (RB); Pedra do Desengano, 17 XII 1986, fl., *G. Martinelli et al. 11999* (RB); 06 X 1988, fl., *G. Martinelli et al. 13161* (RB); 01 VII 1989, fl., *A. Costa et al. 315* (RB). Nova Friburgo—Pedra da Bicuda, 04 XII 1991, fl., *T. Wendt & A. Costa 221* (RB); Pedra dos Mafort, 07 XI 1982, fl. and fr., *C. Farney 153* (RB). Macaé—Pico do Frade de Macaé, 16 IX 1982, fl., *G. Martinelli et al. 8721* (RB).

Recent collections have added important information to the species circumscription; for instance, the wide variation in plant shape and the presence of spines on young shoots or on the reduced basal leaves. The latter characteristic was observed in the collections from Pedra do Desengano, in the municipality of Santa Maria Madalena; it was not seen, however, in all individuals of that population. The presence or absence of leaf spines may be associated with the plant's maturity, since young individuals seemed to show them more often. This characteristic should be further analyzed at Pedra do Desengano and in other areas where the species has occurred.

4. *Pitcairnia flammea* Lindley, Bot. Reg. 13: 1092. 1827. FIGURE 6.

TYPE. Guanabara, Rio de Janeiro, 1827, *Harrison s.n.* (CGE, holotype; photo, GH).

Pitcairnia suaveolens Lindley, Bot. Reg. 13: 1069. 1827. **TYPE:** *Harrison s.n.* (CGE, holotype; photo, RB and HB). **SYN. NOV.**

Pitcairnia beycalema Beer, Bromel. 63, 1857. **TYPE:** *Schonbrunn Hortus* (W). **SYN. NOV.**

Pitcairnia lancifolia Mez in Martius, Fl. Bras. 3(3): 447. 1894. **TYPE:** *Glaziou 3628* (BR, holotype; P, isotype; photo, RB and HB). Serra dos Orgãos, Rio de Janeiro, 20 V 1869. **SYN. NOV.**

Pitcairnia lancifolia var. *minor* L. B. Smith, Bol. Mus. Nac. Rio de Janeiro 2 (15): 4. 1952. **TYPE:** *Brade s.n.* (R, holotype; photo, RB). Serra da

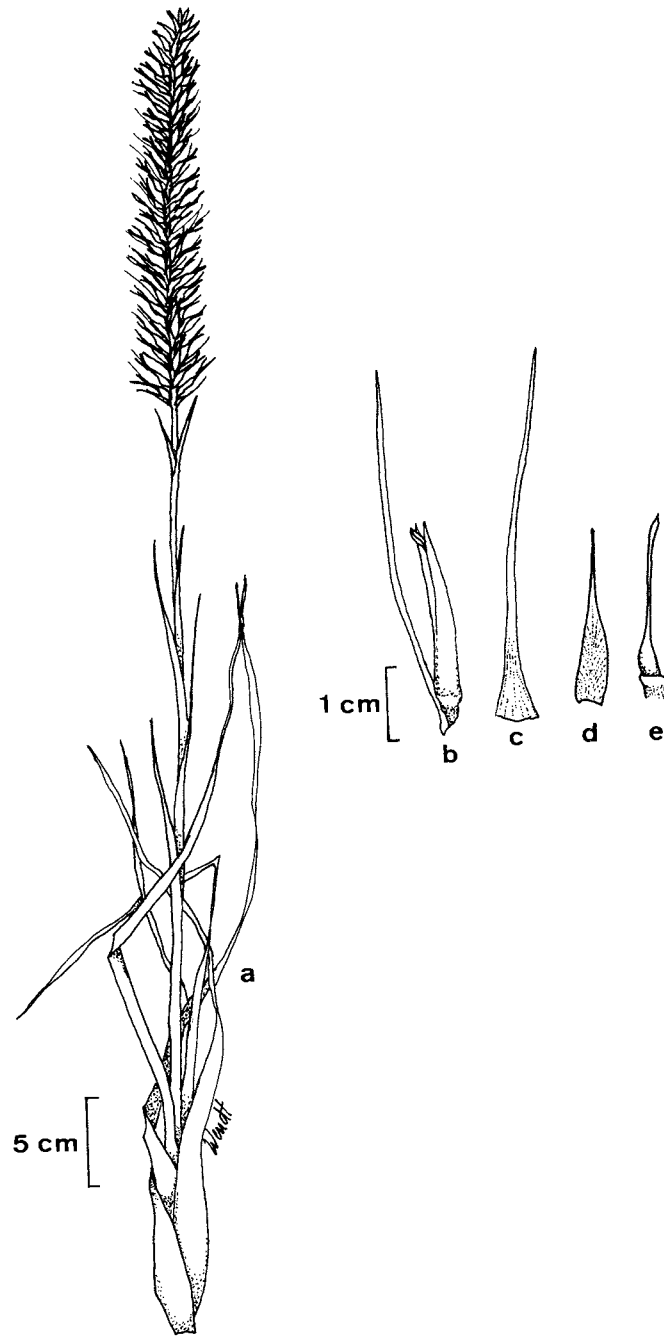


FIGURE 4. *Pitcairnia encholirioides*. A, habit. B, flower and bract. C, floral bract. D, sepal. E, gynoecium. Drawn from Santos Lima & Brade 13249 (RB).

Tijuca, Guanabara, Rio de Janeiro, 1931. Syn. nov.

Pitcairnia pumila Weber, Feddes Rep. 93(5): 347. 1982. TYPE: Amanda & Michael Bleher s.n.

(WEB, holotype). Serra dos Orgãos, Rio de Janeiro. Syn. nov.

Plant flowering ca. 15.0–150.0 cm tall. Leaf blades linear, long-attenuate, glabrous to densely

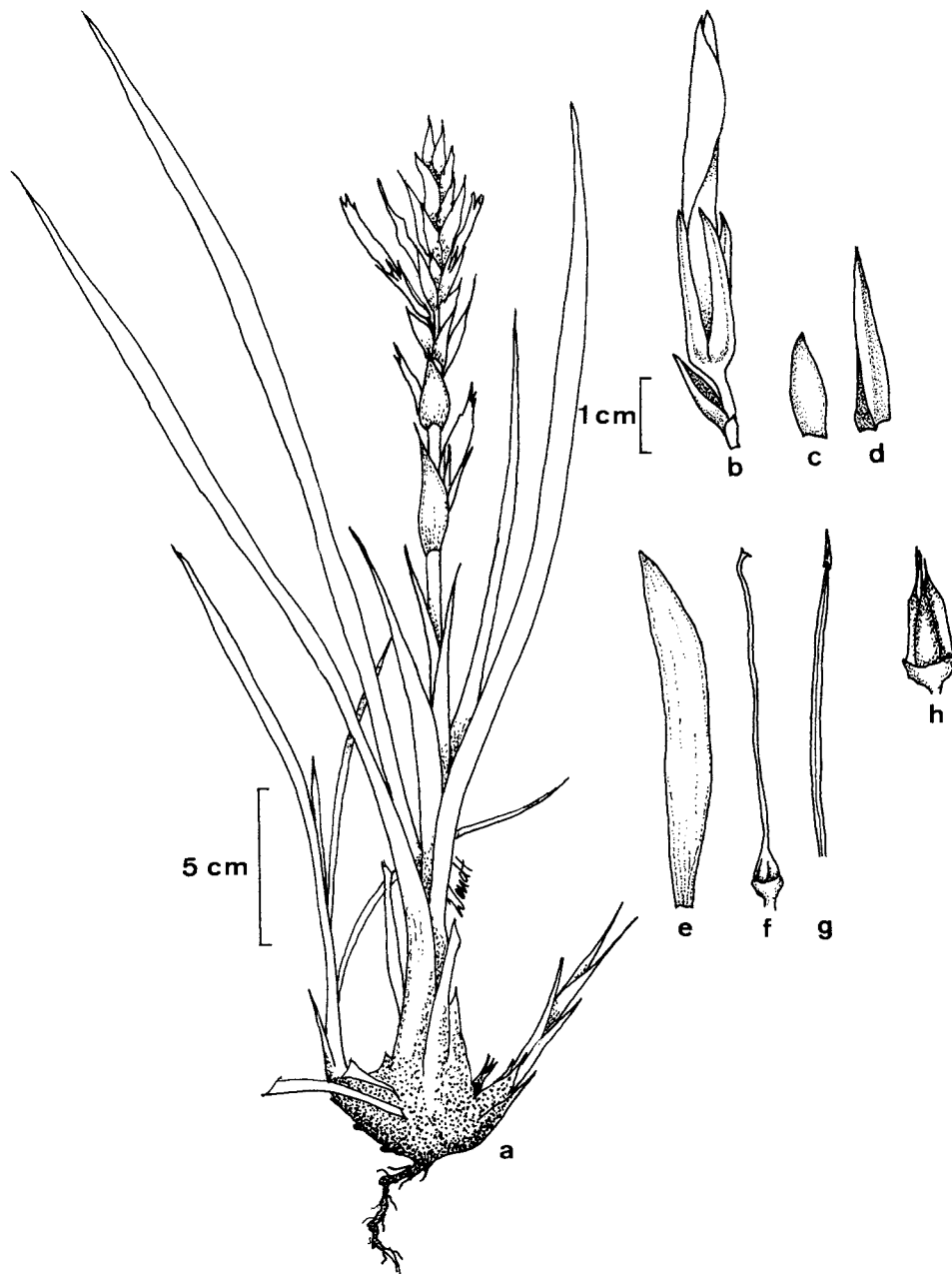


FIGURE 5. *Pitcairnia carinata*. A, habit. B, flower and bract. C, floral bract. D, sepal. E, petal. F, gynoecium. G, stamen. H, fruit. Drawn from G. Martinelli 11999 (RB) and C. Farney 153 (RB).

covered beneath with scales, slightly narrowed above the leaf sheath, 1.0–3.6 cm wide, ca. 20.0–100.0 cm long; leaf sheath short, triangular to largely ovate, castaneous, glabrous or lepidote, 0.5–4.0 cm long. Inflorescence simple, lax or dense, few to many flowers (ca. 4–70), glabrous

or lepidote, 5.0–50.0 cm long. Scape erect, slender or stout, glabrous or lepidote; the basal scape bracts foliaceous and imbricate; the upper narrowly triangular, acuminate, shorter to exceeding the internodes. Floral bracts narrowly triangular, shorter to exceeding the length of the pedicels.

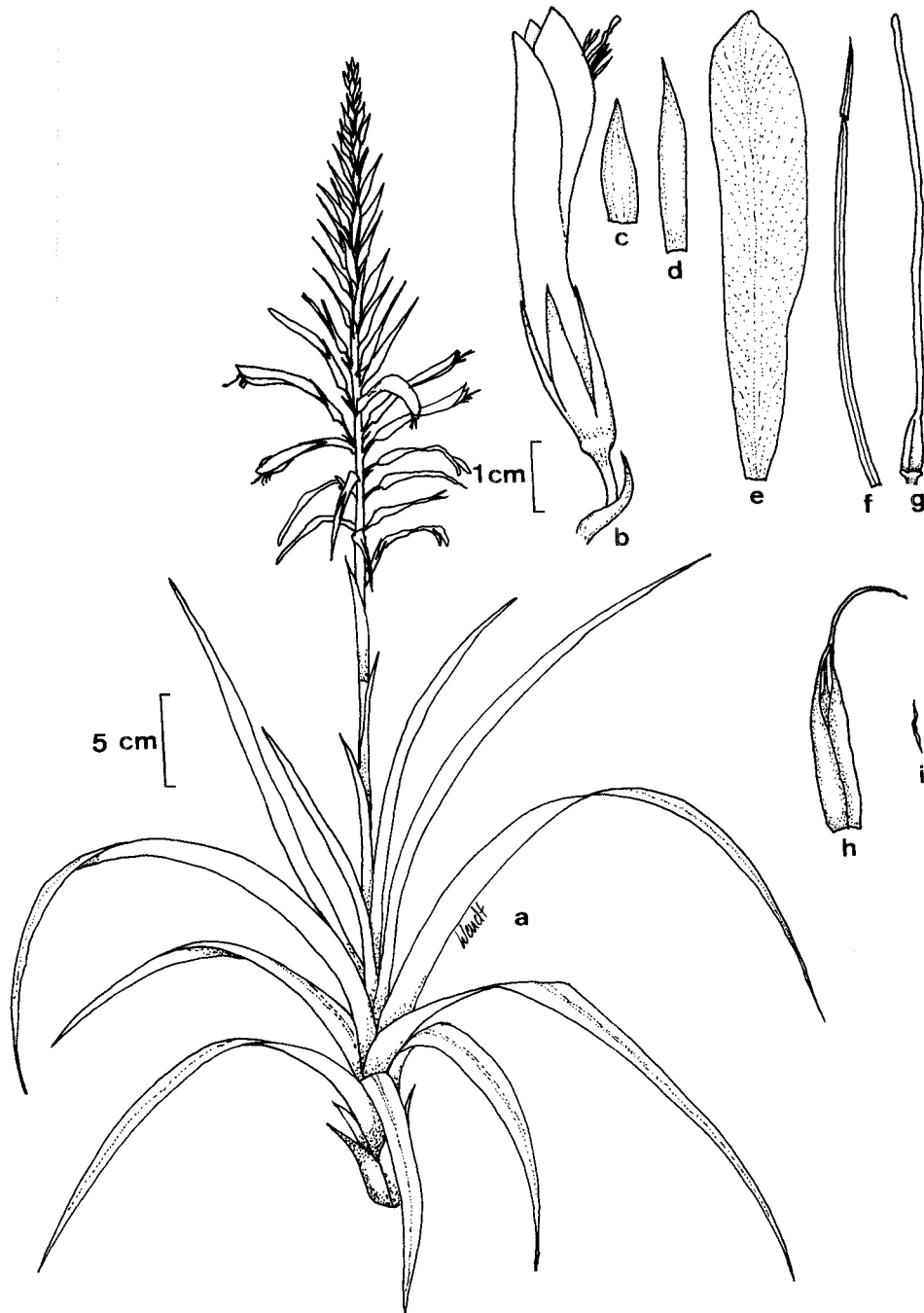


FIGURE 6. *Pitcairnia flammea*. A, habit. B, flower and bract. C, floral bract. D, sepal. E, petal. F, stamen. G, gynoecium. H, fruit. Drawn from A. Costa 95 (RB).

Pedicels slender, 0.8–3.5 cm long. Sepals narrowly triangular, 1.5–3.5 cm long. Corolla zygomorphic at the anthesis with petals erect, red or yellowish-white, acute, unappendaged, 5.0–

6.0 cm long. Ovary superior; ovules bicaudate. Fruit capsule septicial; seed bicaudate.

MATERIAL EXAMINED. Santa Maria Madalena—Estrada para o Sto Antônio do Imbé, 27 IX 1964, fl.,

Santos 2052 and Flaster 1089 (R, HB); Rifa, 24 III 1955, fl., *E. Pereira 1322* (RB); Fazenda Mater Boni, 18 II 1981, fl. and fr., *G. Martinelli 7613* (RB). Resende—Itatiaia, 15 II 1942, fl., *Brade 17171* (RB); Itatiaia, caminho para o Vêu da Noiva, 04 IV 1972, fl., *P. I. S. Braga 2456* (RUSU). Petrópolis—estrada velha Rio-Petrópolis, fl., *L. B. Smith & Mus. R 6493* (R lost, RB photocopy); divisa com Pati do Alferes, 23 VII 1968, fl., *R. Braga 23* (RB, HB); 09 VI 1978, fl., *G. Martinelli et al. 4569* (RB); Morro do Cuca, entre Vale das Videiras e Araras, 26 IX 1977, fl., *G. Martinelli 3085* (RB); estrada Rio-Petrópolis, 27 III 1964, fl., *Fromm 1622* (RB, HB); Serra da Estrela, 28 II 1967, fl., *E. Pereira 10545* (HB); Vale do Bonsucesso, 27 I 1968, fl., *D. Sucre 2207-A and P. I. S. Braga 65* (RB); Morro do Cuca, entre Vale das Videiras e Araras, 17 XII 1973, fl., *G. Martinelli 107* (RB); Rocinha, Pedro do Rio, 24 II 1936, fl., *Freire 652* (R). Teresópolis—Dedo de Deus, 03 V 1917, fl., *A. J. Sampaio 2444* (R); Serra dos Orgãos, 21 X 1977, fl., *G. Martinelli 3314* (RB); 05 II 1955, fl., *Vidal s.n.* (R); represa dos Guinle, 31 I 1978, fr., *A. Gentry 908* (RB); Fazenda Varginha, 02 IV 1986, fl., *R. Ribeiro 789* (GUA); Pedra do Cavalo, 1952, fl., *Vidal II-1781* (R); para o Garrafão, 13 VI 1940, fl., *Brade 16295* (RB, R); 01 IV 1917, fl., *A. J. Sampaio 2093* (R); 02 V 1929, fl., *Brade 9533* (R); Serra dos Orgãos, III 1841, fl., *Gardner 5895* (K); entre Barragem e a Toca dos caçadores, 01 X 1959, fl., *P. Carauta 119* (R); Parque Nacional da Serra dos Orgãos, Museu Martius, 21 X 1977, fl., *G. Martinelli 3334* (RB); Rio Beija-flor, 17 VIII 1983, fl., *G. Martinelli 9303* (RB); Garrafão, 04 V 1917, fl., *A. J. Sampaio 2460* (R). Nova Friburgo—Morro da Caledônia, 08 VI 1977, fl., *G. Martinelli et al. 2511* (RB); Morro da torre de TV, 06 VII 1976, fl., *M. C. Viana 807* (GUA); Macaé de Cima, 27 XI 1986, fl., *G. Martinelli et al. 11949* (RB); entre Teodoro de Oliveira e Nova Friburgo, 20 IV 1952, fl., *L. B. Smith 6680-A* (R); Rio Macaé, perto de Lumiar, 06 VI 1976, fl., *F. Dungs 23* (HB); picada para Teodoro de Oliveira, 03 XII 1991, fl., *T. Wendt & A. Costa 215* (RB); Pedra da Bicuda, 04 XII 1991, fl., *T. Wendt & A. Costa 220* (RB); estrada Rio-Friburgo, 26 XI 1939, fl., *B. Lutz 1339* (R). Mangaratiba—Vale do Rio do Saco, 18 XI 1986, fl., *P. Carauta 5397* (GUA). Nova Iguaçu—Tinguá, IV 1966, fl., *L. Duarte s.n.* (GUA). Rio de Janeiro—Horto da Estação Biológica, 24 IV 1936, fl., *A. Castellanos 23886* (RB, GUA); 22 VII 1968, fr., *J. P. Lanna Sobrinho 1761* (GUA); Pedra da Gávea, VII 1916, fl., *Frazão s.n.* (RB); Pico da Tijuca, 14 V 1935, fl., *Brade 14494* (RB); 22 III 1960, fl., *A. Castellanos 22709* (GUA, HB); Tijuca, fl., *Ule 4692* (R); 01 V 1977, fl., *P. Carauta 2445* (GUA); Corcovado, 19 V 1987, fr., *T. Wendt et al. 128 & 129* (RB); Estrada para o Redentor, 08 IV 1962, fl., *G. Pabst et al. 6909* (RB, HB); Morro do Grajaú, 28 IV 1947, fl., *Mello Filho 544* (R); Copacabana, 11 VII 1889, fl., *Schwacke 6665* (RB); Irmão Maior do Leblon, 15 V 1966, fl., *P. Carauta 326* (GUA); Av. Niemeyer, 29 VI 1922, fl., *Freire & Vidal s.n.* (R); 19 V 1966, fl., *E. Pereira 10484* (HB); 09 VII 1987, fl., *T. Wendt 171* (RB); Restinga da Tijuca, 02 IV 1941, fl., *O. Machado s.n.* (RB); Restinga de Jacarepaguá, 07 V 1958, fl., *E. Pereira et al. 3722* (RB, HB); 27 VI 1961, fl., *A. P. Duarte 5881* (RB); Restinga de Grumari, 14 VIII 1968, fr., *D. Sucre 3536* (RB); Recreio dos

Bandeirantes, 01 VI 1935, fl., *B. Lutz 902* (R); 11 VI 1946, fl., *Mello Filho 497* (R); Restinga de Itapeba, Morro Rangel, 10 V 1964, fl., *N. Santos 5128* (R); 07 VI 1960, fl., *B. Flaster 92* (GUA, HB); Serra da Carioca, 19 III 1935, fl., *Brade 14380* (RB); caminho para Gruta da Geonoma, 14 I 1976, fl., *D. Araújo 939* (GUA); Estrada da Vista Chinesa, 02 XI 1967, fl., *J. P. Lanna Sobrinho 1617* (GUA, HB); 05 V 1980, fl. and fr., *R. Correia 99* (GUA); Morro Queimado, 31 I 1934, fl., *E. Pereira s.n.* (HB); Corcovado, III 1897, fl., *Ule 4166* (R); Pedra da Gávea, 21 V 1916, fl., *A. Lutz 1033* (R); IV 1968, fl., *L. B. Smith 6429* (R); 08 VII 1977, fl., *Beatriz s.n.* (HB); Magé—estrada Rio-Teresópolis, 16 IV 1987, fl., *A. Costa 81* (RB); Garrafão, II 1952, fl., *Vidal II-751* (R). Niterói—Itaipu, Morro Andorinhas, 14 IV 1980, fl., *D. Araújo 3780* (GUA). Silva Jardim—Juturnahiba, 20 VI 1938, fl., *A. Passarelli 112* (R). Parati—13 II 1968, fl., *L. B. Smith & McWilliams 15433* (R); enseada de Paratimirim, 16 III 1968, fl., *G. Martinelli 11567* (RB). Angra dos Reis—21 II 1974, fl., *Reitz 7584* (RB); Ilha Grande, Praia do Sul, 05 XII 1980, fl., *D. Araújo 4205* (GUA).

Smith (1943) considered several species of *Pitcairnia* to be varieties of *P. flammea*, arguing that the characteristics used in the separation of the species proved to be inconstant as the volume of herbarium material grew. He defined five varieties in addition to the typical, which are: *P. flammea* var. *roezlii* (E. Morr.) L. B. Smith, *P. flammea* var. *floccosa* L. B. Smith, *P. flammea* var. *corcovadensis* (Wawra) L. B. Smith, *P. flammea* var. *glabrior* L. B. Smith and *P. flammea* var. *pallida* L. B. Smith. His key to the varieties, where the use of expressions such as “mostly” and “usually” as well as overlapping measurements, indicates a difficulty in defining the varieties.

Smith and Reitz (1967) proposed another new variety, *P. flammea* var. *macropoda*, and Pereira (1977) described *P. flammea* var. *spiculosa*. These two varieties have not been reported as occurring in the State of Rio de Janeiro.

The new synonymies proposed here for *P. flammea* are not related to any of the seven varieties mentioned above. In order to reach an understanding about the validity of these varieties, a thorough investigation on the variation pattern within the several plant communities is necessary.

Pitcairnia suaveolens was collected by Harrison in Rio de Janeiro and flowered while in cultivation in England in 1826, as well as *P. flammea*. Smith and Downs (1974) cited only a few specimens of *P. suaveolens* for the States of Minas Gerais and Rio de Janeiro; however none of these exsiccatae are found in Brazilian herbaria. These consist of very old collections. The examination of *Gardner 5895*'s collection of 1841 revealed that it is positively a specimen of *P. flammea*. The types could only be compared

through photographs, where they showed many similarities and no relevant difference. However, the original description of *P. suaveolens* mentions the presence of an appendage on the petal. Since this information could not possibly be checked, this synonym is marked with an interrogation mark.

Pitcairnia beycalema is represented in the collections by five specimens, two for Rio de Janeiro State and three, including the type, originated from cultivation, without a defined provenance. The material of *Smith & Mus R 6493*, of which a photocopy has been examined, is similar to the specimens of *P. flammea*. It was not possible to examine the type; however the original description shows no relevant taxonomic characteristic to justify its maintenance as an independent species.

Pitcairnia lancifolia, known only from the type, and *P. lancifolia* var. *minor*, known from the type and one collection, are known from the Serra dos Orgãos and Serra da Tijuca, where specimens of *P. flammea* have been collected abundantly. The distinctive characteristic of the former two taxa is the presence of petiolated leaves. However, a closer examination of these specimens reveals that rather than petiolated leaves (such as those found in *P. sprucei* Baker, for instance), the leaves of these plants are narrowed right above the sheath, which can also be seen in different gradients for *P. flammea* specimens. This observation indicates that the petiolated leaves characteristic has been wrongly attributed to *P. lancifolia*.

Pitcairnia bumila is known only from the type collection at Serra dos Orgãos. It was described based on a depauperate specimen, of which not even the petals are known. There is no characteristic in the original description which could distinguish this species from *P. flammea*, with which Weber did not compare his new species.

5. *Pitcairnia staminea* Loddiges, Bot. Cab. 8: pl. 722. 1823. FIGURE 7.

TYPE. Original description and plate in the absence of any preserved material (Smith & Downs 1974).

Plant flowering 60.0–140.0 cm tall. Leaf blades linear, long-attenuate, glabrous above and furfuraceous beneath, persistent, homomorphic, entire slightly narrowed above the leaf sheath, 1.2–2.0 cm wide, 30.0–60.0 cm long; leaf sheath subtriangular, sparsely lepidote, 2.5–4.0 cm long. Inflorescence simple, lax, usually many-flowered; rachis red, glabrous to furfuraceous, 15.0–50.0 cm long. Scape erect, slender, sparsely furfuraceous; scape bracts narrowly triangular or lanceolate, attenuate, furfuraceous, usually

smaller than the internodes. Floral bracts narrowly lanceolate, attenuate, three times shorter than the pedicels. Pedicels very slender, more or less perpendicular to the rachis, 2.5–3.5 cm long. Sepals narrowly triangular, attenuate, carinate, greenish, glabrous, 1.9–2.2 cm long. Corolla actinomorphic at the anthesis with petals recurved, red, unappendaged, 5.0–6.0 cm long. Ovary superior; ovules bicaudate. Fruit capsule septicide, seed bicaudate.

MATERIAL EXAMINED. Rio de Janeiro—encostas do Morro da Urca e Pão de Açúcar, 09 VI 1957, fl., *Mello Filho 1349* (R); 08 V 1966, fl., *A. Castellanos s.n.* (GUA); Pedra da Gávea, VII 1915, fl., *A. Frazão s.n.* (RB); Morro da Babilônia, VII 1913, fr., *F. C. Hoehne 17* (R); Pedra Musema, 11 V 1963, fl., *J. P. Lanna Sobrinho 633* (GUA); Recreio dos Bandeirantes, Pedra do Itanhangá, IV 1960, fl., *A. P. Duarte 5219* (RB, RUSU); 30 V 1987, fl., *T. Wendt & T. Fontoura 143* (RB). Niterói—Praia de Itacoatiara, falso Pão de Açúcar, 15 III 1964, fl., *L. F. Pabst s.n.* (HB). Maricá—Morro do Céu, 11 IV 1986, fl., *D. Araújo 7348* (GUA); Inoã, 23 VII 1961, fl., *Gomes, Mello Filho & Burle Marx 1209* (RB); Itaipuaçu, próximo a Pedra do Elefante, IV 1988, fl., *T. Fontoura s.n.* (RB); entre as Praias de Itaipuaçu e Itacoatiara, Alto Moirão, 12 IV 1989, fl., *R. Andreatta et al. 878* (RUSU).

6. *Pitcairnia albiflos* Herbert, Bot. Mag. 53: pl. 2642. 1826. FIGURE 8.

TYPE. Original description and plate in the absence of any preserved material (Smith & Downs 1974).

Plant flowering 40.0–100.0 cm tall. Leaf blades linear, long-attenuate, usually glabrous, persistent, homomorphic, entire, slightly narrowed above the leaf sheath, ca. 25.0–70.0 cm long, 1.3–2.0 cm wide; leaf sheath ovate, castaneous toward base, glabrous or lepidote, 3.0–4.0 cm long. Inflorescence simple, lax, usually many-flowered, rachis green, glabrous, 10.0–30.0 cm long. Scape erect, slender, glabrous; the basal scape bracts, foliaceous and imbricate, the upper narrowly triangular, acuminate and not imbricate. Floral bracts narrowly lanceolate, acuminate, approximately half as long as the pedicels, the lower even equaling the pedicels. Pedicels slender, 1.5–2.5 cm long. Sepals pale yellow, narrowly lanceolate, acuminate, slightly carinate, 1.5–1.8 cm long. Corolla actinomorphic at the anthesis with petals recurved, yellowish-white, acute, unappendaged, ca. 3.0–5.0 cm long. Ovary superior; ovules bicaudate. Fruit capsule septicide; seed bicaudate.

MATERIAL EXAMINED. Rio de Janeiro—Corcovado, 13 VII 1946, fl., *Apparicio & Paulo 213* (RB); 15 I 1970, fl., *D. Sucre 6424* (RB); Estrada das Paineiras, 09 VI 1988, fl., *T. Wendt 179* (RB); Pedra do Sumaré,

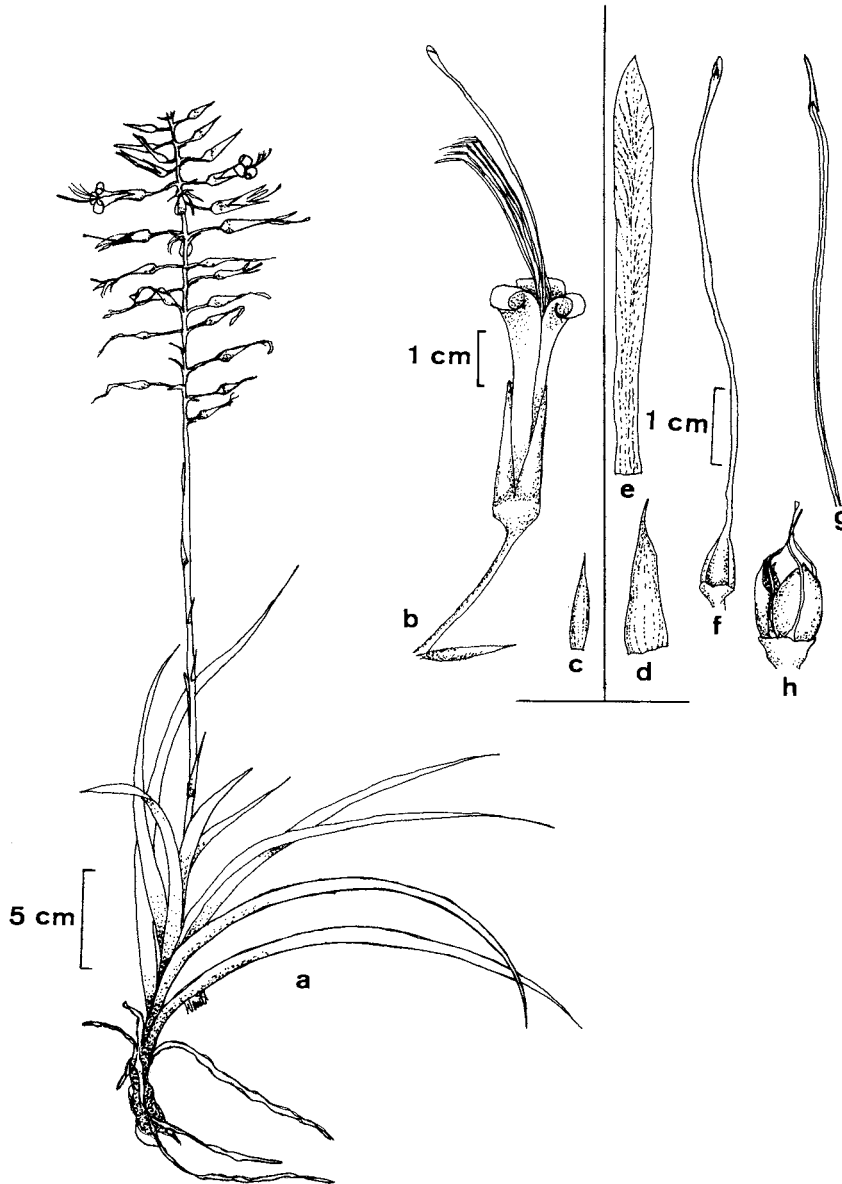


FIGURE 7. *Pitcairnia staminea*. A, habit. B, flower and bract. C, floral bract. D, sepal. E, petal. F, gynoecium. G, stamen. H, fruit. Drawn from *T. Wendt 143* (RB) and *Gomes 1209* (RB).

23 VI 1970, fl., *D. Sucre 7034* (RB); Morro do Grajaú, 28 IV 1947, fl., *Mello Filho 545* (R); Estrada da Vista Chinesa, 11 I 1985, fl., *C. Angeli 590* (GUA); 11 I 1984, fl., *C. Farney 309* (RB); Pedra Bonita, VI 1932, fl., *Brade 11912* (R); 27 V 1961, fl., *H. E. Strang 267* (GUA); Morro da Urca, 09 VI 1957, fl., *M. Emmerich 2* (R); Morro do Pão de Açúcar, 21 XI 1965, fl., *P. Carauta 250* (GUA); 08 V 1966, fl., *A. Castellanos s.n.* (GUA); Pedra da Gávea, 06 IV 1946, fl., *Guerra s.n.* (RB); 07 II 1971, fl., *D. Sucre 7427* (RB); 16 II 1974,

fl., *P. Carauta 1708* (RB, GUA); Lagoa Rodrigo de Freitas, 02 VII 1887, fl. and fr., *Schwacke 5551* (RB).

Herbarium specimens of this species are easily mistaken for *P. flammea*. The distinguished character for *P. albiflos* is the corolla with symmetrically recurved petals at the anthesis. However, in wilting flowers or in dried material this characteristic cannot be observed since the petals

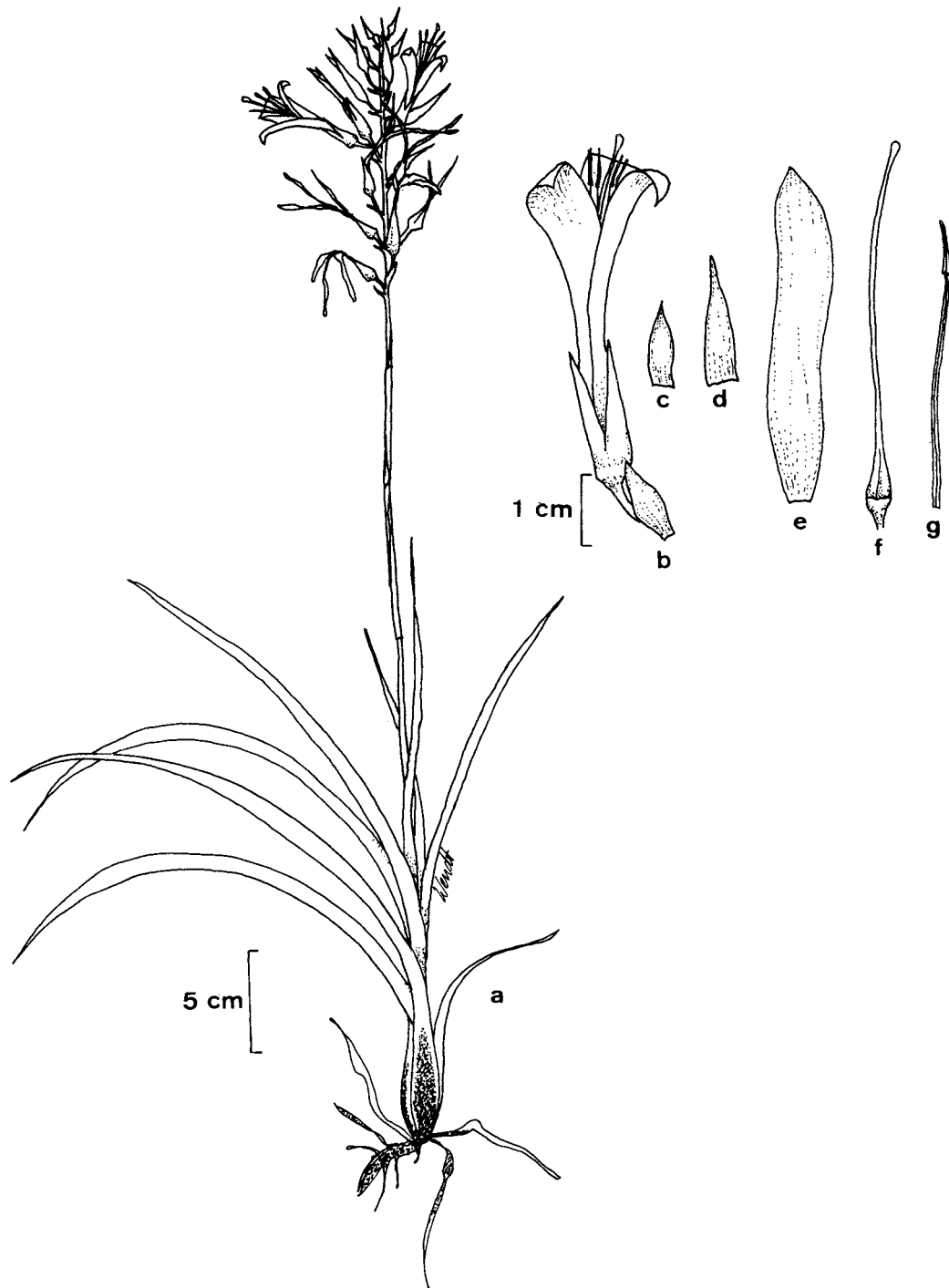


FIGURE 8. *Pitcairnia albiflos*. A, habit. B, flower and bract. C, floral bract. D, sepal. E, petal. F, gynoecium. G, stamen. Drawn from *T. Wendt 179* (RB).

become distorted. Furthermore, this characteristic is rarely recorded as a field observation by collectors. *Pitcairnia staminea* is another species taxonomically close to *P. albiflos*. It also has spiralled petals at the anthesis, but differs from *P. albiflos*, having much longer pedicels (ca. 3.0 cm) that are more or less perpendicular to the rachis. In addition, *P. staminea* petals are more strongly recurved and reddish.

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