



## *Euphorbia kadapensis* (Euphorbiaceae), a new species from southern India

NAIDU SAROJINIDEVI & RUDRARAJU REDDIVENKATARAJU\*

Biosystematics and Phytomedicine Division, Department of Botany, Sri Krishnadevaraya University, Anantapur, Andhra Pradesh-515 003, India

\*Corresponding author. Email: rrvenkataraju@yahoo.com

### Abstract

*Euphorbia kadapensis*, a new species of Euphorbiaceae is described from Kadapa district in Rayalaseema region of Andhra Pradesh, southern India. It belongs to *Euphorbia* subgen. *Chamaesyce*. Within the group, it resembles *E. concanensis*, *E. longistyla* and *E. senguptae* of sect. *Anisophyllum* subsect. *Hypericifoliae* though the affinities are more so with the allopatric *E. concanensis* from the west coast of India.

**Key words:** Biodiversity, *Chamaesyce*, Conservation, Eastern Ghats, Kadapa spurge

### Introduction

The genus *Euphorbia* Linnaeus (1753: 450) of the Euphorbiaceae is one of the largest genera of Magnoliophyta (Frodin 2004) with about 2000 species distributed throughout the world though chiefly in tropical, subtropical and warm temperate regions (Mabberley 1997). It is also the largest genus of the family in India with 82 species of which 31 are endemic (Binojkumar & Balakrishnan 2010). From the state of Andhra Pradesh, Babu (1997) reported 29 species and one variety of *Euphorbia*. Later, *Euphorbia pycnostegia* Boissier (1860: 9) var. *zornioides* (Boissier 1862: 19) Santapau (1954: 11) and *E. hyssopifolia* Linnaeus (1759: 1048) [as *Chamaesyce hyssopifolia* (L.) Small (1905: 429)] were added to the list (Rao *et al.* 1999, Reddy & Raju 2002). The intensive exploration of the Rayalaseema region in southern Andhra Pradesh for members of the Euphorbiaceae has led to the discovery of a hitherto unknown species of *Euphorbia* subgen. *Chamaesyce* Rafinesque (1817: 119).

### Taxonomic treatment

*Euphorbia kadapensis* Sarojinidevi & Venkataraju, *sp. nov.* (Figs. 1, 2)

**Type:**—INDIA. Andhra Pradesh: Kadapa district, Palakonda hills, Mabbuchinthalapalle, 14°20'54.16"N, 78°15'05.41"E, 372–380 m, 5 October 2011, *N. Sarojinidevi & R.R. Venkataraju 31413* (holotype SKU!, isotypes BSID!, MH!).

**Diagnosis:**—The new species is very distinct from the known species of the genus from the territory by virtue of its glabrous shoots, long free styles, obscurely venulose cocci and tuberculate seeds. It is allied to the long-styled species from the peninsula on one hand, namely the sympatric *E. longistyla* and *E. senguptae* with its tapering shoots, elliptic leaves and long styles, and on the other to the allopatric *E. concanensis* from Konkan coast in vegetative traits but differs in the morphology of limbs of glands, ebracteolate staminate flowers, simple and discrete stigmas and etuberculate seeds. *E. senguptae* can be easily segregated by the limbs of glands which are minutely wavy and *E. longistyla* with its incised limbs of glands

**Description:**—Erect, decumbent to ascending herb (hemicyptophyte) up to 30 cm tall. Latex milky. Stem sympodial, dichotomously branched. Branches terete, glabrous, pink, filiform towards apices, sparsely hairy, hairs hyaline; internodes 1–2.5 cm long, thickened at nodes; stipules scaly, connate, 0.1 cm long, shortly laciniate. Leaves simple, opposite, equal, inequilateral, subsessile; petiole 0.1 cm long, sparsely hairy; lamina ovate to elliptic, 1.0–2.5

reviewers for the constructive suggestions. The first author is thankful to Dr. V. Sampath Kumar (former IBLO, Royal Botanic Gardens, Kew) and Dr. S. Karuppusamy (Madurai), for encouragement and to the University Grants Commission, New Delhi, for financial assistance.

## References

- Babu, P.S.P. (1997) *Euphorbia*. In: Pullaiah, T. & Moulali, A. (Eds.) *Flora of Andhra Pradesh 2.*, Scientific Publishers, Jodhpur, pp. 855–868.
- Balakrishnan, N.P. & Subramanyam, K. (1960) A new species of *Euphorbia* from south India. *Bulletin of the Botanical Survey of India* 2: 175–176.
- Binojkumar, M.S. & Balakrishnan, N.P. (2010) *The genus Euphorbia L. (Euphorbiaceae) in India. A taxonomic revision*. Bishen Singh Mahendra Pal Singh, Dehra Dun, 430 pp.
- Boissier, P.E. (1860) *Centuria Euphorbiarum*. Hermann, Leipzig & Ballière, Paris, 40 pp.
- Boissier, P.E. (1862) Euphorbiaceae subordo I. Euphorbieae. In: Candolle, A.L.P.P. de (Ed.) *Prodromus Systematis Naturalis Regni Vegetabilis* 15(2). Sumptibus Sociorum Treuttel & Würtz, Paris, pp. 3–188.
- Bruyns, P.V., Mapaya, R.J. & Hedderson, T. (2006) A new subgeneric classification for *Euphorbia* (Euphorbiaceae) in southern Africa based on ITS and *psbA-trnH* sequence data. *Taxon* 55: 397–420.  
<http://dx.doi.org/10.2307/25065587>
- Candolle, A.P. de (1825) *Prodromus Systematis Naturalis Regni Vegetabilis*. 2. Sumptibus Treuttel & Würtz, Paris, 644 pp.
- Don, G. (1832) *A general history of the dichlamydeous plants* 2. J.G., London, 875 pp.
- Frodin, D.G. (2004) History and concepts of big plant genera. *Taxon* 53: 753–776.  
<http://dx.doi.org/10.2307/4135449>
- Gray, S.F. (1821) *A natural arrangement of British plants* 2. Baldwin, Cradock, and Joy, London, pp. 2–775.
- Hooker, J.D. (1896) *The Flora of British India* 7(21). L. Reeve & Co, London, pp. 1–224.
- IUCN (2001) *IUCN Red List Categories*. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland. Available from <http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria> (accessed 1 April 2014)
- Janarthanam, M.K. & Yadav, S.R. (1995) A new species of *Euphorbia* L. (Euphorbiaceae) from India. *Rheedea* 5: 148–150.
- Lamarck, J.B.A.P.M. (1797) *Tableau encyclopédique et méthodique Botanique* 2, 4(2). Chez Panckoucke, Paris, pp. 73–136.
- Linnaeus, C. (1753) *Species Plantarum*. Impensis Laurentii Salvii, Stockholm, 1200 pp.
- Linnaeus, C. (1759) *Systema Naturae ed. 10*, 2. Impensis Laurentii Salvii, Stockholm, pp. 2–1048.
- Linnaeus, C. (1771) *Mantissa Plantarum Altera*. Impensis Laurentii Salvii, Stockholm, pp. 143–584.
- Mabberley, D.J. (1997) *The Plant Book*. 2<sup>nd</sup> edn. Cambridge University Press, Cambridge, 858 pp.
- Moffett, R.O. (2007) *A record of contributions from the National Herbarium, Union of South Africa, Pretoria*. *Bothalia* 37: 165–175.
- Rafinesque, C.S. (1817) Second decade of un-described American plants. *American Monthly Magazine* 2 (2): 119–120.
- Raju, V.S. & Rao, P.N. (1987) The taxonomic use of basic stomatal type in the generic delimitation of *Chamaesyce* (Euphorbiaceae). *Feddes Repertorium* 98: 137–141.
- Rao, R.S., Sudhakar, S. & Venkanna, P. (1999) *Flora of East Godavari District, Andhra Pradesh, India*. Indian National Trust of Art and Cultural Heritage, New Delhi, 947 pp.
- Reddy, & C.S. Raju, V.S. (2002) Additions to the weed flora of Andhra Pradesh. *Journal of Economic and Taxonomic Botany* 26: 195–198.
- Roeper, J.A.C. (1828) *Euphorbia*. In: Duby, J.E. (Ed.) *Pyrami de Candolle Botanicon Gallicum*. Bouchard-Huzard, Paris, pp. 412–417.
- Santapau, H. (1954) The genus *Euphorbia* in Bombay. *Bulletin of Botanical Society* 8(1 & 2): 1–17.
- Small, J.K. (1905) Additions to the flora of subtropical Florida. *Bulletin of the New York Botanical Garden* 3: 416–440.
- Stapf O. (1906) The oil grasses of India and Ceylon. *Bulletin of Miscellaneous Information Kew* 1906: 297–463.  
<http://dx.doi.org/10.2307/4120226>
- Swartz, O. (1788) *Nova genera et species plantarum seu prodromus*. In bibliopoliis acad. M. Swederi, Stockholm, Uppasala & Abo, 152 pp.
- Webster, G.L. (1967) The genera of Euphorbiaceae in southeastern United States. *Journal of the Arnold Arboretum* 48: 303–361, 363–430.
- Yang, Y., Riina, R., Morawetz, J.J., Haevermans, T., Aubriot, X. & Berry, P.E. (2012) Molecular phylogenetics and classification of *Euphorbia* subgenus *Chamaesyce* (Euphorbiaceae). *Taxon* 61: 764–789.