

RACINAEA, A NEW GENUS OF BROMELIACEAE (TILLANDSIOIDEAE)

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ABSTRACT

A re-evaluation of *Tillandsia* subgenus *Pseudo-catopsis* (André) Baker revealed sufficiently distinct characters to warrant the establishment of a new genus, **Racinaea**. Named in honor of Racine Foster, *Racinaea* is described and discussed, and new combinations are provided for 46 species and 15 varieties.

KEY WORDS: Bromeliaceae, *Pseudo-catopsis*, *Racinaea*, *Tillandsia*

Tillandsia section *Pseudo-catopsis* was established by André in 1889. Shortly thereafter, Baker (1889) elevated *Pseudo-catopsis* to subgeneric rank. He characterized the group by having leaves rosulate, coriaceous, acuminate, and more or less densely lepidote, spikes distichous, flowers small, and a capsule 3-4 times the length of the sepals. Mez (1896), in his treatment of Bromeliaceae for C. DeCandolle's *Monoaraphiae Phanerogamarum*, accepted *Pseudo-catopsis* as a valid subgenus in *Tillandsia*, but did not accept all of Baker's descriptive characters. He redefined it by using both stamens that are shorter than the petals and asymmetric sepals as the relevant subgeneric characters. In doing so, he transferred several species out of subg. *Pseudo-catopsis* sensu Baker and into other subgenera in *Tillandsia*. Smith & Downs (1977) continued the use of *Pseudocatopsis* sensu Mez in their monograph of the Bromeliaceae, though they further defined it as having sepals broadest towards the apex.

During the course of revisionary work on the genera of Bromeliaceae, we have come to the conclusion that taxa treated under subgenus *Pseudocatopsis* are sufficiently distinct from other tillandsioid species to warrant generic segregation. We therefore establish the new genus *Racinaea* to accommodate them. The unique set of characters that readily distinguish *Racinaea* from other tillandsioid genera are distichous, small and inconspicuous flowers;

asymmetric sepals which are broadest towards the apex and free or nearly so; stamens and pistil that are included in the corolla; and a short and stout style. A generic description and appropriate new combinations for taxa previously treated as *Tillandsia* follow. It should be noted that *Tillandsia adpressa* André and its varieties, while belonging in *Racinaea*, are excluded from the present work because they are being treated separately elsewhere (Grant, in press).

The generic name is adopted in honor of the late Racine Foster (1910-1991) who, with her husband Mulford Foster, collected more than 200 new species of bromeliads, founded the Journal of the Bromeliad Society, and authored the book, *Brazil, Orchid of the Tropics*. She was a remarkable woman and her dedication to the study of bromeliads was an exemplary and lifelong endeavor. It gives us great pleasure to name our new genus after her.

Racinaea M.A. Spencer & L.B. Smith, *gen. nov.* TYPE: *Tillandsia cuspidata* L.B. Smith, *Phytologia* 9:252, pl. 3, figs. 7-8. 1963.

Tillandsia section *Pseudo-Catopsis* André, *Bromel. Andr.* 62, 66. 1889.

Tillandsia subgenus *Pseudo-Catopsis* (André) Baker, *Handb. Bromel.* 157, 192. 1889.

Herbae acaules vel caulescentes, epiphyticae. Folia rosulatum subpatentia vel subbulbosa. Vaginae amplae, aequales vel subinflatae. Laminae lingulatae vel subfiliformes. Scapus distinctus. Inflorescentia simplex vel composita, ramis distichis, rarissime leviter secundis. Flores hermaphroditi, actinomorphi, distichi vel raro secundi, sessiles vel brevissime pedicellati, inconspicui, omnibus minuti, saepissime pallidi vel lutescentes. Sepala convoluta, asymmetrica et fere ad apicem latiora, non ultra 15 mm longa, libera vel rarissime basi brevissime coalita. Petala libera, nuda, plus minusve patentia quam sepalis breviora vel longiora. Stamina et pistilla semper inclusa. Filamenta libera, quamquam interdum adnata ad petala. Ovarium optime superius, glaberrimum. Stylus subsessilis vel brevissimus et crassus, ovario brevior. Capsula septicida dehiscens. Semina erecta, basi pilorum pappiformium sericantiumque seuto niveorum coma appendiculata.

Plants caulescent to short-caulescent, epiphytic. Leaves rosulate, open to subbulbous. Sheaths ample, even to subinflated. Blades ligulate to subfiliform. Scape distinct. Inflorescence simple or compound, branches distichous, rarely secund. Flowers hermaphroditic, actinomorphic, distichous to rarely secund, sessile to short pedicellate, small and inconspicuous, usually pale to yellow. Sepals convolute, asymmetric and broadest towards the apex, not more than 15 mm long, free to rarely short connate at base. Petals free, naked, more

or less spreading, shorter than to longer than the sepals. Stamens and pistil always included in the petals, sometimes deeply so. Filaments free, sometimes adnate to the petals. Ovary completely superior, glabrous. Style subsessile to short and stout, shorter than the ovary. Capsule septicidal, dehiscent. Seeds erect, basally appendaged with a white, pappiform coma.

Racinaea adscendens (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia adscendens* L.B. Smith, *North Am. Fl.* 19:122. 1938. TYPE: MEXICO. *Botteri* 1005 (HOLOTYPE: GH).

Racinaea aeris-incola (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Vriesea aerisincola* Mez in Martius, *Fl. Bras.* 3(3):555. 1894. TYPE: BRAZIL. *Lhotsky s.n.* (LECTOTYPE: G). *Tillandsia aeris-incola* (Mez) Mez in DC., *Monogr. Phan.* 9:759. 1896.

Racinaea blassii (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia blassii* L.B. Smith, *Phytologia* 22:85, pl. 1, fig. 5-6. 1971. TYPE: ECUADOR. *Hort. A. Blass* 4 (HOLOTYPE: US).

Racinaea commixa (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia commixa* Mez, *Repert. Sp. Nov.* 16:75. 1919. TYPE: PERU. *Mathews s.n.* (HOLOTYPE: K).

Racinaea contorta (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia contorta* Mez & Pittier ex Mez, *Bull. Herb. Boiss.*, II. 3:224. 1903. TYPE: COSTA RICA. *Tonduz in Herb. Costaric.* 11376 (HOLOTYPE: B).

Racinaea crispa (Baker) Spencer & Smith, *comb. nov.* BASIONYM: *Guzmania crispa* Baker, *Jour. Bot. London* 25:173. 1887. TYPE: COLOMBIA. *Purdie s.n.* (HOLOTYPE: K). *Tillandsia crispa* (Baker) Mez in DC., *Monogr. Phan.* 9:739. 1896.

Racinaea cuspidata (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia cuspidata* L.B. Smith, *Phytologia* 9:252, pl. 3, figs. 7-8. 1963. TYPE: PERU. *Wurdack* 1457 (HOLOTYPE: US; Isotype: USM).

Racinaea diffusa (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia diffusa* L.B. Smith, *Phytologia* 9:252, pl. 3, figs. 9-10. 1963. TYPE: PERU. *Wurdack* 1547 (HOLOTYPE: US).

Racinaea elegans (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia elegans* L.B. Smith, *Contr. U. S. Natl. Herb.* 29:528, fig. 84. 1954. TYPE: ECUADOR. *Drew E-391* (HOLOTYPE: US).

- Racinaea fawcettii** (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia fawcettii* Mez in DC., *Monogr. Phan.* 9:752. 1896. TYPE: JAMAICA. *Harris in Fl. Jamaica* 5186 (HOLOTYPE: B; Isotype: GH).
- Racinaea flexuosa** (Baker) Spencer & Smith, *comb. nov.* BASIONYM: *Catopsis flexuosa* Baker, *Jour. Bot. London* 25:175. 1887. TYPE: BOLIVIA. *Mandon* 1172 (HOLOTYPE: K). *Tillandsia bakeri* L.B. Smith, *Contr. Gray Herb.* 95:45. 1931.
- Racinaea fraseri** (Baker) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia fraseri* Baker, *Handb. Bromel.* 187. 1889. TYPE: COLOMBIA or ECUADOR (without locality). *Fraser s.n.* (HOLOTYPE: BM).
- Racinaea ghiesbreghtii** (Baker) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia ghiesbreghtii* Baker, *Handb. Bromel.* 206. 1889. TYPE: MEXICO. *Ghiesbreght* 77 (HOLOTYPE: P).
- Racinaea gilmartiniae** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia gilmartiniae* L.B. Smith, *Phytologia* 9:247, pl. 2, figs. 5-6. 1963. TYPE: ECUADOR. *Gilmartin* 799 (HOLOTYPE: US).
- Racinaea homostachya** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia homostachya* André, *Enum. Bromel.* 7. 13 Dec. 1888; *Rev. Hortic.* 60:567. 16 Dec. 1888. TYPE: ECUADOR. *André* 3763 (HOLOTYPE: K).
- Racinaea inconspicua** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia inconspicua* André, *Enum. Bromel.* 8. 13 Dec. 1888; *Rev. Hortic.* 60:568. 16 Dec. 1888. TYPE: ECUADOR. *André* 3795 (HOLOTYPE: K).
- Racinaea insularis** (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia insularis* Mez in DC., *Monogr. Phan.* 9:756. 1896. TYPE: ECUADOR. *Steindachner* 29 (HOLOTYPE: W).
- Racinaea insularis** (Mez) Spencer & Smith var. *latilamina* (Gilmartin) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia insularis* Mez var. *latilamina* Gilmartin, *Phytologia* 16:163. 1968. TYPE: ECUADOR. *Gilmartin & Hornman* 882 (HOLOTYPE: US).
- Racinaea jenmanii** (Baker) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia jenmanii* Baker, *Jour. Bot. London* 25:345. 1887. TYPE: GUYANA. *Jenman* 848 (HOLOTYPE: K; Isotype: BRG).
- Racinaea laminata** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia laminata* L.B. Smith, *Phytologia* 9:253, pl. 3, figs. 11-12.

1963. TYPE: PERU. *Wurdack 1502* (HOLOTYPE: US; Isotype: USM).

Racinaea lescaillei (C. Wright) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia lescaillei* C. Wright in Sauvalle, Anal. Acad. Ci. Habana 8:53. 1871. TYPE: CUBA. *C. Wright 674* in part (HOLOTYPE: GH).

Racinaea membranacifolia (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia membranacifolia* L.B. Smith, Contr. Gray Herb. 89:11, 32, pl. 2, figs. 4-7. 1930. TYPE: COLOMBIA. *Killip & Smith 15067* (HOLOTYPE: GH; Isotypes: F, US).

Racinaea michelii (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia michelii* Mez, Bull. Herb. Boiss., II. 3:146. 1903. TYPE: COLOMBIA. *Langlassé 94* (HOLOTYPE: B; Isotypes: F, GH).

Racinaea monticola (Mez & Sodiro) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia monticola* Mez & Sodiro, Bull. Herb. Boiss., II. 4:1135. 1904. TYPE: ECUADOR. *Sodiro 171/33* (HOLOTYPE: B).

Racinaea multiflora (Bentham) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia multiflora* Bentham, Bot. Sulph. 174. 1844. TYPE: ECUADOR. *Cuming 1269* (HOLOTYPE: K).

Racinaea multiflora (Bentham) Spencer & Smith var. *decipiens* (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia decipiens* André, Enum. Bromel. 13 Dec. 1888; Rev. Hort. 60:567. 16 Dec. 1888. TYPE: ECUADOR. *André 4055* (HOLOTYPE: K; Isotype: NY). *Tillandsia multiflora* Bentham var. *decipiens* (André) L.B. Smith, Contr. Gray Herb. 89:13, 35. 1930.

Racinaea multiflora (L.B. Smith) Spencer & Smith var. *tomensis* (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia multiflora* Bentham var. *tomensis* L.B. Smith, Contr. Gray Herb. 89:13, 35, pl. 5, figs. 1-4. 1930. TYPE: ECUADOR. *Hitchcock 21357* (HOLOTYPE: GH; Isotype: US).

Racinaea pallidiflavens (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia pallidiflavens* Mez, Repert. Nov. Sp. 3:36. 1906. TYPE: PERU. *Weberbauer 3298* (HOLOTYPE: B).

Racinaea pardina (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia pardina* L.B. Smith, Lilloa 14:98, figs. 15 & 16. 1948. TYPE: BOLIVIA. *Buchtien 7183* (HOLOTYPE: US).

- Racinaea parviflora** (Ruiz & Pavón) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia parviflora* Ruiz & Pavón, *Fl. Peruv.* 3:41, pl. 269. 1802. TYPE: PERU. *Ruiz & Pavón s.n.* (HOLOTYPE: BM).
- Racinaea parviflora** (Ruiz & Pavón) Spencer & Smith var. **expansa** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia parviflora* Ruiz & Pavón var. *expansa* L.B. Smith, *Phytologia* 22:87, fig. 7. 1971. TYPE: ECUADOR. *Blass Hortus* 6 (HOLOTYPE: US).
- Racinaea pectinata** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia pectinata* André, *Enum. Bromel.* 7. 13 Dec. 1888; *Rev. Hortic.* 60:567. 16 Dec. 1888. TYPE: ECUADOR. *André 3032* (HOLOTYPE: K; Isotype: NY).
- Racinaea pendulispica** (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia pendulispica* Mez in DC., *Monogr. Phan.* 9:745. 1896. TYPE: PERU. *Poeppig 1348* (HOLOTYPE: G; Isotype: W).
- Racinaea penlandii** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia penlandii* L.B. Smith, *Lilloa* 6:384, pl. 1, figs. 14-15. 1941. TYPE: ECUADOR. *Penland & Summers 1138* (HOLOTYPE: GH).
- Racinaea penlandii** (L.B. Smith) Spencer & Smith var. **pendunculata** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia penlandii* L.B. Smith var. *pendunculata* L.B. Smith, *Lilloa* 6:385, pl. 1, figs. 16-17 1941. TYPE: COLOMBIA. *Daniel & Tomas 1558* (HOLOTYPE: US).
- Racinaea pugiformis** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia pugiformis* L.B. Smith, *Contr. Gray Herb.* 89:13, 24, pl. 1, figs. 4-7. 1930. TYPE: ECUADOR. *Hitchcock 21586* (HOLOTYPE: GH; Isotype: US).
- Racinaea quadripinnata** (Mez & Sodiro) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia quadripinnata* Mez & Sodiro, *Bull. Herb. Boiss.*, II. 5:105. 1905. TYPE: ECUADOR. *Sodiro 171/31* (HOLOTYPE: B).
- Racinaea riocreuxii** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia riocreuxii* André, *Enum. Bromel.* 7. 13 Dec. 1888; *Rev. Hortic.* 60:567. 16 Dec. 1888. TYPE: ECUADOR. *André 4408* (HOLOTYPE: K).
- Racinaea ropalocarpa** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia ropalocarpa* André, *Enum. Bromel.* 6. 13 Dec. 1888; *Rev. Hortic.* 60:566. 16 Dec. 1888. TYPE: COLOMBIA. *André 2319* (HOLOTYPE: K; Isotype: NY).

Racinaea rothschuhiana (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia rothschuhiana* Mez in DC., *Monogr. Phan.* 9:645. 1896. TYPE: NICARAGUA. *Rothschuh* 94 ("54") (HOLOTYPE: B).

Racinaea sanctae-martae (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia sanctae-martae* L.B. Smith, *Phytologia* 5:396, pl. 1, figs. 3-4. 1956. TYPE: COLOMBIA. *H.H. Smith* 2346 (HOLOTYPE: NY; Isotype: K).

Racinaea seemannii (Baker) Spencer & Smith, *comb. nov.* BASIONYM: *Guzmania seemannii* Baker, *Handb. Bromel.* 153. 1889. TYPE: ECUADOR. *Seemann* 898 (HOLOTYPE: K). *Tillandsia seemannii* (Baker) Mez in DC., *Monogr. Phan.* 9:737. 1896.

Racinaea sinuosa (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia sinuosa* L.B. Smith, *Contr. Gray Herb.* 89:14, 32, pl. 2, figs. 8-12. 1930. TYPE: ECUADOR. *Hitchcock* 21358 (HOLOTYPE: GH; Isotypes: NY, US).

Racinaea sinuosa (L.B. Smith) Spencer & Smith var. ***quirozii*** (Gilmartin) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia sinuosa* L.B. Smith var. *quirozii* Gilmartin, *Phytologia* 16:162. 1968. TYPE: ECUADOR. *Gilmartin* 1176 (HOLOTYPE: US).

Racinaea spiculosa (Grisebach) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia spiculosa* Grisebach, *Nachr. Ges. Wiss. Goett.* "1864":17. 1865. TYPE: VENEZUELA. *Fendler* 1518 (HOLOTYPE: GOET).

Racinaea spiculosa (Grisebach) Spencer & Smith var. ***micrantha*** (Baker) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia micrantha* Baker, *Jour. Bot. London* 25:303. 1887. TYPE: TRINIDAD. *Fendler* 818 (HOLOTYPE: K). *Tillandsia spiculosa* Grisebach var. *micrantha* (Baker) L.B. Smith, *Phytologia* 19:288. 1970.

Racinaea spiculosa (Grisebach) Spencer & Smith var. ***stenoglossa*** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia stenoglossa* L.B. Smith, *Fieldiana Bot.* 28:151, fig. 23 g-h. 1951. TYPE: VENEZUELA. *Steyermarck* 59775 (HOLOTYPE: F). *Tillandsia spiculosa* Grisebach var. *stenoglossa* (L.B. Smith) Gouda, *Bromeliaceae subf. Tillandsioideae. Flora of the Guianas* (Series A: Phanerogams, Fascicle 3):62. 1987.

Racinaea spiculosa (Grisebach) Spencer & Smith var. ***ustulata*** (Reitz) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia triticea* Burchell ex Baker var. *ustulata* Reitz, *Sellowia* 14:108. 1962. TYPE: BRAZIL. *Reitz* 5934 (HOLOTYPE: HBR).

- Racinaea steyermarkii** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia steyermarkii* L.B. Smith, *Phytologia* 28:38, pl. 3, fig. I-K. 1974. TYPE: VENEZUELA. *Steyermark, Espinoza, & Diederichs 106763* (HOLOTYPE: US; Isotype: VEN).
- Racinaea subulata** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia subulata* André, *Enum. Bromel.* 7. 13 Dec. 1888; *Rev. Hortic.* 60:567. 16 Dec. 1888. TYPE: ECUADOR. *André 3763 e.p.* (HOLOTYPE: K).
- Racinaea tandapiana** (Luther) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia tandapiana* Luther, *Selbyana* 7(1):91-92, pl. 4. 1982. TYPE: ECUADOR. *Wunderlin et. al. 8651* (HOLOTYPE: SEL; Isotypes: UNA,USF).
- Racinaea tenuispica** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia tenuispica* André, *Enum. Bromel.* 7. 13 Dec. 1888; *Rev. Hortic.* 60:567. 16 Dec. 1888. TYPE: COLOMBIA. *André 2414* in part (HOLOTYPE: K).
- Racinaea tetrantha** (Ruiz & Pavón) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia tetrantha* Ruiz & Pavón, *Fl. Peruv.* 3:39, pl. 265. 1802. TYPE: PERU. *Ruiz & Pavón s.n.* (HOLOTYPE: MA).
- Racinaea tetrantha** (Ruiz & Pavón) Spencer & Smith var. **aurantiaca** (Grisebach) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia aurantiaca* Grisebach, *Nachr. Ges. Wiss. Goett.* "1864":16. 1865. TYPE: VENEZUELA. *Fendler 2575* (HOLOTYPE: GOET). *Tillandsia tetrantha* Ruiz & Pavón var. *aurantiaca* (Grisebach) L.B. Smith, *Contr. Gray Herb.* 89:15. 1930.
- Racinaea tetrantha** (Ruiz & Pavón) Spencer & Smith var. **caribaea** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: TYPE: VENEZUELA. *Fendler 1523* (HOLOTYPE: GOET). *Tillandsia caribaea* L.B. Smith, *Proc. Amer. Acad. Arts* 70 (*Contr. Gray Herb.* 106):155. 1935; *Tillandsia tetrantha* Ruiz & Pavón var. *caribaea* (L.B. Smith) Gouda, *Bromeliaceae subf. Tillandsioideae. Flora of the Guianas* (Series A: Fascicle 3):65-66. 1987.
- Racinaea tetrantha** (Ruiz & Pavón) Spencer & Smith var. **densiflora** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia aurantiaca* Grisebach var. *densiflora* André, *Enum. Bromel.* 7. 13 Dec. 1888; *Rev. Hortic.* 60:567. 16 Dec. 1888. TYPE: ECUADOR. *André 2342* (HOLOTYPE: K; Isotype: NY). *Tillandsia tetrantha* Ruiz & Pavón var. *densiflora* (André) L.B. Smith, *Contr. Gray Herb.* 89:15. 1930.

Racinaea tetrantha (Ruiz & Pavón) Spencer & Smith var. ***miniata*** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia aurantiaca* Grisebach var. *miniata* André, *Enum. Bromel.* 7. 13 Dec. 1888; *Rev. Hortic.* 60:567. 16 Dec. 1888. TYPE: COLOMBIA. *André 3138* (HOLOTYPE: K; Isotype: NY). *Tillandsia tetrantha* Ruiz & Pavón var. *miniata* (André) L.B. Smith, *Contr. Gray Herb.* 89:15. 1930.

Racinaea tetrantha (Ruiz & Pavón) Spencer & Smith var. ***ramosior*** (L.B. Smith) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia tetrantha* Ruiz & Pavón var. *ramosior* L.B. Smith, *Phytologia* 13:147. 1966. TYPE: PERU. *Hutchison & Wright 5669* (HOLOTYPE: US; Isotype: UC).

Racinaea tetrantha (Ruiz & Pavón) Spencer & Smith var. ***scarlatina*** (André) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia aurantiaca* Grisebach var. *scarlatina* André, *Enum. Bromel.* 7. 13 Dec. 1888; *Rev. Hortic.* 60:567. 16 Dec. 1888. TYPE: ECUADOR. *André 3138 bis* (HOLOTYPE: K; Isotype: NY). *Tillandsia tetrantha* Ruiz & Pavón var. *scarlatina* (André) L.B. Smith, *Contr. Gray Herb.* 89:15. 1930.

Racinaea trapeziformis (Mez) Spencer & Smith, *comb. nov.* BASIONYM: *Tillandsia trapeziformis* Mez in DC., *Monogr. Phan.* 9:737. 1896. TYPE: COLOMBIA. *Wagner s.n.* (HOLOTYPE: Z; Isotype: B).

Racinaea tripinnata (Baker) Spencer & Smith, *comb. nov.* BASIONYM: *Catopsis tripinnata* Baker, *Handb. Bromel.* 156. 1889. TYPE: ECUADOR. *Pearce s.n.* (HOLOTYPE: K). *Tillandsia tripinnata* (Baker) Mez in DC., *Monogr. Phan.* 9:745. 1896.

DUBIOUS TAXA

The following species probably belong in *Racinaea*, but, since we were unable to examine the types, and the descriptions did not include the relevant generic characters, they are impossible to place in *Racinaea* at this time.

Tillandsia almeriae Rauh, *Trop. und Subtrop. Pflanz.* 58:19-21, fig. 10. 1986.

Tillandsia domingosmartinis Rauh, *Trop. und Subtrop. Pflanz.* 79:17-18, fig. 8. 1991.

Tillandsia haugii Rauh, *Trop. und Subtrop. Pflanz.* 52:46-53. figs. 28-30. 1985.

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