

Eight new synonyms in the genus *Pycreus* (Cyperaceae)

V.P. Prasad^{1*} and D.A. Simpson²

¹Central National Herbarium, Botanical Survey of India, P.O. Botanic Garden, Howrah – 711103, West Bengal, India.

²Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, UK.

*E-mail: prasad_parur@yahoo.com

Abstract

Pycreus plicatus Govind. is reduced to the synonym of *P. diaphanus* (Schrad. ex Schult.) S.S. Hooper & T. Koyama. *Cyperus latovaginatatus* Govind. [*Pycreus latovaginatatus* (Govind.) P. Singh & V. Singh], *C. plumbeonucea* Govind. [*P. plumbeonuceus* (Govind.) P. Singh & V. Singh], *C. curvibracteatus* Govind. [*P. curvibracteatus* (Govind.) P. Singh & V. Singh], *Pycreus apiculatus* Govind. and *P. opulentus* Govind. are reduced to the synonyms of *P. diaphanus* var. *gracilescens* (Kük.) S.S. Hooper. *Pycreus palghattensis* Govind. is reduced to the synonym of *P. pumilus* (L.) Nees, *P. membranaceus* (Vahl) Govind. is treated as a variety, i.e., *P. pumilus* var. *membranaceus* (Vahl) Karthik. and *P. similinervulosus* Govind. is reduced to the synonym of *P. pumilus* var. *membranaceus*. Also lectotype is designated for *P. similinervulosus*.

Keywords: Nomenclature, Sedge, Synonym, Taxonomy, Type

Introduction

In the last three decades, a large number of species that have been described in the family Cyperaceae resulted in a substantial increase in the total number of sedge species occurring in India. Sedges often demonstrate wide variations in morphology depending on the habitat in which they grow. Immature or depauperate specimens of certain species may also be confused as to their identity. At times such variations have led to the erroneous description of new taxa. However, when a large number of specimens from different parts of the country are studied such variations within taxon can be better understood and their identity corrected. While revising the genus *Pycreus* for Flora of India, type specimens of several species described in the recent past were studied and that resulted in the merging of five names with just one, i.e., *Pycreus malabaricus* C.B. Clarke (Prasad, 2009). Prasad (2015) had also reduced another two names, *P. bolei* S.M. Almeida and *P. lanceolotii* S.M. Almeida as heterotypic synonyms of *P. pumilus* (L.) Nees. Further study of the type materials at PCM, CAL, MH and K resulted in the synonymy of eight more names. The names to be treated as synonyms are listed here under their correct names, along with the original citation, information on the type, and the reason for the synonymy is provided in a note.

Pycreus diaphanus (Schrad. ex Schult.) S.S. Hooper & T. Koyama, J. Jap. Bot. 51: 316. 1976. *Cyperus*

diaphanus Schrad. ex Schult., Mant. 2: 477. 1824. Type?: NEPAL, N. Wallich s.n. (SING, image!).

Cyperus latespicatus Boeckeler, Flora 42: 441. 1859. *Pycreus latespicatus* (Boeckeler) C.B. Clarke in Hook.f., Fl. Brit. India 6: 590. 1893. *Cyperus diaphanus* var. *latespicatus* (Boeckeler) J. Kern in Steenis, Fl. Males., ser. 1, Spermat. 7: 653. 1974. Type: Bengal, Griffith s.n. (not seen).

Pycreus plicatus Govind., Proc. Indian Acad. Sci. 100: 417. 1990, **syn. nov.** Type: INDIA, Tamil Nadu, Madurai district, Venniar to Varaiyattumottai, High Wavys, 24.2.1978, E. Govindarajalu 014125A (Holotype, CAL!)* **Fig. 1a**

Note: A detailed study of the type of *Pycreus plicatus* revealed that it is a slender, depauperate form of *P. diaphanus* (Schrad. ex Schult.) S.S. Hooper & T. Koyama. The spikelets (10–13 × c. 4 mm), glumes (2.8–3 × c. 1.8 mm) and achenes (c. 1.1 × 0.9 mm) clearly match with that of *P. diaphanus*. Govindarajalu (1990a) while describing *P. plicatus* allied it with an African species, *P. divulsus* (Ridl.) C.B. Clarke that looks entirely different.

Pycreus diaphanus* var. *gracilescens (Kük.) S.S. Hooper in C.J. Saldanha & Nicolson, Fl. Hassan Dist.: 692. 1976. *Cyperus latespicatus* var. *gracilescens* Kük. in Engl., Pflanzenr. IV, 20(101): 393. 1936. Type: Could not be located.

Cyperus latovaginatatus (*latovaginata*) Govind., J. Indian Bot. Soc. 52: 74. 1974, **syn. nov.**

Pycrus latovaginatatus (Govind.) P. Singh & V. Singh, J. Econ. Taxon. Bot. 5: 467. 1984. Type: INDIA, **Tamil Nadu**, Madurai district, Upper Manalar and Vattaparai, High Wavy Mts., 1.2.1969, E. Govindarajalu 9299 (Holotype, PCM!; Isotype, CAL0000001725!).

Fig. 1b

Cyperus plumbeonucea Govind., J. Indian Bot. Soc. 52: 76. 1974, **syn. nov.**

Pycrus plumbeonuceus (Govind.) P. Singh & V. Singh, J. Econ. Taxon. Bot. 5: 467. 1984. Type: INDIA, **Tamil Nadu**, Madurai district, Camp shed, High Wavy Mts., 4.2.1969, E. Govindarajalu 9453 (Holotype, PCM!; Isotype, CAL0000001722!).

Fig. 1c

Cyperus curvibracteatus Govind., Proc. Indian Acad. Sci., B 88: 231. 1979, **syn. nov.**

Pycrus curvibracteatus (Govind.) P. Singh & V. Singh, J. Econ. Taxon. Bot. 5: 468. 1984. Type: INDIA, **Tamil Nadu**, Nilgiris district, Sigur R.F., s.d., E. Govindarajalu 6241 (Holotype, PCM!; Isotype, CAL0000025687!).

Fig. 1d

Pycrus apiculatus Govind., Proc. Indian Acad. Sci. 100: 415. 1990, **syn. nov.** Type: INDIA, **Kerala**, Idukki district, Devikulam, Lockart gap, Munnar, 19.11.1979, E. Govindarajalu 15130 (Holotype, CAL!)*.

Fig. 2a

Pycrus opulentus Govind., Proc. Indian Acad. Sci. 100: 417. 1990, **syn. nov.** Type: INDIA, **Tamil Nadu**, Madurai district, Thuvanam, High Wavys, 25.12.1973, E. Govindarajalu 11933 (Holotype, CAL!)*.

Fig. 2b

Note: A detailed study of the types of *Cyperus latovaginatatus* Govind., *C. plumbeonucea* Govind., *C. curvibracteatus* Govind., *Pycrus apiculatus* Govind. and *P. opulentus* Govind. revealed that they all belong to *P. diaphanus* var. *gracilescens* (Kük.) S.S. Hooper. A combination of the characters such as broader spikelets, castaneous glumes with mucous apex and achenes with wrinkled or wavy surface due to longitudinally stretched epidermal cells are the diagnostics of *P. diaphanus*. According to the protologue of *Cyperus latespicatus* var. *gracilescens* Kük. [*Pycrus diaphanus* var. *gracilescens* (Kük.) S.S. Hooper] the culms are narrow and

spikelets smaller (c. 3 mm wide) that are evident in the types of these five taxa. The distinguishing characters supporting the merger of these five species with *P. diaphanus* var. *gracilescens* are given below in table 1.

Besides the habit and vegetative characters, the important characters given in the table 1 are sufficient to prove that the types of all the above five names belong to variety *gracilescens* of *P. diaphanus*.

Kükenthal (1936) while describing *C. latespicatus* var. *gracilescens* cited two specimens, one from Shimoga, Mysore (Karnataka) in southern India (A. Meebold 9353) and the other from Central China (F.T. Wang 23622b). One of these specimens may be selected as the lectotype, once these are located.

Pycrus pumilus (L.) Nees, Linnaea 9: 283. 1835. *Cyperus pumilus* L., Cent. Pl. II: 6. 1756. Type: INDIA (not seen)

Pycrus palghattensis Govind., Proc. Indian Acad. Sci. 100: 427. 1990, **syn. nov.** Type: INDIA, **Kerala**, Palghat district, Palghat, 30.8.1975, V.P.K. Nambiar 12713 (Holotype, CAL!)*.

Fig. 2c

Note: A study on the type of *P. palghattensis* Govind. revealed that it belongs to *P. pumilus* (L.) Nees, a common species in India. However, Govindarajalu (1990b) while describing *P. palghattensis* compared it with *P. squarrosulus* Cherm., a species from Madagascar.

Pycrus pumilus var. **membranaceus** (Vahl) Karthik. in Karthik. *et al.*, Fl. Ind. Enum. Monocot.: 66. 1989.

Cyperus membranaceus Vahl, Enum. Pl. 2: 330. 1806. *C. pumilus* f. *membranaceus* (Vahl) C.B. Clarke, J. Linn. Soc., Bot. 21: 44. 1884. *Pycrus pumilus* subsp. *membranaceus* (Vahl) T. Koyama, Gard. Bull. Singapore 30: 151. 1977. *P. membranaceus* (Vahl) Govind., Proc. Indian Acad. Sci. 100: 424. 1990. Type: INDIA, König s.n. (Syntype, C10010305, image!)

Pycrus similinervulosus Govind., Proc. Indian Acad. Sci. 100: 430. 1990, **syn. nov.** Lectotype (designated here): INDIA, **Kerala**, Idukki district, Cheriakanam, Thekkady, s.d., E. Govindarajalu 6450 (MH!).

Fig. 2d

Table 1. Comparison of morphometric characters of five species

Characters	<i>C. latovaginatatus</i>	<i>C. plumbeonucea</i>	<i>C. curvibracteatus</i>	<i>P. apiculatus</i>	<i>P. opulentus</i>
Spikelets	7–10 × c. 3 mm	c. 8 × 3 mm	7–10 × 2–2.2 mm	7–10 × c. 3 mm	6–10 × c. 3 mm
Glumes	2–2.2 × c. 1.5 mm	c. 2.2 × 1.6 mm	1.8–2 × c. 1.5 mm	2–2.5 × 1.5–1.8 mm	c. 2 × 1.5 mm
Achenes	c. 1 × 0.7 mm	c. 1 × 0.8 mm	c. 1 × 0.6 mm	c. 1 × 0.8 mm	c. 0.9 × 0.6 mm



Fig. 1. Holotype of: a. *Pycrus plicatus* Govind. (*E. Govindaraju* 014125A, CAL)*; Isotypes of: b. *Cyperus latovaginatus* Govind. (*E. Govindaraju* 9299A, CAL); c. *C. plumbeonucea* Govind. (*E. Govindaraju* 9453C, CAL); d. *C. curvibracteatus* Govind. (*E. Govindaraju* 6241, CAL).

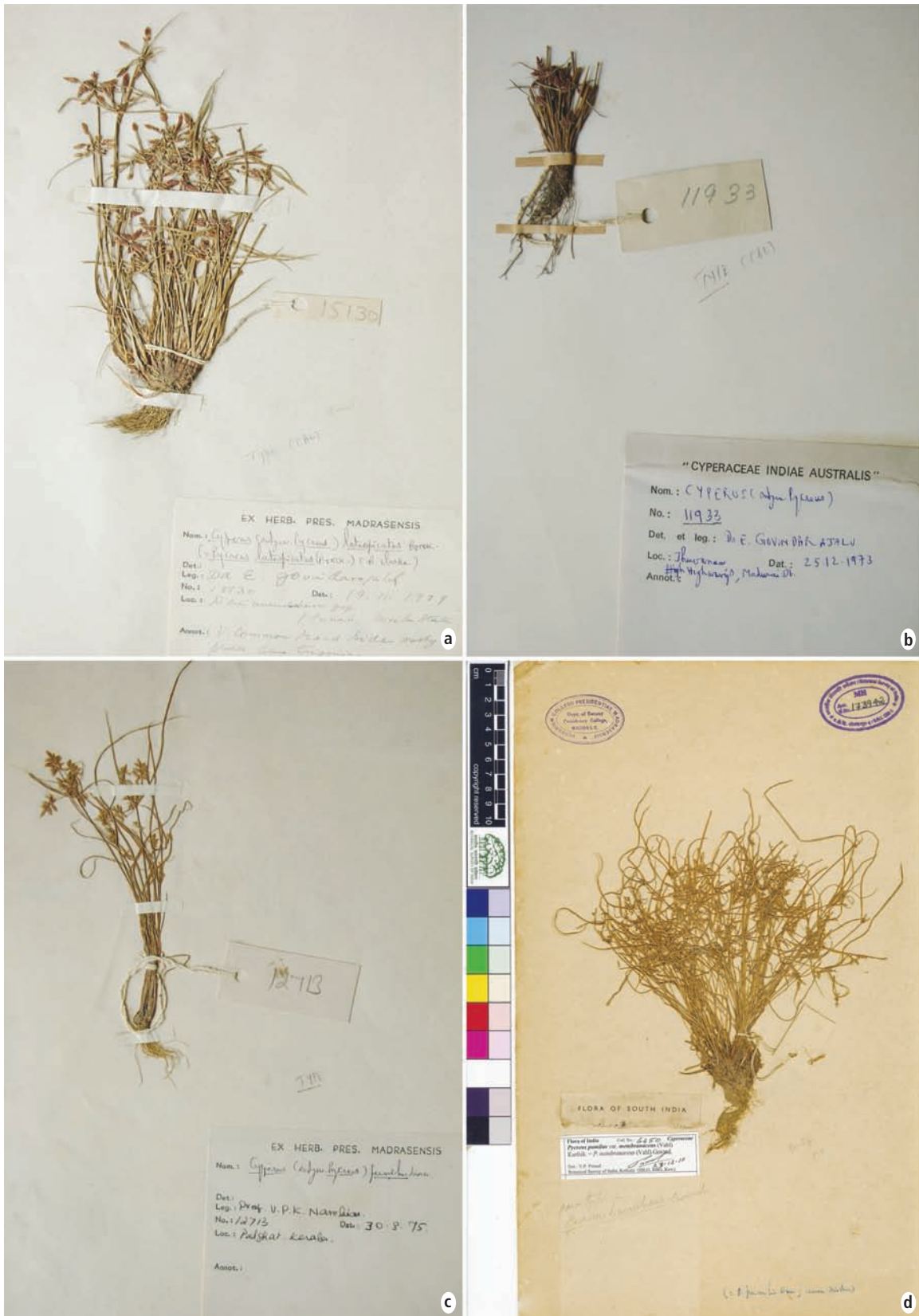


Fig. 2. Holotypes of: a. *Pycreus apiculatus* Govind. (E. Govindarajulu 15130, CAL)*; b. *P. opulentus* Govind. (E. Govindarajulu 11933, CAL)*; c. *P. palghattensis* Govind. (V.P.K. Nambiar 12713, CAL)*; d. Lectotype of: *P. similinervulosus* Govind. (E. Govindarajulu 6450, MH).

Note: As per the protologue, holotype of *Pycreus similinervulosus* Govind. should have been at CAL, but could not be located. At the Maduravoyal Field Station of Centre for Advanced Studies in Botany, University of Madras, Chennai, an empty folder was found on which the holotype number 6012 is written. It is assumed that the holotype and isotypes are missing and hence the available paratypes were studied to confirm the identity. Furthermore, as the holotype and isotypes are missing one of the paratypes (*E. Govindarajalu* 6450), which matches well with protologue is selected here as the lectotype for the name.

Detailed study of these paratypes revealed that these are nothing but *P. pumilus* var. *membranaceus* (Vahl) Karthik. Govindarajalu (1990b) while describing *P. similinervulosus* compared it with *Cyperus* (*Pycreus*) *nervulosus* Kük., which is actually *Pycreus pumilus* (L.) Nees. Govindarajalu (l.c.) treated '*membranaceus*' as a distinct species. But there are not many differences between this and the typical *P. pumilus*, and hence it is preferred here to treat it as a variety. It is worth mentioning that Clarke (1884) treated this as a forma, not even as a variety.

*As per the protologue the holotype should have been at CAL, but was traced at the Maduravoyal Field Station of Centre for Advanced Studies (CAS) in Botany, University of Madras, Chennai.

Acknowledgements

Major part of this study was undertaken at K when the first author worked there as the Indian Botanical Liaison Officer (IBLO). He is grateful to the Director and Board of Trustees, Royal Botanic Gardens, Kew, UK, for the facilities. Thanks are due to the Director, Botanical Survey of India, Kolkata and the Head of Office, CAL, for the facilities. Prof. N. Anand, former Director, CAS in Botany, University of Madras, Chennai, helped to locate the type specimens designated by Prof. E. Govindarajalu. Thanks are due to Head of the Department,

Post Graduate and Research Studies in Botany, Presidency College, Chennai, for the permission to consult the PCM. The Heads of CAL and MH have kindly sent a few type specimens on loan to K for critical study. They also provided images of few type specimens. Dr. W. Arisdason, Scientist, Botanical Survey of India, Kolkata, has critically gone through the manuscript and suggested corrections to improve the quality. Thanks are also due to Mr. Anand Kumar, Botanical Assistant, Botanical Survey of India, Kolkata, for scanning the specimens and for preparing the photoplates.

Literature Cited

- Clarke, C.B. 1884.** On the Indian species of *Cyperus*; with remarks on some others that specially illustrate the subdivisions of the genus. *J. Linn. Soc., Bot.* **21**: 1–202.
- Govindarajalu, E. 1990a.** Cyperaceae Indiae Australis Precursores: New species and scanning electron microscopic observations in *Pycreus* sect. *Muricati*. *Proc. Indian Acad. Sci., Pl. Sci.* **100**: 415–422.
- Govindarajalu, E. 1990b.** Cyperaceae Indiae Australis Precursores: New species and combinations in *Pycreus* Beauv. *Proc. Indian Acad. Sci., Pl. Sci.* **100**: 423–433.
- Kükenthal, G. 1936.** Cyperaceae–Scirpoideae–Cypereae. In: Engler, H.G.A. (ed.), *Das Pflanzenreich: Regni vegetabilis conspectus*. IV(20), Heft **101(3)**: 321–480.
- Prasad, V.P. 2009.** Five new synonyms of *Pycreus malabaricus* (Cyperaceae). *Rheedea* **19**: 19–24.
- Prasad, V.P. 2015.** *Pycreus bolei* and *P. lancetii* two new synonyms of *P. pumilus* (Cyperaceae). *Nelumbo* **57**: 37–39.

Received:28.7.2016

Revised and Accepted:7.12.2016