



Cyperus coonoorensis (Cyperaceae), a new species from the Nilgiri Biosphere Reserve, India

AMBIKA RAJAN VIJI¹, ALAGRAMAM GOVINDASAMY PANDURANGAN^{1,3}, SIVADAS DEEPU¹ & GORDON C. TUCKER²

¹Plant Systematics and Evolutionary Science Division, Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram, Kerala – 695 562, India

²Dept. of Biological Sciences, Eastern Illinois University, 600 Lincoln Ave, Charleston, IL 61920 U.S.A.

³E-mail: agpandurangan@gmail.com

Abstract

Cyperus coonoorensis sp. nov. (Cyperaceae) is described and illustrated as a new species from Nilgiri Biosphere Reserve, Western Ghats, India. A member of sect. *Diffusi*, the new species distinctly differs from related species, *C. diffusus*, by its long and stout rhizome, large inflorescence and number of florets and spikelets. A detailed description, phenology, illustration, colour plates, distribution and relevant notes are provided. A key to the sect. *Diffusi* in South Asia is also provided.

Keywords: Identification key, Tamil Nadu, Taxonomy, Western Ghats

Introduction

The genus *Cyperus* L. (1753: 44) is mainly distributed in tropical and subtropical regions of the world and has about 700 species (Tucker & Simpson 2013). In India it is represented by 91 species (Govaerts *et al.* 2014). The genus can be easily recognised by its nature of inflorescence with conspicuous involucre bracts, absence of perianth and distichous spikelets with several fertile glumes.

As part of taxonomic revision of the family Cyperaceae in the Nilgiri Biosphere Reserve located in the Western Ghats, an interesting specimen of *Cyperus* belonging to sect. *Diffusi* (Kunth) C. B. Clarke (1884: 124) was collected from Coonoor, Nilgiri district, Tamil Nadu. It shows apparent similarity with *Cyperus diffusus* Vahl (1805: 321) in the shape of the glumes and wide leaves but distinctly differs from the already described species of section *Diffusi*. It is being described as new species with illustration and a discussion of its relationships with other known species.

Materials and Methods

Specimens were collected by the authors from Coonoor, Nilgiri district, Tamil Nadu within the Nilgiri Biosphere Reserve. The specimens were prepared for herbarium as per standard procedure and fixed in Kew solution for further microscopic studies. In addition, national and regional herbaria (CALI, MH, TBGT, UCT and CAL) were searched for similar specimens. Virtual herbaria at C, E, G, K, MO, NY, P and US were also consulted. Measurements and line drawings were made using a Leica MZ6 stereomicroscope.

Taxonomy

Cyperus coonoorensis Viji, Pandur., Deepu & G.C.Tucker, sp. nov. (Fig. 1 & Fig. 2)

Type:—INDIA. Tamil Nadu: Nilgiri Distr., Coonoor, 11°20'59''N & 75°49'10''E, ± 1501 m, 24 March 2012, A. R. Viji & A. G. Pandurangan 72342 (holotype TBGT!; isotypes CALI!).

Acknowledgements

The authors are grateful to the Director, Jawaharlal Nehru Tropical Botanic Garden and Research Institute, for the facilities. Also thankful to Dr Wayt Thomas, Elizabeth G. Britton Curator of Botany, The New York Botanical Garden, USA for his sincere help and encouragement. Grateful thanks are due to herbarium curators of MH, CALI & UCT for giving permission for herbarium consultation. The authors are also grateful to the Board of Trustees of Royal Botanic Gardens, Kew, Museum Botanicum Havniense, Herbarium Paris for using the herbarium images. The State Forest Authorities of Kerala and Tamil Nadu are duly acknowledged for giving permission to conduct field studies in the Biosphere Reserve.

References

- Boeckeler, J.O. (1874) Die Cyperaceen des Königl. Herbariums zu Berlin. *Linnaea* 38: 223–544.
- Camus, E.G. (1910) *Cyperus thorelii*. In: Lecomte, H. *Notulae Systematicae. Herbarium du Muséum de Paris* I: 242.
- Clarke, C.B. (1884) On the Indian species of *Cyperus*; with remarks on some others that specially well illustrate the subdivisions of the genus. *Journal of Linnean Society, Botany* 21: 1–202.
- Clarke, C.B. (1901) Cyperaceae. In: Thiselton-Dyer, W.T. (Ed.) *Flora of Tropical Africa* 8: 266–384. [L. Reeve & Co. Ltd.]
- Dai, L.K., Tucker, G.C. & Simpson, D.A. (2010) *Cyperus* L. *Flora of China* 23: 19–241. [Science Press, Beijing and Missouri Botanical Garden Press, St. Louis]
- Gómez, P.L.D. & Gómez-Laurito, J. (1982) Plantae Mesoamericanae novae VII. *Phytologia* 52 (4): 228.
- Haines, R.W. & Lye, K.A. (1983) *The Sedges and Rushes of East Africa*. East African Natural History Society, Nairobi, 404 pp.
- IUCN (2012a) *IUCN Red List Categories and Criteria: Version 3.1. Second edition*. Gland, Switzerland and Cambridge, UK. [unknown pagination]
- IUCN (2012b) *Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0*. Gland, Switzerland and Cambridge, UK. [unknown pagination]
- IUCN Standards and Petitions Subcommittee (2013) *Guidelines for Using the IUCN Red List Categories and Criteria. Version 10.1*. Prepared by the Standards and Petitions Subcommittee in September 2013.
- Kern, J.H. (1974) *Cyperus*. In: Van, S. (Ed.) *Flora Malesiana*. Noordhoff International publishing, Leiden, The Netherlands, pp. 592–661.
- Kuekenenthal, G. (1935–1936) Cyperaceae – Scirpoideae – Cyperae. In: Engler, A. & Das, D. (Eds.) *Pflanzenreich IV* 20 (Heft 101), pp. 671.
- Kunth, C.S. (1837) *Enumeratio Plantarum Omnium Hucusque Cognitarum Secundum*. Sumtibus J.G. Cottae, Stuttgart & Tübingen, 95 pp.
- Linnaeus, C. (1753) *Species Plantarum. Vol. 1*. Impensis Laurentii Salvii, Stockholm, 560 pp.
- Nees von Essenbeck, C.G. (1834) *Contributions to the botany of India*. Allen & Compan, Parbury, 136 pp. [Wight, R. (Ed.), pp. 91]
- Roth, A.W. (1817) *Digitaria setigera*. In: Roemer, J.J. & Schultes, J.A. (Eds.) *Systema Vegetabilium* 2, 474 pp.
- Rottboll, C.F. (1773) *Descriptionum et Iconum Rariores* 13, pl. 4, f 3.
- Simpson, D.A. & Koyama, T. (1998) *Cyperaceae. Flora of Thailand. 6 (4)*. Forest Herbarium, Royal Forest Department, Bangkok, pp. 247–485.
- Tucker, G.C. & Simpson, D.A. (2013) *Diversity and Biogeography of Cyperaceae in China. Fifth International Conference on the Comparative Biology of the Monocots*. 9–13 July 2013. Bronx, N. Y. Abstracts, 120 pp.
- Tucker, G.C. (1986) New Mesoamerican species of *Cyperus* (Cyperaceae). *Rhodora* 88 (853): 503.
- Tucker, G.C. (1994) Revision of the Mexican Species of *Cyperus* L. (Cyperaceae). *Systematic Botany Monographs* 43: 1–213. <http://dx.doi.org/10.2307/25027842>
- Tucker, G.C. (2007) Systematics of *Cyperus* L. section *Diffusi* Kunth (Cyperaceae) in the Neotropics. In: Barbosa, L.M. & Santos, N.A. (Eds.) *A botânica no Brasil: pesquisa, ensino e políticas ambientais. Sociedade Botânica do Brasil Bulletin* 238A: 311–314.
- Vahl, M. (1805) *Enumeratio Plantarum. Volumen Secundum*. Impensis auctoris, & prostat apud J.H. Schubothe, Copenhagen, 321 pp.