



The transfer of *Vernonia perangusta* to the genus *Vernonanthura* (Vernonieae, Asteraceae) and the correct name for *Vernonanthura phosphorica*

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Abstract

The size and geographical distribution of the genus *Vernonia*, tribe Vernonieae, has been greatly reduced as a result of several revisionary studies. All species of *Vernonia* are now confined to the New World with the vast majority in continental North America. Of the South American species that were not placed in other genera in these treatments, but remained in *Vernonia* [i.e., *V. echioides* (Paraguay, Uruguay), *V. greggii* (Mexico), *V. incana* (Paraguay, Uruguay), *V. perangusta* (Brazil), *V. rubioides* (Brazil)], few have been studied in detail to confirm their generic status. Our work shows that *V. perangusta* is a member of the genus *Vernonanthura* and is hereby transferred to that genus. We also studied the widespread and variable taxon known originally as *Vernonia polyanthes*. This species was transferred to *Vernonanthura* as *V. phosphorica* (based on *Chrysocoma phosphorica*), but the name *Eupatorium polyanthes* has priority over *Chrysocoma phosphorica* and thus a new combination for that taxon is also required in *Vernonanthura*.

Key words: Brazil, Compositae, *Lepidaploa* complex

Introduction

The tribe Vernonieae Cassini (1819: 203) is one of the largest in the Asteraceae Berchtold & Presl (1820: 254) with about 1700 species distributed in the tropical regions of Asia, Africa and America (Robinson 2007, Keeley & Robinson 2009). It presents two major centers of diversification, one in southern Brazil and the other in tropical Africa. The Vernonieae are, from a taxonomic viewpoint, considered to be one of the most complex groups within the Asteraceae (Keeley *et al.* 2007). Discussions have mainly centered around the delimitation of *Vernonia* Schreber (1791: 541), the core genus of the tribe (Bremer 1994, Robinson 1999).

All species of *Vernonia* are now confined to the New World with the vast majority in continental North America. Of the South American species that were not placed in other genera in Robinson's 1999 treatment, but remained in *Vernonia* [i.e., *V. echioides* Lessing (1829: 278) from Paraguay and Uruguay, *V. greggii* Gray (1882: 204) from Mexico, *V. incana* Lessing (1829: 277) from Paraguay and Uruguay), *V. perangusta* Malme (1933: 21) from Brazil, *V. rubioides* Lessing (1829: 289) from Brazil], few have been studied in detail to confirm their generic status (Dematteis & Angulo 2010). Two of these species are the subject of this paper. *Vernonia polyanthes* (Spreng.) Lessing (1931: 651) and *V. perangusta*. The first is a relatively common species widely distributed in Brazil, and was considered a later name for *Chrysocoma phosphorica* Vellozo (1825: 325), renamed *Vernonanthura phosphorica* (Vell.) Robinson (1992: 73). *Chrysocoma phosphorica* (Vellozo 1825), is apparently an earlier name of *Eupatorium polyanthes* Sprengel (1826: 414). However, Carauta (1973) reported the effective publication date for Vellozo species described in the *Florae fluminesis* as 1829. Therefore, the name *Eupatorium polyanthes* takes priority over *Chrysocoma phosphorica* and consequently, a new combination is required to accommodate this taxon in *Vernonanthura*.

The second species, *Vernonia perangusta*, is endemic to the state of Paraná (Brazil). *Vernonia perangusta* was not assigned to a new genus in Robinson's revisionary work, but was given a doubtful status as “= *Lessingianthus* ?” (Robinson 1999: 102). Our work shows that *V. perangusta* is a member of the genus *Vernonanthura* Robinson (1992: 66), rather than *Lessingianthus* Robinson (1988: 939).

The genus *Vernonanthura* was established for taxa initially placed by Robinson (1992) in *Vernonia* section *Lepidaploa* (Cassini 1817: 66) De Candolle (1836: 26) subsection *Paniculatae* Bentham (1873: 229). A number of these taxa have also been placed in *Vernonia* section *Lepidaploa* subsection *Chamaedrys* Cabrera (1944: 307). As presently delimited, *Vernonanthura* is comprised of 70 species widely distributed in South America, with a concentration in southeastern Brazil. The members of the genus are shrubs or small trees with thyrsoid inflorescences and cymose to corymbose individual branches (Robinson 1992). *Vernonanthura* is also characterized by tricolporate, subechinolophate pollen grains and a continuous microperforate tectum with depressions delimited by irregular ridges (Dematteis 2006, Oliveira *et al.* 2007). This pollen, type “A” of Keeley & Jones (1979), clearly separates the genus from other members of the *Lepidaploa* complex, which have lophate pollen grains with a discontinuous tectum (types “B” and “C”).

Below we provide descriptions of *Vernonia polyanthes* and *V. perangusta*. These taxa share the characters mentioned above with *Vernonanthura* and are hereby transferred to that genus.

Taxonomic treatment

Vernonanthura polyanthes (Sprengel) Vega & Dematteis, *comb. nov.* (Fig. 1)

Basionym: *Eupatorium polyanthes* Sprengel (1826: 414); *Vernonia polyanthes* (Spreng.) Lessing (1931: 651). *Cacalia polyanthes* (Spreng.) Kuntze (1891: 971). Lectotype (designed here): BRAZIL. Rio de Janeiro: Estrella, Serra do Mar, fl, fr, P. W. Lund s. n. (holotype G-DC!).

Chysocoma phosphorica Vellozo (1825 [1829]: 325); *Vernonanthura phosphorica* (Vell.) Robinson (1992: 73). Type: Icones 8, táb. 4 (Illustration).

Vernonia corcovadensis Gardner (1846: 218). Type: BRAZIL. Rio de Janeiro: woods on the Corcovado, July 1837, G. Gardner 788 (holotype BM!, isotypes K!, P!, W!).

Erect shrub up to 3 m tall. Stems striate, tomentose. Leaves petiolate, petioles 0.5–1.5 mm long. Leaf blades lanceolate, 5–15 cm long by 1–3 cm wide, margin entire, acute at apex, attenuate basally, laxly pilose above, tomentose beneath. Capitula sessile or subsessile, on seriate-cymose branches, grouped in a paniculiform synflorescence. Involucre campanulate, 4–5 mm high. Phyllaries in 4–6 series, mucronate, pilose or rarely glabrous, inner phyllaries lanceolate, outer ones ovate. Florets white. Corollas 5–5.5 mm long, lobes lanceolate, 1.5–2 mm long. Anthers 2–3 mm long. Styles 6–7 mm long, branches linear, 2 mm long. Cypselas ribbed, covered with single hairs and glandular papillae. Pappus uniseriate, 4–5 mm long. Pollen grains (after acetolysis) radially symmetrical, isopolar, oblate-spheroidal to prolate-spheroidal, polar axis 39.44–44.88 µm, equatorial diameter 40.08–44.88 µm, subechinolophate, 3-colporate, tectum continuous, densely microperforate, spines 3.80–5.44 µm long.

Vernacular names:—“assa peixe”, “assa peixe branco” (Brazil).

Additional specimens examined:—BOLIVIA. Beni: Prov. Ballivian, Carmen Florida, October 1989, D.E. Williams 1051 (CTES). BRAZIL. Bahia: Jacobina, Moritiba, 1842, J.S. Blanchet 3691 (G, W); Mun. Lençóis, BR 242, 4 km do entroncamento a Lençóis em direção a Seabra, 22 August 1996, R.M. Harley & M.A. Maycoorm 3768 (CEPEC); Utinga, ca. 8 km na estrada Utinga-Bonito, Alt. 713 m, 10 September 1999, R.P. Oliveira, M.M. Silva, N.K.R. Souza & D.B. Araujo 213 (ALCB). Minas Gerais: near Conceição, August 1840, G. Gardner 4774 (BM); Juiz de Fora, 14 July 1983, L. Krieger 19887 (CESJ); Diamantina, Barão, base of Serra de Capão, 21 May 1931, Y. Mexia 5898 (G); Grão Mogol, 28 June 1981, S.M. Pereira 3211 (BHCB); Sanata Rita de Jacutinga, 28 July 1970, L. Krieger 8942 (CESJ); Parque Estadual Ibitipoca, 6 July 1999, M.A. Manhães 23 (CESJ); Rio Acima, 28 June 1988, C.V. Mendonça 13 (BHCB); Viçosa Agricultural College lands, 22 July 1930, Y. Mexia 4891 (G); Entre Rios de Minas, Pedra Branca, 19 February 1992, L. Krieger s.n.

(CESJ). Paraná: Mun. Cerro Azul, Cabeceiras do Ribeirão do Tigre, 18 July 1984, *G. Hatschbach* 48092 (MBM); Ponta Grossa, in silvula, 25 April 1910, *P. Dusén* 9909 (G); Mun. Jundá do Sul, Fazenda Monte Verde, 30 July 1998, *J. Carneiro* 551 (MBM); Mun. Matinhos, Caiobá, Morro do Boi, 12 April 1999, *J. Carneiro* 635 (MBM). Rio de Janeiro: Rio de Janeiro, Monerat, 14 September 1951, *P. Capell s.n.* (BC, N° 119131); Rio de Janeiro, July 1834, *P.W. Lund* 461 (G-DC); Nova Friburgo, laderas de los bosques, March 1953, *P. Capell s.n.* (BC N° 127142); Serra do Itatiaia, 1800 m, March 1894, *E. Ule* 3383 (CORD). São Paulo: nativa no parque do estado, May 1932, *F.C. Hoehne* 29675 (MVFA); Mun. Campinas, Chácara Atibaia, km 14 rodovia Campinas-Moji-Mirim, September 1968, *H.F. Leitão Filho* 515 (CTES).

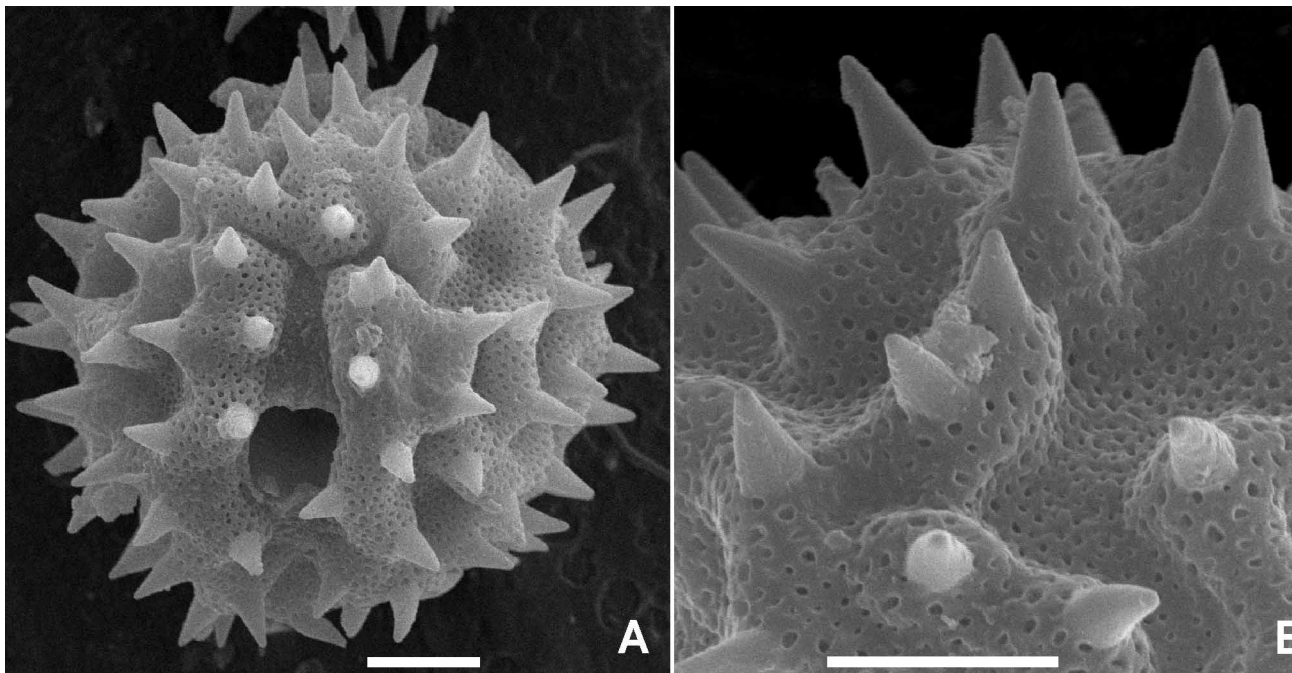


FIGURE 1. Pollen grains of *Vernonanthurra polyanthes*. A. Equatorial view. B. Spine detail. A–B. *Hatschbach* 48092 (CTES). Scale bar = 10 μm .

***Vernonanthurra perangusta* (Malme) Vega & Dematteis, *comb. nov.* (Fig. 2)**

Vernonia perangusta Malme (1933: 21). Type: BRAZIL. Paraná: Fortaleza, in paludosis, 26 February 1910, *P. Dusén* 9552 (holotype S!).

Erect shrubs, 30–50 cm high, with small xylopodia. Stems single, striate, loosely pilose, rarely glabrous, 1–3 mm diameter. Leaves coriaceous, sessile. Leaf blades linear, 4–7 cm long, 0.8–1.3 cm wide, denticulate, revolute at the margin, apically acute, attenuate at base, glabrous, glandular dotted beneath, uninervate. Inflorescence loosely corymbose, with 3–6(–8) heads. Bracts of the inflorescence linear, 2–4 mm long. Capitula pedunculate, peduncles (1–)2–4(–5) cm long, laxly pilose. Involucre turbinate, 7–9 mm long, 7–8 mm wide. Phyllaries in 5–7 series, coriaceous, glabrous or ciliate at margin, inner phyllaries linear-lanceolate, 5–7 mm long, the outer ones ovate-lanceolate to triangular, 2–4 mm long, commonly extending onto the peduncles. Florets violet. Corollas 7–9 mm long, lobes lanceolate, 2.5–3.5 mm long. Anthers 3–4 mm long. Styles 8–10(–12) mm long. Cypselas pilose, glandular dotted, 3–3.5 mm long. Pappus biseriate, inner bristles 5–6 mm long, outer scales 0.8–1.2 mm long. Pollen grains (after acetolysis) radially symmetrical, isopolar, oblate-spheroidal to prolate-spheroidal, polar axis 43.52–50.32 μm , equatorial diameter 43.52–48.96 μm , subechinolphate, 3-colporate, tectum continuous, densely microperforate, spines 4.2–6.8 μm long.

Additional specimens examined:—BRAZIL. Paraná: Ponta Grossa, Fazenda Cambijon, Fortaleza, 13 February 1949, *A.C. Brade* 19602 (MBM); Mun. Piraí do Sul, Serra das Furnas, 30 March 1957, *G. Hatschbach* 3877 (L, MBM, PACA).

Notes:—This species was described by Malme (1933) in the taxonomic treatment of the Asteraceae of the Paraná state of Brazil. This taxon was not included in *Vernonanthura* by Robinson (1992, 1999). *Vernonanthura perangusta* closely resembles *V. nudiflora* (Lessing 1829: 258) Robinson (1992: 72), but differs in having smaller inflorescences and heads, in addition to a smaller number of florets. This species also has a superficial resemblance to *Vernonia psilophylla* De Candolle (1836: 28) with which it shares features of the phyllaries and leaf blade shape. That species belongs to the genus *Lessingianthus*, however, which differs considerably from *Vernonanthura*, especially in pollen type, inflorescence and capitula size (Robinson 1992).

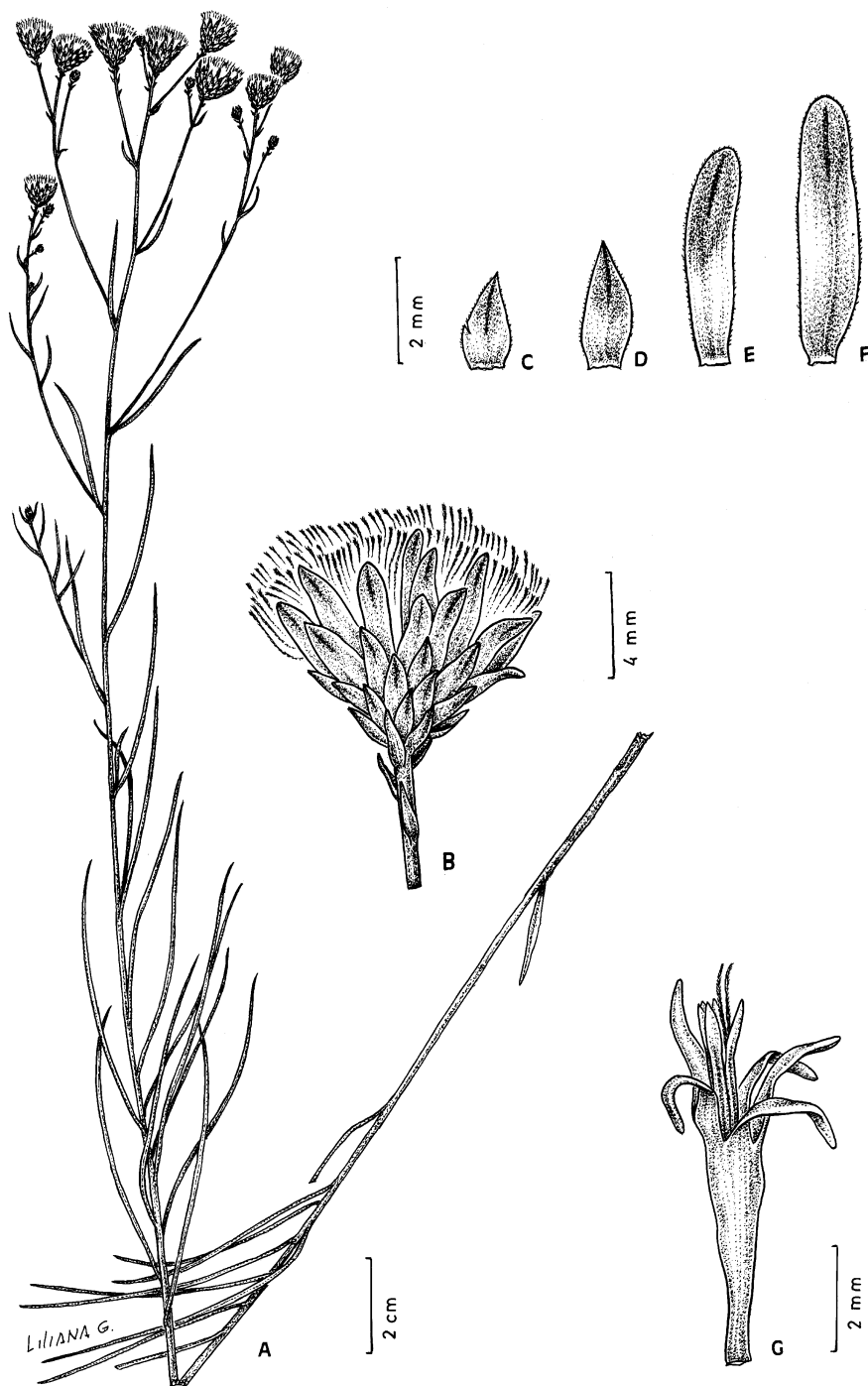


FIGURE 2. *Vernonanthura perangusta*. A. Plant. B. Capitulum. C–F. Phyllaries. C. Outer phyllary. D. Middle phyllary. E–F. Inner phyllaries. G: Corolla, showing anthers and style. A–G. *Dusen 9552* (S).

References

- Bentham, G. (1873) Compositae, in: Bentham, G. & Hooker, J.D. (eds.), *Genera plantarum* 2(1): 163–533. Reeve & Co., London.
- Berchtold, F. von & Presl, J. (1820) *O přirozenosti Rostlin*. Krala Wiljma Endersa, Prague.
- Bremer, K. (1994). *Asteraceae. Cladistics and classification*. Timber Press, Portland.
- Cabrera, A.L. (1944) Vernoneas Argentinas (Compositae). *Darwiniana* 6: 265–379.
- Carauta, J.P.P. (1973) The text of Vellozo's Flora flumimensis and its effective date of publication. *Taxon* 22: 281–284.
- Cassini, A.H.G. (1817) Aperçu des genres nouveaux formes par M. Henri Cassini dans la famille des Synanthérées. *Bulletin des Sciences de la Société Philomatique de Paris* 4: 66–68.
- Cassini, A.H.G. (1819) Suite du sixième mémoire sur la famille des Synanthérées, contenant les caractères des tribus. *Journal de Physique, de Chimie, d'Histoire Naturelle et des Arts* 88: 189–204.
- De Candolle, A.P. (1836) *Prodromus systematis naturalis regni vegetabilis* 5. Treuttel & Würtz, Paris.
- Dematteis, M. (2006) *Vernonanthura warmingiana* (Asteraceae: Vernoneae), a new species from Brazil. *Brittonia* 58: 182–188.
- Dematteis, M. & Angulo, M.B. (2010) Additions to the genus *Lessingianthus* (Vernoneae, Asteraceae) from South America. *Rodriguésia* 61: 233–241.
- Gardner, G. (1846) Contributions towards a flora of Brazil, being the distinctive characters of the tribe Vernoneae. *London Journal of Botany* 5: 209–242.
- Gray, A. (1882) Contributions to North American Botany. *Proceedings of the American Academy of Arts and Sciences* 17: 163–230.
- Keeley, S.C. & Jones, S.B. (1979) Distribution of the pollen types in *Vernonia* (Vernoneae: Asteraceae). *Systematic Botany* 4: 195–202.
- Keeley, S.C. & Robinson, H. (2009) Vernoneae, in: Funk, V.A., Susanna, A., Stuessy, T.F. & Bayer, R.J. (eds.), *Systematics, evolution and biogeography of Compositae*. International Association for Plant Taxonomy, Vienna, pp. 439–469.
- Keeley, S.C., Forsman, Z.H. & Chan, R. (2007) A phylogeny of the “evil tribe” (Vernoneae: Compositae) reveals Old/New World long distance dispersal: Support from separate and combined congruent datasets (*trnL-F*, *ndhF*, ITS). *Molecular Phylogenetics and Evolution* 44: 89–103.
- Kuntze, C.E.O. (1891) *Revisio generum plantarum vascularium omnium*. I.A. Felix, Leipzig.
- Lessing, C.F. (1829) De Synanthereis herbarii regii Berolinensis dissertatio prima. *Linnaea* 4: 420–356.
- Lessing, C.F. (1831) De Synanthereis herbarii regii Berolinensis dissertationes IV. Vernonearum mantissa. *Linnaea* 6: 624–721.
- Malme, G.O.A. (1933) Compositae Paranaenses Dusenianae. *Kongliga Svenska Vetenskaps Academiens Handlingar* 12(2): 1–122.
- Oliveira, V.M., Forni-Martins, E.R. & Semir, J. (2007) Cytotaxonomic studies in six species of *Vernonia* (Asteraceae, Vernoneae). *Caryologia* 60: 37–47.
- Robinson, H. (1988) Studies in the *Lepidaploa* complex (Vernoneae: Asteraceae), IV. The new genus *Lessingianthus*. *Proceedings of the Biological Society of Washington* 101: 929–951.
- Robinson, H. (1992) A new genus *Vernonanthura* (Vernoneae: Asteraceae). *Phytologia* 73: 65–76.
- Robinson, H. (1999) Generic and subtribal classification of American Vernoneae. *Smithsonian Contributions to Botany* 89: 1–116.
- Robinson, H. (2007) Tribe Vernoneae, in: Kubitzki, K. (ed.), *The families and genera of vascular plants*. Vol. 8. Asterales. Springer-Verlag, Berlin, Heidelberg & New York, pp. 165–192.
- Schreber, J.C.D. von (1791) *Genera plantarum*. Ed. 8, Vol. 2. Varrentrapp & Wenner, Frankfurt.
- Sprengel, C.P.J. (1826) *Systema vegetabilium*. Vol. 3: 2–936.
- Vellozo, J.M. da C. (1825) [1829] *Florae fluminensis*. Typographia nationali, Rio de Janeiro.