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A new genus, *Uniyala*, from peninsular India and Sri Lanka (Vernonieae: Asteraceae)

Harold Robinson* and John J. Skvarla

(HR) Department of Botany, MRC 166, National Museum of Natural History, P.O. Box 37012, Smithsonian Institution, Washington, D.C. 20013-7012, U.S.A., e-mail: robinsoh@si.edu;
(JJS) Department of Botany and Microbiology, and Oklahoma Biological Survey, University of Oklahoma, Norman, Oklahoma 73019-6131, U.S.A., e-mail: jskvarla@ou.edu

Abstract.—The genus *Uniyala*, of southern India and Sri Lanka, is described as new for seven shrubby species, previously placed in *Vernonia*, with 4- or 5-costate achenes and blunt sweeping hairs on the style branches. The new combinations are *Uniyala anceps*, *U. bourdillonii*, *U. comorinensis*, *U. multibracteata*, *U. ramaswamii*, *U. salvifolia*, and *U. wightiana*.

A group of seven shrubby species previously placed in *Vernonia* Schreb. (de Candolle 1836, Clarke 1876, Hooker 1881) does not belong to that genus in the strict sense (Robinson 1999a, 1999b). The group also proves not to belong to the broadened concept of *Gymnanthemum*, where some of the species had been previously placed by Robinson (1999b, 2007). No other pre-existing name is available, and so a new name is provided herein. The name honors B. P. Uniyal, author of the useful treatment of Vernonieae in the recent Flora of India (Uniyal 1995).

Materials and Methods

Specimens examined are from the U.S. National Herbarium in Washington, D.C. Pollen was removed from herbarium sheets and treated with acetolysis solution (Erdtman 1960). Acetolyzed pollen (Fig. 1A–D) was examined with scanning electron microscopy (SEM) after staining with osmium-thiocarbohydrazide and pulse sputter coating as described in greater detail in recent studies of Asian Vernonieae (Robinson & Skvarla 2006, 2007; Robinson et al. 2008). Pollen was examined with JEOL 880 (Microscopy Laboratory at the University of Oklahoma), LEICA 440 and AMRAY 1810 (SEM laboratory of the United States National Museum of Natural History) scanning electron microscopes, all equipped with lanthanum hexaboride (LaB_6) electron sources.

Results and Discussion

Distinctive features of the new genus include small size and erect shrubby habit, simple rather than branched hairs on stems and leaves, somewhat tomentose pubescence on stems, leaves and involucral bracts, terminal corymbiform inflorescences and numerous florets per head, tomentum on tips of corolla lobes in some species, ornamented basal appendages on anther thecae, long but blunt sweeping hairs of style branches, usually four- or five-costate achenes, capillary bristles of the inner pappus, distinct, crowded, paleaceous short outer pappus, and type A, sublophate pollen grains (Fig. 1A–C).

Of the characters listed above for the new genus the most variable are number of florets per head and pubescense of the

* Corresponding author.

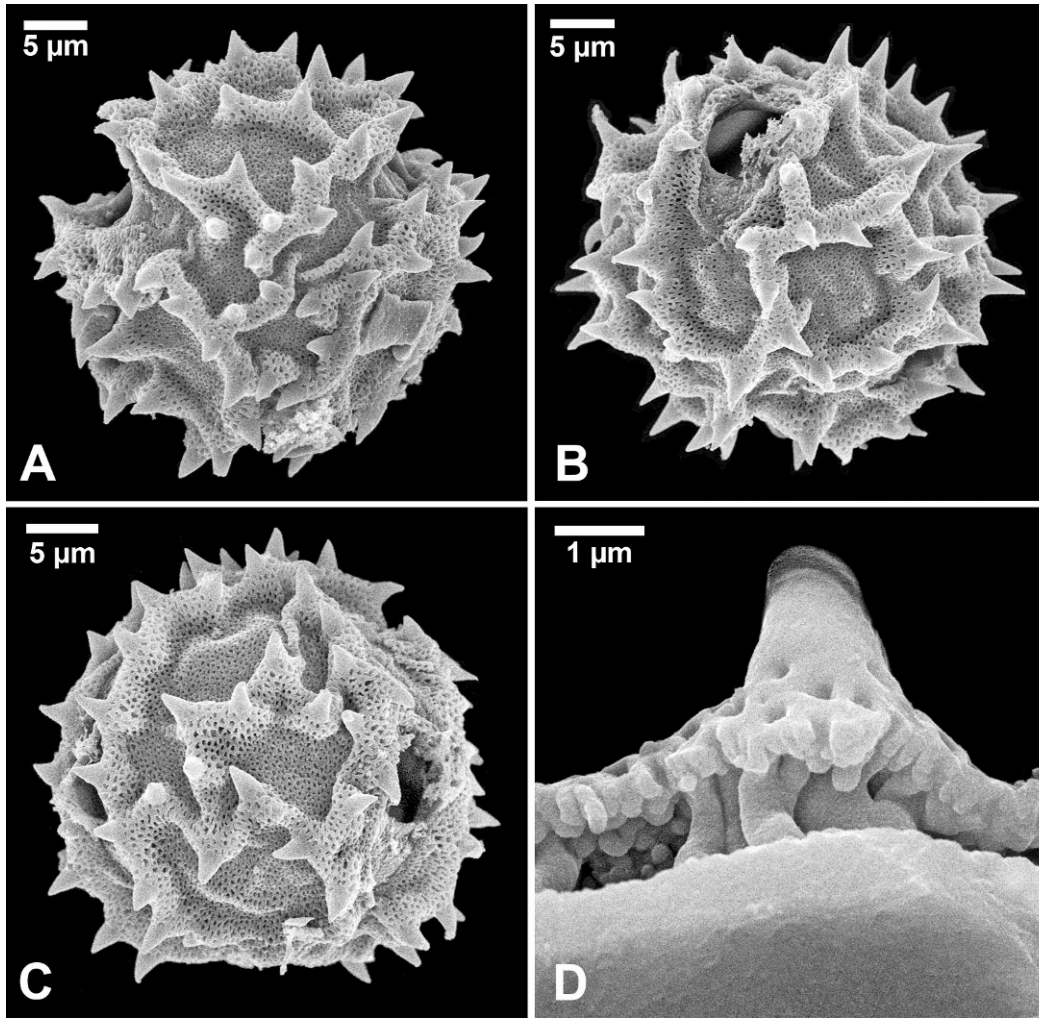

Fig. 1. SEM micrographs of *Uniyala anceps* (S. H. Sohmer 8695, Ceylon, US). A. Polar view. B. Oblique view of colpus. C. Intercolpar view showing positions of two pores. D. Broken grain showing spine and subtending columellae.

corolla. Among the most consistent are the long, blunt sweeping hairs of the style branches and the squamiform outer series of the pappus. In the treatment of Koster (1933), the pappus character would place the species in *Vernonia* section *Lepidella* Oliv. & Hiern, the type of which is a herbaceous African species with triporate pollen that is now placed in *Vernoniastrum* H. Rob. (Robinson 1999b). Species of the new genus were placed in *Vernonia* subsection *Distephanus* (Cass.) S. B. Jones by Jones (1981). In his admittedly indistinct subsection, Jones also included some *Gymnanthemum* Cass., *Strobocalyx* Blume ex DC., species now placed in *Decaneuropsis* H. Rob. & Skvarla (2007), and a subsection typified by *Distephanus populifolius* (Lam.) Cass., the latter with trinervate leaves and yellow flowers.

Closest relatives of the new genus, among previously described genera, are uncertain, although the shrubby habit and the blunt sweeping hairs are suggestive of the mostly arborescent genus *Strobocalyx* currently placed in the sub-

tribe Gymnantheminae (Robinson et al. 2008). The new genus differs from *Strobocalyx* by its sublophate pollen.

Uniyala H. Rob. & Skvarla, gen. nov.

Type species.—*Vernonia wightiana* Arn.

Plantae fruticosae; pilis simplicibus; folia alterna, laminis in nervis secundariis pinnatis late patentibus; inflorescentia terminalia, capitulis paucis late campanulatis; corollis in tubis quam faucis brevioribus, lobis linearibus; basi stylorum nodatis, pilis stylorum acicularis obtusis; achenia 4–5-costata. Grana pollinis sublophata.

Shrubs, erect, mostly 0.5–1.0 m high; stems puberulous to lanate or tomentose, with simple but often contorted hairs. Leaves spirally inserted, short petiolate to subsessile; blades elliptical or elliptic-lanceolate to ovate-lanceolate or lanceolate, base acuminate to cuneate or slightly auriculate, margins nearly entire to remotely crenulate, or serrulate, apex obtuse to subacute, upper surface often roughened, lower surface white- to brownish tomentose, secondary veins 7–10 on each side, spreading at a 45° angle or more. Inflorescences terminal, corymbiform; peduncles elongate, with small linear or subulate bracteoles. Heads broadly campanulate, 1.0–1.5 cm wide; involucral bracts 3–4-seriate, gradate to subequal, subulate, lanceolate to ovate-lanceolate, short-acute, puberulous to tomentose outside; receptacle glabrous. Florets 10–30 in a head; corollas violet to purple, with glandular dots and no hairs in three species, with numerous slender hairs outside and tomentose at tips of lobes in four species, basal tube shorter than throat, limb narrowly funnelform, lobes linear; anther bases with distinct, broad, oblong appendages, sometimes with annular thickenings in cells; apical appendage narrowly oblong-ovate, with firm-walled cells; style base with distinct node; sweeping hairs on style branches long with rounded tips. Achenes 2.5–3.0 mm long, usually 4–5-costate but often clearly 4, sometimes winged on costae, setulae sparse or lacking, some glandular dots, with crowded idioblasts between costae, raphids linear; pappus of many capillary inner bristles nearly as long as corollas, slightly broadened distally, outer series short, paleaceous. Pollen of Type A of Jones (1981) = *Lychnophora* type of Stix (1960), ca. 50 μm in diameter in fluid, tricolporate, echinate, sublophate with broad lacunae, perforated tectum continuous between colpi (Fig. 1A–C), columellae firmly attached to foot layer (Fig. 1D). Chromosome number N = 10 (Narayan & Rees 1979).

Delimitation of species has relied extensively on the treatments by Grierson (1980) and Uniyal (1995).

Key to the species of *Uniyala*

1a. Leaf undersurface subglabrous to thinly pubescent, showing glandular dots; leaf blades narrowly oblanceolate to linear-lanceolate. 2
1b. Leaf undersurface densely tomentose or lanate, obscuring any glandular dots; leaf blades mostly elliptical to oblong. 3
2a. Inflorescence usually with 6–10 heads; involucres up to 0.8 mm wide. . . . . *U. anceps*
2b. Inflorescence with 1–4 heads; involucres ca. 1 cm wide. . . . *U. ramaswamii*
3a. Achenes with wings. . . . *U. multibracteata*
3b. Achenes without wings. 4
4a. Achenes glabrous; heads with 10–15 florets. 5
4b. Achenes with few to many setulae and glands; heads with 30–40 florets. 6
5a. Leaves sessile, winged to base. . . . . *U. salvifolia*
5b. Leaves petiolate. . . . *U. comorinensis*
6a. Leaves up to 12 cm long and 4 cm wide, not nearly restricted to or congested at branch tips. . . . . *U. wightiana*
6b. Leaves up to 5 cm long and 1.5 cm wide, restricted to and strongly congested at branch tips. . . . . *U. bourdillonii*

The seven currently recognized species of *Uniyala* are as follows:

Uniyala anceps (C. B. Clarke ex Hook.f.) H. Rob. & Skvarla, comb. nov.

Vernonia anceps C. B. Clarke ex Hook.f., Fl. Brit. India 3:233 (1881).

The species is unusual in the genus for its glabrous or nearly glabrous leaves.

Distribution.—Sri Lanka, India (Rajast(h)an).

Uniyala bourdillonii (Gamble) H. Rob. & Skvarla, comb. nov.

Vernonia bourdillonii Gamble, Kew Bull. 1920:339 (1920).

The species is close to *U. wightiana*, but the leaves are somewhat smaller, and are more restricted to and congested near the branch tips.

Distribution.—South India.

Uniyala comorinensis (W. W. Smith) H. Rob. & Skvarla, comb. nov.

Vernonia comorinensis W. W. Smith, Rec. Bot. Surv. India 4(5):283 (1911).

Chromosome number 2N = 20 (Narayan & Rees 1979).

Distribution.—South India.

Uniyala multibracteata (Gamble) H. Rob. & Skvarla, comb. nov.

Vernonia multibracteata Gamble, Kew Bull. 1920:340 (1920).

The species is notable for the wings on the costae of its achenes.

Distribution.—South India.

Uniyala ramaswamii (Hutch.) H. Rob. & Skvala, comb. nov.

Vernonia ramaswamii Hutch., Kew Bull. 1916:35 (1916).

The species is similar to *U. anceps*, with narrow, non-tomentose leaves, but the heads are solitary or paired and the achenes are apparently more often 5-costate. Chromosome number N = 10 (Narayan & Rees 1979).

Distribution.—South India.

Uniyala salvifolia (Wight) H. Rob. & Skvarla, comb. nov.

Vernonia salvifolia Wight, Icon. t. 1079 (1846).

Distribution.—South India.

Uniyala wightiana (Arn.) H. Rob. & Skvarla, comb. nov.

Vernonia wightiana Arn., Nov. Activum Acad. Caes. Leop.-Carol. German. Nat. Cur. 18:345 (1836).

Distribution.—Sri Lanka.

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