

Genus *Pycreus* P. Beauv. (Cyperaceae) in Uttar Pradesh, India

V.P. Singh

Department of Botany
Ramabai Government Womens P. G. College, Akbarpur, AmbedkarNagar
Email id: singh.drviyajayprakash@gmail.com

Abstract

The paper provides a detailed taxonomic account of 6 spp. of the genus *Pycreus* P. Beauv. in Uttar Pradesh. Key to the species is also provided.

The state of Uttar Pradesh (after recent reorganisation) is situated between 77°-3' & 84°-39' N and 23°-52' & 30°-25' E. The area falls under Gangetic Plain and covers forested area of Tarai & Bhabhar tract, cultivated areas of Purvanchal, Rohilkhand Duabs, Bundelkhand etc. But the flora of the region is not yet worked out. Present study deals with the floristic diversity of the genus *Pycreus* P. Beauv. in the state. The study is based on the field observations, scrutiny of literature (Uniyal *et al* 1997, Duthie 1929, Hooker 1893-94, Singh & Srivastava 2002) and herbarium specimens housed in CAL, LWG, DD, BSA, BSIP, MU (Herbarium at Merrut University) GU, (Herbarium at Gorakhpur University) DUTHIE (Allahabad University) herbaria.

PYCREUS P. Beauv.

Fl. Oware & Benin 2 : 48. t. 86. 1807.

Type : *Pycreus polystachyos* (Rottb.) P. Beauv. (*Cyperus polystachyos* Rottb.)

Annual or perennial sedges, sometimes rhizomatous or stoloniferous. Culms not nodose above the leafy base, solid. Leaves 3-ranked with gramineous blade, or becoming subaphyllous sheath by the reduction of the blade. Spikelets laterally flattened with few to many glumes districhously disposed on a continuous rhachilla, prophyllate at base. Glumes all alike, as a rule bearing a hermaphrodite flower at the axil, often with nerveless sides. Flowers with digynous pistil, 1 or 2 (rarely 3) stamens; hypogynous bristles absent. Achenes bilaterally flattened, with one angle facing the rhachilla; styles 2-cleft.

About 70 species in temperate, tropical and subtropical parts of the world, with high specific concentration in Africa; 6 species in Uttar Pradesh.

Key to the species

- 1a. Spikelets digitate; glumes mucronate-aristate, 1-1.5 mm long. Nuts *ca* 0.5 mm long ...*P. pumilus*
- 1b. Spikelets spicate; glumes muticous-mucronulate; glumes and nuts frequently larger ...2
- 2a. Epidermal cells of the nut longitudinally stretched, linear-oblong; nuts wrinkled by wavy or broken transverse lines ...3
- 2b. Epidermal cells of the nut isodiametric, roundish or hexagonal; nuts not wrinkled ...4
- 3a. Spikelets linear, *ca* 2 mm broad, suberect even in fruit; glumes *ca* 2 mm long, mucronulate, stramineous-yellowish ...*P. stramineus*
- 3b. Spikelets oblong-lanceolate, 3-4 mm broad, finally spreading; glumes 2.5-3.5 mm long, muticous, fulvous, castaneus, or purplish ...*P. diaphanus*
var. *latespicatus*

- 4a. Stems mostly decumbent and rooting at the lower nodes. Leaves at the base of the stem and a few upward also. Spikelets oblong; glumes broadly ovate, with arcuate keel, and usually with a depression on either side. Nuts obovate-suborbicular
...*P. sanguinolentus*
- 4b. Stem always erect. Leaves only at the base of the stem. Spikelets linear-lanceolate; glumes oblong-lanceolate with straight keel, without any depression on the sides. Nuts linear-oblong or narrowly obovate...5
- 5a. leaves flat. Spikelets gradually tapering to an acute apex; rhachilla narrowly winged; glumes acute. Nuts linear oblong subtruncate at the top
...*P. polystachyos*
- 5b. Leaves canaliculate. Spikelets parallel-sided; rhachilla wingless; glumes obtuse. Nuts elliptic-narrowly obovate, not truncate
...*P. flavidus*

Pycreus diaphnus Schrader ex R. & S., var **latespicatus** (Boeck.) Kern in Fl. Males. (Ser. 1) 7(3) : 653, 1974. *Cyperus latespicatus* Boeck., Flora 42 : 441 (433) 1859; Clarke in Journ. Linn. Soc. Bot. 21 : 40, 1884; Kükenthal in Pflanzenr. Heft 101 : 392. 1936. *Pycreus latespicatus* (Boeck) Clarke in Hook. f. Fl. Brit. India 6 : 590, 1893 et Ill. Cyp. t. 3, 1909.

Annuals. Stems tufted, rigid, trigonous, 10-40 cm high. Leaves flat, gradually narrowed upwards, 1-2.5 mm wide. Inflorescence simple, often contracted, sometimes with 2-3(-5) rays up to 7 cm long, or reduced to a single head. involucre bracts 2-3 (-4) patent, the lowest up to 15 cm long. Spikes broadly ovate; rachis short, up to 5 mm, spikelets finally horizontally spreading, approximate, oblong, with nearly parallel margins, strongly compressed, sub-obtuse, 10 - 20 mm x 2.5 - 4 mm, 20-30 (-40)-flowered; rachilla slightly flexuous, wingless, persistent; internodes ca 0.5 mm. Glumes membranous, obliquely patent, keeled, ovate, obtuse, mucous, about 2/3 imbricate, 2.5 - 3 x 1.75 - 2 mm; keel curved, green, 3(-5)-nerved; sides nerveless, shining fulvous to castaneous, margins somewhat undulate. Stamens 2; anthers oblong to oblong-linear, 0.75-1 mm. Styles up to 1.5 mm; stigmas 2, about as long as the style. Nut biconvex, laterally compressed, obovate to broadly obovate or elliptic, broadly stipulate, apiculate, 1-1.25 by 0.8-1 mm, rugulose with transverse wavy lines, ultimately black, epidermal cells longitudinally oblong.

Notes : This species resembles *Cyperus unioloides* but readily distinguished by the 2 stamens (3 in *Cyperus unioloides*) and the rugulose nut.

Fl. & Fr. : Aug.-Oct.

Habitat : near streams (*nala*), wet places and paddy field.

Distribution : India : (Kumaon to Khasi, Bengal, Chota-Nagpur), Malabar.

Distribution in Uttar Pradesh : Fatehpur, Mainpuri, Lucknow, Saharanpur.

Representative Specimens : **Lucknow** : Govt. Reserve forest, *Umashankar*, 1019 (LWG!). **Mainpuri** : Jain Inter College, *Maliya et al.*, 215416 (LWG!). **Saharanpur** : *s.l.*, Raizada, *s.n.*, *Som Deva*, 7582

Pycreus flavidus (Retz.) Koyama in Journ. Jap. Bot. 51(10) : 313. 1976, *et in* Dassan., Rev. Handb. Fl. Ceylon 5 : 222. 1985. *Cyperus flavidus* Retz., Obs. Bot. 5 : 13. 1788, *non sensu* C.B. Clarke in Hook. f., Fl. Brit. India 6 : 600. 1893; Kern in Fl. Males. Ser. I. 7 : 648. 1974. *Cyperus globosus* Allion., Fl. Pedem. Auct. : 49. 1789, *non* Forssk. 1775. *Cyperus capillaris* Koenig ex Roxb., Fl. Ind. 1 : 198. 1820. *Cyperus strictus* Roxb., Fl. Ind. 1 : 203. 1820, *non* Lam. 1791. *Pycreus globosus* (Allion.) Reichenb., Fl. Germ. Excurs. 2 : 140. 1830. *Pycreus capillaris* (Koenig ex Roxb.) Nees (Linnaea 9 : 283. 1834 *comb. invalid.*) ex C.B. Clarke in Hook. f., Fl. Brit. India 6 : 591. 1893, *pro part. excl.* var *nilgircus* (Hochst. ex Steud.) C.B. Clarke.

Type : India, Tranquebar, *Koenig*.

Erect, annual herbs. Stems trigonous, caespitose. Leaves subbasal, rigid, linear, filiform, as long as or shorter than stems, 1-2 mm broad; sheaths with a truncate mouth. Umbel compound, spikes dense, short-linear, sometimes several rays and a central, sessile, subglobose spike; rays short, upto 5 cm long; bracts 2-3 upto 15 cm

long; spikelets pale brown, linear or lanceolate, compressed, many-flowered, 6-10 mm long; glumes chartaceous, ovate or ovate-oblong, closely imbricate, keeled; stamens 2, anthers small, mucous, ovary one celled style 2 mm long 2 fid. Stigma 2, as long as or longer than styles. Nuts biconvex, ellipsoid, compressed, apiculate, chestnut brown to black, *ca* 1 mm long.

Fl. & Fr. : July-Nov.

Habitat : in marshy places, water-sides, cultivated fields. Common.

Chrom No. : $2n = 16, 20$ (as *Cyperus flavidus* Retz.).

Distribution : S. Europe, Africa, W. & C. Asia, India, China, Japan, Malaysia.

Distribution in Uttar Pradesh : Allahabad, Azamgarh, Banda, Bijnor, Bulandshahar, Gonda, Jalaun, Jaunpur, Jhansi, Kheri, Lucknow, Meerut, Mirzapur, Muzaffarnagar, Pilibhit, Saharanpur, Sultanpur.

Representative Specimens : **Allahabad** : Garwa, B.K. Mishra, 73 (DUTHIE!); G. Panigrahi, 11366 (BSA!); Shankargarh, R.K.S. Chauhan, 519 (DUTHIE). **Azamgarh** : Naraipur, S.N. Srivastava, 14370 (GU); Bilariyaganj, Chandra, 5743 (GU). **Banda** : s.l., B.K. Verma, 5179 (DUTHIE). **Bijnor** : Nagina, Chandra et al, 44049 (LWG!). **Bulandshahar** : Lokhoti, N.P. Singh, 25398 (LWG!). **Gonda** : s.l., Inayat, 222857/a (CAL!). **Jalaun** : Nadigaon, G. Shukla, 7655 (DUTHIE). **Jhansi** : Arjar, J.F. Duthei, 6496 (DD!); Rajghat, J.F. Duthei, 7053 (DD!). **Kheri** : Banthi, Inayat, 22857 (DD!); Oudh, Inayat, 22857 (CAL!). **Lucknow** : Banthara, Ravi Ahuja, 1171 (LWG!). **Meerut** : Sardhana, R.S. Saxena, 659 (MU). **Mirzapur** : Kutwa, U.C. Bhattacharya, 17675 (CAL!); Churk, G. Panigrahi, 9670 (CAL!); Tanda fall, G. Panigrahi, 3649 (CAL!). **Muzaffarnagar** : s.l., Tayal & Lalita, 298 (DAV College). **Pilibhit** : Mainkot, Inayat, 22856 (DD!); Gobal, C.L. Malhotra, 50821 (CAL!). **Saharanpur** : Bahadrad, A.K. Goel, 108 (MU). **Sultanpur** : Kurebhar, Om Prakash, 10171 (GU); Belhari, Om Prakash, 10189 (GU).

Pycreus polystachyos P. Beauv. Fl. de Oware 2 : 48. t. 86. f. 2. 1807. *Cyperus polystachyos* Rottb. Descr. et Icon. 39. t. 21. f. 1. 1773.

Annual or sometimes perennial, tufted, 10-70 cm high. Stems slender or rigid, compressed-trigonous, 1-2 mm thick (sometimes almost absent). Leaves 5-9, half to three-fourth as long as the stem, 2-4 mm broad, greyish green. Anthela compound, evolute or capitately contracted; bracts 3-6 foliaceous, lowest 3.5-20 cm long; rays 1-7, longest up to 4 cm long; spikelets numerous, congested, suberect to spreading, linear, 8-25 x 1.5 mm, 16-50-flowered; rachilla flexuous, narrowly winged; glumes membranaceous, rather remote, ovate-lanceolate, 1.5-2 mm long, mucous or mucronulate, keeled, stramineous or pale ferruginous (rarely castaneous). Stamens 1-2; anthers *ca* 0.5 mm long, crest ovate; styles deeply bifid. Nuts linear-oblong, lenticular, with almost truncate shoulders, 1 - 1.2 mm long, apiculate, brown or ultimately glossy black.

var. **laxiflorus** Benth., Fl. Austr. 7 : 261. 1878. *Pycreus polystachyos* var. *laxiflorus* Clarke in Hook. f., Fl. Brit. India 6 : 592. 1893.

Stems longer. Anthela lax; rays 6-10; spikelets remote, the lower often spreading; glumes ferruginous.

Fl. & Fr. : July.

Habitat : in paddy-fields.

Distribution : India : Assam : Cachar; Lakhimpur and Uttar Pradesh : Basti (*cf* Sahni, 1990).

Pycreus pumilus (L.) Nees (Linnaea 9 : 283. 1835, *comb. invalid*) ex C.B. Clarke in Hook. f., Fl. Brit. India 6 : 591. 1893, *pro part. quoad basion., excl. syn. et descr.*; 948; Koyama in Hara et al., Enum. 1 : 117. 1978 [‘as (L.) Domin’]. *Cyperus pumilus* L. in Torner, Cent. Pl. 2 : 6. 1756, et Sp. Pl. ed. 2. 1 : 69. 1762. Kern in Fl. Males. Ser. I. 7 : 650. f. 66. 1974. *Cyperus nitens* Retz., Obs. Bot. 6 : 13. 1791. *Pycreus nitens* (Retz.) Nees in Nova Acta. Acad. Caes. Leop.-Carol. Garman. Nat. Curr. 19. Suppl. 1 : 53. 1843; C.B. Clarke in Hook. f., Fl. Brit. India 6 : 591. 1893.

ssp. *pumilus*.

Small, erect, annual herbs. Stems caespitose, obscurely 3-gonous. Leaves basal, shorter than or as long as stems, 1-2 mm broad, acute-acuminate, scabrid in upper part. Umbels simple or compound or reduced to single head; bracts 3-5, overtopping rays, foliaceous; spikes ovoid or sub-globose, dense, 1-2 cm across; spikelets clustered or short-spicate, strongly compressed, linear or linear-lanceolate, divergent, pale brown or straw-coloured, 5-10 mm long; rachilla slender, persistent; glumes membranous, ovate, sharply keeled, 3-5-veined not exposing the achenes; stamen 1, occasionally 2, anthers oblong; ovaries 1-celled; styles slender, *ca* 1 mm long; 2-fid; stigmas 2, about as long as style. Nuts obovoid, laterally compressed, retuse apiculate at apex, brown, 0.4-0.7 mm long.

Fl. & Fr. : Oct.-July.

Habitat : in moist grass places, in ditches, muddy situations.

Chrom. No. : $2n = 90$ (as *Cyperus pumilus* L.)

Habitat : near waterbodies.

Distribution : Nepal, India, Thailand to Vietnam, Malaysia.

Distribution in Uttar Pradesh : Aligarh, Allahabad, Azamgarh, Bahraich, Banda, Barabanki, Fatehpur, Ghazipur, Gorakhpur, Hamirpur, Jhansi, Kheri, Lucknow, Meerut, Mirzapur, Moradabad, Pilibhit, Saharanpur, Sultanpur.

Representative specimens : **Aligarh** : Chherut, *A.K. Singh*, 259 (MU). **Allahabad** : Saiyad Sarawan, *B.K. Mishra*, 780 (DUTHIE); Ramnathpuram, *B.K. Mishra*, 599 (DUTHIE); Hanumanganj, *B.K. Mishra*, 626 (DUTHIE); Garwa, *B.K. Verma & R.P. Dube*, 549 (DUTHIE!). **Azamgarh** : Mahula, *S.N. Srivastava*, 14624 (GU); Gambhirpur, *Chandra*, 5511 (GU). **Bahraich** : Abdullaganj, *O.P. Mishra*, 6402 (BSA). **Banda** : Manikpur, *B.K. Verma*, 5214 (DUTHIE). **Bulandshahar** : Ahar, *L.K. Sharma*, 481 (MU). **Fatehpur** : Kishanpur, *S.K. Dixit*, 2248 (DUTHIE). **Ghazipur** : Udanti river, *S.D. Singh*, 12498 (GU). **Gorakhpur** : Narhilake, *A.K. Srivastava*, 7221 (GU); Padri Bazar, *T.N. Srivastava*, 1122 (GU). **Hamirpur** : *s.l.*, *U.C. Bhattacharya*, 17847 (CAL!). **Jaunpur** : (cf. *S.K. Singh & Dixit* 1969). **Jhansi** : Jhansi, Fort, *Janki Prasad*, 22838 (LWG!). **Lucknow** : Kukrail forest, *U.S. Mishra*, 12949 (LWG!); Malihabad, *U.S. Mishra*, 4785 (LWG!); Barabanki road, *L.D. Deo & U.S. Mishra*, 10 (LWG!); NBG, *S.L. Kapoor*, 24035 (LWG!); Avaran forest, *Ravi Ahuja*, 1195 (LWG!). **Meerut** : Parikshitgarh, *R.S. Saxena*, 999 (MU). **Mirzapur** : *s.l.*, *J.G. Srivastava*, 21592 (LWG!); *s.l.*, *U.C. Bhattacharya*, 17537 (CAL!); *s.l.*, *G. Panigrahi*, 12278 (CAL!); Hara R.H. Compound, *G. Panigrahi*, 12368 (CAL!). **Pilibhit** : Amaria, *C.L. Malhotra*, 42417 (CAL!); Bithaura, *C.L. Malhotra*, 50913 (CAL!). **Saharanpur** : *s.l.*, *R.N. Parker*, 44861 (DD!); *s.l.*, *J.F. Duthie*, 119 (DD!). **Sultanpur** : Kaaba, *Om Prakash*, 10302 (GU); Ratanpur, *Om Prakash*, 10181 (GU).

Pycneus sanguinolentus Nees in *Linnaea* 9 : 283. 1834; Clarke in *Hook. f. Fl. Brit. India* 6 : 590. 1893; *Cyperus sanguinolentus* Vahl, *Enum. Pl.* 2 : 354. 1806.

ssp. *sanguinolentus*

Annuals or perennials, 6-90 cm high. Rhizomes, when present, short or sometimes creeping to 15 cm, *ca* 2 mm thick. Stems erect or decumbent at the base, compressed-trigonous, 1-2 mm thick. Leaves several clustered at the base and a few also scattered upwards up to middle of the stem, shorter than to equalling the stem, 1.5-4 mm broad. Anthela evolute or capitately contracted; bracts 2-5 foliaceous, spreading, lowest 5-20 cm long; rays, when present, 1-3, suberect, usually 1-2 cm, sometimes up to 4 cm long; spikelets congested, 3-21 together, diverging, ovate or oblong-lanceolate, compressed, 5-25 mm long, 2-3 mm broad, 8-40-flowered; rachilla wingless; glumes subclavately imbricating, ovate, 2.2-2.5 mm long, obtuse, with a distinct depression and a marginal sanguineous band on both sides; keel green, 3-5-nerved. Stamens 3; anthers *ca* 0.5 mm long; styles 1.5-2 mm long, bifid. Nuts broadly obovoid to suborbicular, 1.1-1.3 x 0.8-1 mm, apiculate, blackish-brown.

var. ***micronux*** (Clarke) Kuentner. in *Engl. Pflanzenr. heft* 101 : 387. 1936. *Cyperus eragrostis* var. *micronux* Clarke in *J. Linn. Soc. (Bot.)* 21 : 59. 1884.

Glumes *ca* 2 mm long, cinnamomeous-fuscous. Styles *ca* 3 mm long. nuts smaller, *ca* 0.5 mm long.

Fl. & Fr. : April-Jan.

Habitat : in wastelands and river-banks, on moist sandy, sandy loam or clayey soil; a common weed in paddy-fields. Common.

Distribution : Arunachal Pradesh (Subansiri. Assam : Goalpara; Kamrup; Nowgong. Meghalaya) K & J. Hills.

Distribution Uttar Pradesh : Banda, Gorakhpur, Pilibhit, Sultanpur.

Representative specimens : **Banda** : Manikpur, *B.K. Sinha*, 6459 (DUTHIE). **Gorakhpur** : Deibhar, *A.K. Srivastava*, 7055 (GU). **Pilibhit** : Amaria, *C.L. Malhotra*, 42402 (CAL!). **Sultanpur** : Akhandnagar, *Om Prakash*, 10981 (GU).

Pycnus stramineus C.B. Clarke in Hook. *f.*, Fl. Brit. India 6 : 589. 1893. *Cyperus substramineus* Kuekenh. in Engl. Pflanz. heft. 101 : 398 1936. *Cyperus stramineus* Nees in Wt., Contr. Bot. Ind. 74. 1834; *non* Desi ex Link, 1820.

Annuals, tufted, 5-32 cm high. Stems slender subtrigonous. Leaves 3-5, shorter than to equalling the stem, 1.5-2 mm broad. Anthela simple, contracted or evolute; bracts 2-3, foliaceous, suberect, lowest 5-7 cm long; rays 1-3, longest 0.5-1.5 cm long; spikelets 2-6 together, suberect, linear, compressed, 8-35 x 2 mm, 14-80-flowered; rhachilla broad, wingless; glumes closely imbricating, ovate, 2 mm long, mucronulate, stramineous; keel 3-nerved; margins hyaline. Stamens 2; anthers *ca* 0.6 mm long, crest ovate, red; styles long, deeply bifid. nuts obovoid, lenticular, 1-1.2 mm long, apiculate, blackish brown, with whitish transversely undulating lines.

Fl. & Fr. : Aug.-Oct.

Habitat : in moist sandy alluvium, along ponds and streams.

Distribution in Uttar Pradesh : Basti.

ACKNOWLEDGEMENTS

Author is grateful to Principal, Ramabai Government Womens P. G. College, Akbarpur, Ambedkarnagar, Dr. Arvind Kumar Singh, Head, Department of Botany, T.D.P.G. College, Jaunpur for facilities.

REFERENCES

- Duthie, J.F. (1929) *Flora of Upper Gangetic Plains and of the Adjacent Siwalik & Sub-Himalayan tracts*. Calcutta.
- Hooker, J.D. (1893) *Flora of India* Vol. V., London
- Singh, V.P. & R.C. Srivastava (2002) *Diversity of Cyperaceous taxa of Uttar Pradesh State of India*, *Proc. Nat. Symp. on Science & Ethics of Env. Care & Sustainability*, 2: 336-340.
- Singh, V.P. & R.C. Srivastava (2003) Economic importance of Sedges of Uttar Pradesh *Jorn. Econ. Tax. Bot.* 27 (4): 978-981.
- Uniyal, S.K., A. Swami & Uniyal, B.P. (1997) *Cyperaceae of U.P.* – A checklist, Bishen Singh Mahendra Pal Singh, Dehradun.