
The Identity of *Grindelia angustifolia* DC. ex Dunal (Asteraceae: Astereae)

Guy L. Nesom

BONAP—North Carolina Botanical Garden, Coker Hall CB 3280, University of North Carolina, Chapel Hill, North Carolina 27599, U.S.A.

Rogers McVaugh

Department of Biology, University of North Carolina, Chapel Hill,
North Carolina 27599, U.S.A.

ABSTRACT. A colored painting from the Sessé and Mociño expedition serves as the holotype for the validly published name *Grindelia angustifolia* DC. ex Dunal, 1819 (= *Grindelia dunalii* Sprengel, nom. nov., 1825; non *Grindelia angustifolia* Kunth, in HBK, 1818). The illustration represents the species heretofore identified as *Keerlia linearifolia* DC., 1836 (= *Gutierrezia alamanii* A. Gray, nom. nov., 1852; non *Gutierrezia linearifolia* Lagasca & Segura, 1816), which occurs in the south-central Mexican states of México and Morelos. *Gutierrezia dunalii* (Sprengel) Nesom, comb. nov., is proposed as the earliest valid name for this species. *Gutierrezia megalcephala* (Fernald) Nesom is proposed for a closely related entity (*Gutierrezia alamanii* var. *megalcephala* (Fernald) Lane = *Xanthocephalum megalcephalum* Fernald).

The Sessé and Mociño expedition to New Spain (1787–1803) recorded many interesting observations, especially regarding the flora of Mexico. For a description of the expedition and its aims, travels, collections, paintings, and in particular its botanical accomplishments, see articles by McVaugh (1977, 1980, 1987, 1990, 1998) and a recent summary and update by Bartholomew and McVaugh (1997). Plant collections from the expedition are housed at a number of European herbaria as documentation for various early reports and names, but the paintings made in situ by expedition artists also provided the basic information for descriptions of new taxa. A. P. De Candolle and contemporaries proposed approximately 370 new specific names based wholly or in part on these paintings. Considerations regarding the formal typification of these taxa are outlined by Bartholomew and McVaugh (1997) and McVaugh (1998). The original set of paintings is now housed under the name of the Turner Collection of Sessé and Mociño Biological Illustrations at the Hunt Institute for Botanical Doc-

umentation (Carnegie Mellon University, Pittsburgh).

Some of these remarkably detailed paintings have remained without corroboration or reevaluation of their initial identifications, if such were ever made. We examined one of them (Turner No. 0884; Fig. 1), which includes on the same sheet two species of Asteraceae tribe Astereae, the left-hand one annotated by De Candolle as "*Lemerya anthemoides*" and the other as "*Grindelia angustifolia*." It is assumed that the plants were encountered by the expedition in Mexico, as surmised from the identities of the plants depicted. The *Grindelia* illustration served as the basis for a formal description of the species in a publication by Michel-Félix Dunal in 1819 (see nomenclature below).

The left-hand plant is white-rayed, a species of *Aphanostephus*. Details at the top of the illustration, showing white ray flowers, disc corollas, and achenes, are from this plant. The slender taproot of annual duration, pinnatifid leaves, basally unexpanded disc corollas, and achenes with a conspicuous coronal pappus are features of *A. ramosissima* DC. var. *ramosus* (DC.) Turner & Birdsong (Turner, 1984), which occurs over a wide area of central Mexico, from Durango to San Luis Potosí and south to Michoacán, Guerrero, Morelos, and Veracruz.

The yellow-rayed plant (on the right-hand side) represents the species heretofore identified as *Gutierrezia alamanii* A. Gray, which is known from the south-central Mexican states of México and Morelos (Lane, 1985). Salient features shown in the illustration are these: a basally ascending stem arising from a fibrous-rooted rhizome; leaves linear-oblancoolate without a well-defined petiolar portion, 1-nerved, entire, primarily basally disposed but continuing up the stem; several relatively large heads (compared to other species of *Gutierrezia*) with conspicuous yellow rays (18, 21, and 23 rays, respec-

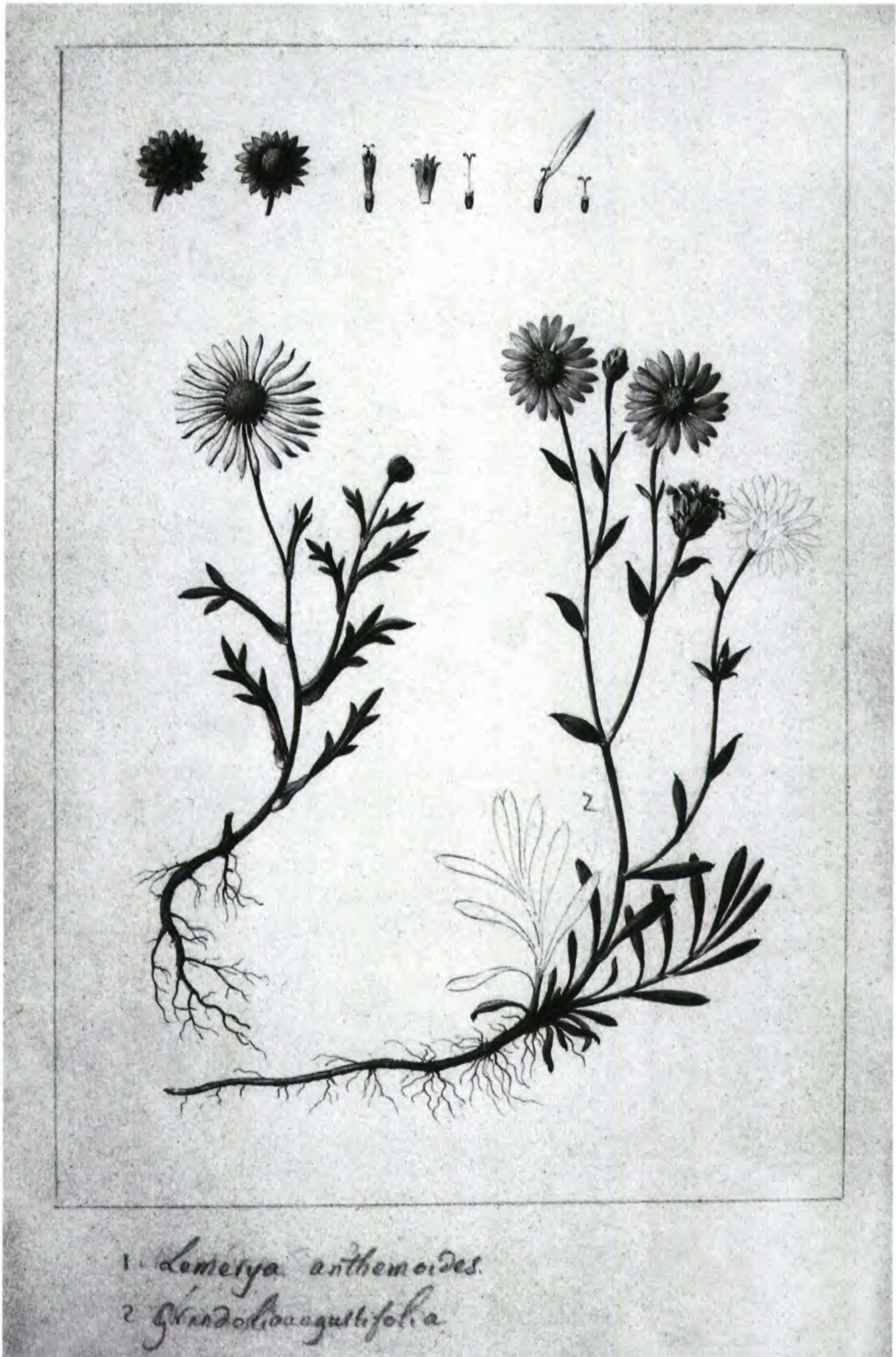


Figure 1. Illustrations of *Grindelia angustifolia* DC. ex Dunal = *Gutierrezia dunalii* (Sprengel) Nesom (right-hand plant, the holotype) and *Aphanostephus ramosissima* DC. var. *ramosus* (DC.) Turner & Birdsong (left-hand plant), as discussed in the text, photographed from Torner No. 0884 (Torner Collection of Sessé and Mociño Biological Illustrations, Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, Pennsylvania).

tively, on the three mature heads illustrated); involucre bracts white on the proximal two-thirds, with prominent green tips. Heads of *G. alamanii* are 8–15 mm wide, excluding the rays; other species of the genus have heads (1–)2–8 mm wide (rarely to 10 mm in *G. conoidea* (Hemsley) M. A. Lane). The pappus of *G. alamanii* is an erose corona 0.1(–0.7) mm high. Because the illustrated plant was described as *Grindelia*, presumably its pappus was observed to be much reduced. However, all but one North American species of *Grindelia* are taprooted except for *G. oolepis* Blake from the Rio Grande Plains of southeastern Texas, which has slender, branched rhizomes. All species of *Grindelia* have serrate leaves, with either sharp-pointed or blunt-tipped teeth. The laterally oriented, fibrous-rooted rhizome and entire leaves of the illustrated plant eliminate it from consideration as a species of *Grindelia*. Species of *Gutierrezia* also are taprooted, except for *G. alamanii*, which is a “perennial, rhizomatous herb with basal rosettes at flowering; tap root branched, secondary roots prominent, the root system thus appearing fibrous” (Lane, 1985: 13). The clarity of the illustration in habit and diagnostic capitular features establish the identity of the yellow-rayed plant as *Gutierrezia alamanii* sensu stricto. (Comments on a closely related entity, *G. alamanii* var. *megaloccephala* (Fernald) M. A. Lane, are given below.)

If *Grindelia angustifolia* DC. ex Dunal is treated as a *Gutierrezia*, the following new combination is necessary.

Gutierrezia dunalii (Sprengel) Nesom, comb. nov.
Basionym: *Grindelia dunalii* [“*Duvalii*”] Sprengel, Syst. veg. 3: 525. 1826. Nom. nov. for *Grindelia angustifolia* DC. ex Dunal, Mém. Mus. Paris 5: 51, plate 7 [cited as plate 3]. 1819. “*Asteris* species. Moç. et Sessé. fl. mex. ined.” and “*Grindelia angustifolia*. D.C. ined.” as cited by Dunal l.c., p. 52. “*Asteris* sp. Moç. fl. mex. ined.” as cited by DC., in DC., Prodr. 5: 315. 1836; non *Grindelia angustifolia* Kunth, in HBK, Nov. Gen. & Sp. [folio] 4: 309. 1818; [quarto] 4: 309. 1820. TYPE: “Mexico.” Torner No. 0884, the right-hand plant (holotype, Torner Collection of Sessé and Mociño Biological Illustrations, Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, Pennsylvania).

Gutierrezia alamanii A. Gray, Smithsonian Contr. Knowledge 3(2): 91 [= Pl. Wright. 1: 91]. 1852. Nom. nov. for *Keerlia linearifolia* DC., in DC., Prodr. 5: 310. 1836; non *Gutierrezia linearifolia* Lagasca. 1816 (= *Gutierrezia sarothrae* (Pursh) Britton & Rusby, see

Lane, 1982). *Xanthocephalum alamanii* (A. Gray) Benth., in Benth. & J. D. Hooker, Gen. Pl. 2: 249. 1873. *Xanthocephalum linearifolium* (DC.) Greenman, Publ. Field Mus. Nat. Hist., Bot. Ser. 2: 345. 1912. TYPE: “Mexico.” Without date, *Alaman s.n.* (holotype, G-DC not seen, microfiche-UNC; isotypes, GH fragment not seen, P not seen, photo of G-DC type-TEX).

The original of the holotype of *Gutierrezia dunalii* bears no inscription except for annotations by De Candolle, “*Lemerya anthemoides*” (for the left-hand plant, an unpublished name) and “*Grindelia angustifolia*” (for the right-hand plant). Presumably DC. plate 559, which is missing from the collection at Geneva, was a copy. No specimen corresponding to this was found in the Sessé and Mociño herbarium.

The illustration published by Dunal (plate 7, a black-and-white engraving) was reproduced from a copy made by the artist Node-Véran of the right-hand plant on Torner No. 0884.

Dunal (1819) cited “*Grindelia angustifolia* DC. ined.,” suggesting that he (Dunal) was taking up an unpublished name, which currently would be credited to Dunal as the publishing author and formally cited either as “DC. ex Dunal” or simply “Dunal” (Greuter et al., 1994: Article 46.4). De Candolle, however (1836: 315), considered the name to originate from himself and wrote the primary citation of the name as “DC. in Dunal l.c. 1819.” Sprengel created the substitute name *Grindelia dunalii* for *Grindelia angustifolia* DC. ex Dunal because of the earlier homonym *G. angustifolia* [Kunth in] HBK. In his monograph on North American *Grindelia*, Steyermark (1934) assigned *G. angustifolia* [Kunth in] HBK to the synonymy of *G. inuloides* Willdenow. Neither *Grindelia angustifolia* DC. nor *Grindelia dunalii* Sprengel was mentioned by Steyermark.

THE STATUS OF *GUTIERREZIA ALAMANII* VAR. *MEGALOCEPHALA*

Gutierrezia alamanii var. *megaloccephala*, as treated by Lane (1985), occurs in the western Sierra Madre from west-central Chihuahua to southern Durango, the southernmost populations disjunct by more than 550 kilometers from populations of typical *G. dunalii* (= *G. alamanii*) in the states of México and Morelos. With recognition of the validity of the earlier name for *Gutierrezia alamanii*, a new name is now required for the sierran populations, provided here at specific rank.

Gutierrezia megalcephala (Fernald) Nesom, comb. nov. Basionym: *Xanthocephalum megalcephalum* Fernald, Proc. Amer. Acad. Arts 36: 505. 1901. *Gutierrezia alamanii* var. *megalcephala* (Fernald) M. A. Lane, Sida 8: 313. 1980. TYPE: Mexico. Chihuahua: Mt. Mohinora, 1 Sep. 1898, E. W. Nelson 4890 (holotype, GH not seen; isotypes, GH not seen, US).

Lane's treatment of these two entities as varieties of a single species is reasonable. In a narrower species concept, however, and based on essentially the same evidence, they can also be justifiably regarded as species separated by the morphological, cytological, and geographical differences noted in the couplet below. Their treatment at specific rank emphasizes the isolation, both external by wide geographic disjunction and internal by genomic differences (diploid vs. tetraploid).

- 1a. Flowering stems 18–32 cm tall, basally decumbent to ascending (matching the Sessé & Mociño illustration); achenes 1.5–1.7 mm long; pappus a barely perceptible, toothed rim ca 0.05–0.2 mm high; plants diploid ($2n = 8$); states of México and Morelos *G. dunalii*
- 1b. Flowering stems 24–70 cm tall, strictly erect from the base; achenes 2–2.5 mm long; pappus a corona of fused scales uneven in height around its circumference, 0.2–0.7 mm high; plants tetraploid ($2n = 16$); states of Chihuahua and Durango *G. megacephala*

Acknowledgments. We are grateful to James J. White (Curator of Art, Hunt Institute for Botanical Documentation) for sending a color transparency of the illustration (Torner No. 0884), from which the

identification was made, and to the staff at TEX (Austin) for help during recent study there. The color transparency has been deposited in the collections of reprints and other documentation for Compositae at TEX.

Literature Cited

- Bartholomew, B. & R. McVaugh. 1997. Identification and typification of *Ternstroemia lineata* de Candolle (Theaceae). Novon 7: 14–16.
- Candolle, A. P. De. 1836. *Grindelia*, in DC., Prodr. 5: 314–316.
- Greuter, W., F. R. Barrie, H. M. Burdet, W. G. Chaloner, V. Demoulin, D. L. Hawksworth, P. M. Jørgensen, D. H. Nicolson, P. C. Silva, P. Trehane & J. McNeill (editors). 1994. International Code of Botanical Nomenclature (Tokyo Code). Regnum Veg. 131.
- Lane, M. A. 1982. Neotypification of *Gutierrezia linearifolia* Lag. (Compositae: Astereae). Taxon 31: 330–333.
- . 1985. Taxonomy of *Gutierrezia* (Compositae: Astereae) in North America. Syst. Bot. 10: 7–28.
- McVaugh, R. 1977–1998. Botanical results of the Sessé & Mociño Expedition (1787–1803).
- . 1977. I. Summary of excursions and travels. Contr. Univ. Michigan Herb. 11: 97–195.
- . 1980. II. The Icones Florae Mexicanae. Contr. Univ. Michigan Herb. 14: 99–140.
- . 1987. III. The impact of this and other expeditions on contemporary botany in Europe. Contr. Univ. Michigan Herb. 16: 155–171.
- . 1990. IV. The library and herbarium of the expedition. Contr. Univ. Michigan Herb. 17: 183–214.
- . 1998. VI. Reports and records from western Mexico, 1790–1792. Bol. Inst. Bot., Univ. Guadalajara Epoca 3, 6(1): 1–178.
- Steyermark, J. A. 1934. A monograph of the North American species of the genus *Grindelia*. Ann. Missouri Bot. Gard. 21: 433–608.
- Turner, B. L. 1984. Taxonomy of the genus *Aphanostephus* DC. Phytologia 56: 81–101.