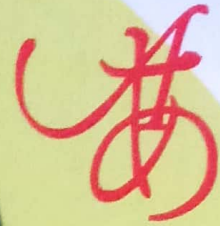




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## 13. Specific and Intraspecific Delimitation in *Pycnusflavidus* (Retz.) T. Koyama (Cyperaceae)

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Beed (M.S.)

### Abstract:

*Pycnusflavidus* has been taken here as an intricate group (complex) constituting an interesting taxonomic aspect within the genus *PycnusBeauv.* (subgen. of some authors). It is mainly characterized by the perennial habit with short non-stoloniferous rhizome, leaves canaliculate, almost setaceous. Involucral bracts leaf like much longer than the anthelate inflorescence. Spikelets radiating from globose to subglobose spikes, linear with almost parallel sides, reddish-brown to chestnut black.

**Keywords :** *Pycnusflavidus*, cyperaceae, specific and intraspecific delimitation, character. *Pycnusflavidus*(Retzius) T. Koyama (= *Cyperusflavidus*Retzius, 1788).

**Distribution:** The species is very common, distributed throughout India and widely spread in different parts of the world.

**Ecology:** Found in marshes, open fields, in ditches along road sides etc. often in low land areas.

***Pycnusflavidus*** has been taken here as an intricate group (complex) constituting an interesting taxonomic aspect within the genus *PycnusBeauv.* (subgen. of some authors). The complex consists of 5-6 specific and intraspecific taxa. Some authors considered *Pycnusflavidus* a polymorphic species and the four varieties viz. var. *erectus* (Clarke) Shaikh R. I. & R. D. Taur, var. *khasiana* (Korlahali) Shaikh R. I. & R. D. Taur, var. *nilagiricus* (Steud.) Karthik. and var. *strictus* (Lam.) Shaikh R. I. & R. D. Taur as the variant forms which are said to be due to continuous variations occurring in most of their characters. The former two varieties are confined to North-East India (Rao & Verma, 1982). Our study on this aspect is based on the plant material documented from central and Peninsular India. Pl. A.

**Intraspecific delimitation:** The two varieties viz. var. *nilagiricus* (Steud.) Karthik. (= *Cyperusnilagiricus* Hochst. ex. Steud.) and var. *strictus* (Lam.) Shaikh R. I. & R. D. Taur (= *Cyperusstrictus* Lam.) under *Pycnusflavidus* are under discussion. Some authors recognise var.

nilagiricus distinct from typical var. flavidus but do not accept var. strictus. The 2 varieties and var. flavidus has been critically worked out here. With the exception of underground parts and certain other floral features, our specimens well agree with these 3 varieties including typical one. The character in both the varieties (var. nilagiricus and var. strictus) which were not described by the earlier workers, have been now considered as new additional characters. These have been employed to distinguish the 3 taxa as shown in key.

**Pycrus nilagiricus** (Hochest. ex Steud.) W. Khan. (= *Cyperus nilagiricus* Hochest. ex Steud. (1855)). *Pycrus flavidus* var. *nilagiricus* (Steud. 1855) Karthikeyan. *Cyperus globosus* var. *nilagiricus* (Steud.) Clarke *Pycrus capillaris* var. *nilagiricus* (Steud.) Clarke. Pl. B.

Originally, var. *nilagiricus* is founded on chestnut black, narrow spikelets. Intraspecifically this taxon is treated under *Pycrus flavidus* as above while some authors treat it synonymously on apparent similarities with the latter. The taxon *nilagiricus* has been described somewhat in detail by Clarke (Fl. Trop. Afr. 1901) and Hooper S. S. (Fl. Hassan dist. 1976). Like var. *strictus* (= *P. strictus*) var. *nilagiricus* (= *P. nilagiricus*) is also distinct specifically as shown in key.

The narrow spikelets in this species have also been considered important diagnostically, but equally narrow spikelets also occur in *P. flavidus* and *P. strictus*.

**Exsiccata:** Occasionally found in wet grasslands. T. N. Ooty, Chavan D. P. 5063, 5117.

***Pycrus flavidus*** (Retz.) Koyama var. *strictus* (Lam.) W. Khan (= *Cyperus strictus* Lam. 1791). *P. capillaris* Koenig ex Roxb. var. *strictus* (Lam.) Clarke (1893) var. *strictus* is known only from the work of C. B. Clarke (FBI, 1893). Pl. C.

Its distinction from the typical var. *flavidus* is chiefly based on colour of spikelets. The twisted nature of the spikelets has also been weighed diagnostically by Clarke (1893). But it is distinct taxon on certain good characters as shown in key. Some authors treated it synonymously under *P. flavidus* on apparent similarities with the latter.

Very common in marshes wet open grasslands, along the bank of rivers etc.

Some of the important diagnostic characters are discussed below.

#### **The colour character:**

The colour character of spikelets has often been created confusion in delimiting infraspecific taxa in *P. flavidus*. Clarke (Fl. Trop. Afr. 8: 298, 1901) rightly remarks that the colour of spikelets is important in the genus *Pycrus*. He has even delimited several specific taxa on this character. The colour of spikelets in *P. flavidus* var. *flavidus* ranges within limit.



Predominantly it is reddish brown bright, finally becomes chestnut black as observed in a series of specimens. The latter colour is not rare, occurs in certain plants or in same plant. Apparently this colour is mixed with white shade and is very unlike to chestnut colour of var. *nilagiricus*. The little changes in colour of spikelets in var. *flavidus* supposed continuous and overlapped variation by some authors and often intermixed between the former and the latter taxon.

The colour of spikelets in var. *nilagiricus* is always chestnut purple to black. There is no mixing of any other colour. Both, the var. *flavidus* and var. *nilagiricus* having black coloured spikelets can be distinguished by other features as shown in key.

The colour of spikelets in var. *strictus* is predominantly yellowish (straw to yellowish - sensu Clarke l.c.(FBI-1893)). The colour is sometimes mixed with very pale brownish shade, finally leading to dirty pale brownish spikelets at full maturity but still there is association of yellowish shade in certain spikelets in the same plant. There is not at all any dark brown, red, purple or black shade mixing in var. *strictus*. The latter var. with its characteristic yellowish spikelets is easily recognisable in the field also.

#### **The underground parts:**

The diagnostic importance of these features has been totally neglected or vaguely described by most of the authors and in most of the herbaria the underground parts are often missing. The type specimens (seen only photographs) of var. *strictus* and var. *nilagiricus* also did not show any sign of these features. A careful observation reveals that these 2 varieties possess distinct, slender stoloniferous rhizome. The var. *flavidus* is a perennial with short but distinct rhizome which is non stoloniferous and covered with fibrous remains of old sheaths. Annual habit has not been so far traced in this common typical phase.

#### **The curved and twisted spikelets:**

Clarke (FBI-1893), while differentiating var. *strictus*, its curved and twisted spikelets have been weighed diagnostically. The photograph of type of this variety also shows curved spikelets. However, our field observations reveal that this condition of spikelets is an abnormality against draught condition of surroundings, where water is receded unlike normal spikelets in wet situations. Such abnormality is not restricted to var. *strictus* and also not rare in var. *flavidus*. Due to the occurrence of var. *nilagiricus* in evergreen or semi evergreen forest, the spikelets never exhibit such abnormality. Hence, it is not a reliable feature to be weighed diagnostically.

**Taxonomic intricacy:**

The problem of specific and infraspecific delimitation related to *P. flavidus*(s.l.) is not so simple as it was thought to be. Because var. *strictus* appears to be very similar to the African *Pycreus spissiflorus*(Schum.) Clarke and var. *nilagiricus* coincides with the another African *Pycreus betschuanus*(Boeck.) Clarke (Both the species are in Fl. Trop. Africa, 1901). Further confusion is added when *P. flavidus*(= *P. globosus*) var. *nilagiricus* is cited by Clarke (l.c. 1901) under African *P. betschuanus* synonymously (illegitimate citation) showing the conspecific relationship between the above 2 taxa. However, var. *nilagiricus*(= based on *Cyperus nilagiricus*(Hochst. ex Steud. 1855) is earliest published taxon then *P. betschuanus*(Boeck. 1878) Clarke.

A comparative study of the description of *P. spissiflorus*(Schum.) Clarke and our observations of var. *strictus* reveal that the 2 taxa hardly differ from each other. However, var. *strictus*(based on *Cyperus strictus*Lam. 1791) is also earliest published taxon than *P. spissiflorus*(based on *Cyperus spissiflorus*Schum. 1891). The conspecific or infraspecific relationship between the 2 varieties and 2 African species need further investigation especially with the help of type material of African species. However, in the present situation, due to the earliest publication of *P. nilagiricus*(1878) and *P. strictus*(1791) there appears to be no difficulty to raise them at specific level.

**Specific delimitation:** As the differences in the 2 varieties from the typical var. *flavidus* are many, consistent and well tested, therefore they need to be treated distinct specifically. Following, the original authors (Hochst. ex Steud. 1855 and Lam. 1791) the specific status has been retained in the present text. The nature, size, shape of nuts and glumes, the surface pattern of nuts do not help for their differentiation. The overlapped variations in general inflorescence are also cannot be weighed diagnostically.

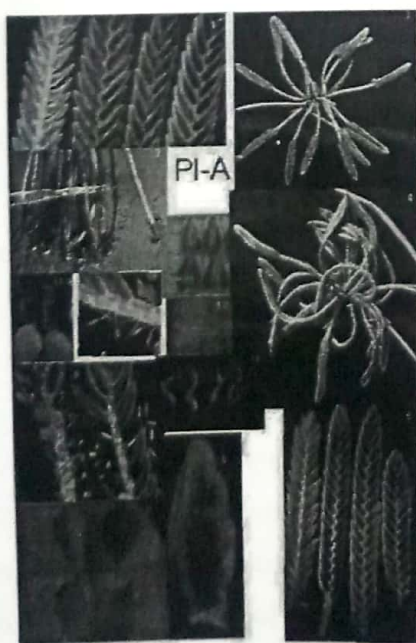
**Present status proposed:**

- Pycreus nilagiricus*** (Hochst. ex Steud.) W. Khan  
*Cyperus nilagiricus* Hochst. ex Steud. (1855). *Pycreus flavidus* var. *nilagiricus* (Steud.)  
 Karthikeyan
- Pycreus strictus***(Lam.) W. Khan  
*Cyperus strictus* Lam. (1791)  
*Pycreus capillaris* var. *strictus* (Lam.) Clarke (1893).



Key to the species

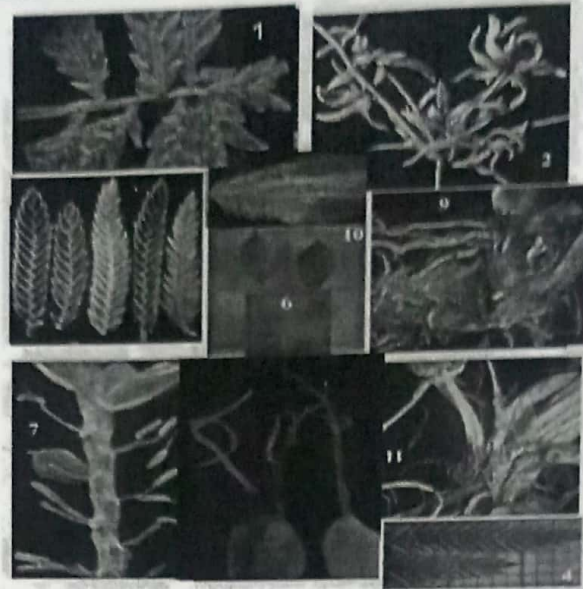
1. Rhizome short, non-stoloniferous; spikeletsstellately radiating on short, 2-7 mm long rhachis in globose or subglobose spikes or if spikes rarely appearing ovate then digitate or subdigitate, 1.5 - 3.5 cm long with usually lower glumes early caducous, reddish brown bright finally chestnut black; glumes compact; anthers minute, elliptic, under 0.2 mm long; styles usually bent above the nut apex, dark purplish, stigmas whitish..... **P. flavidus**
1. Rhizome stoloniferous; spikeletsspicate; upper ones erect or spreading at right angle, lower ones often deflexed on conspicuously elongated rhachis 0.8-1.5 cm long. Lower glumes not early caducous, yellowish to very pale brownish, more or less loose, anthers elliptic oblong or linear, 0.3-0.5 mm long; styles not bent, stigmas and styles wholly whitish or purplish:
  2. Stems trigonous, slender, 1-1.5 mm thick; spikelets ovate -lanceolate, gradually narrowedupwards yellowish to finally very pale dirty brownish mixed with yellowish shade; glumes straight, broadly hyaline magedined, margins not incurved; anthers elliptic oblong, upto 0.3 mm long .....**P. strictus**
  2. Stems compressed trigonous, robust, 2-3 mm thick; spikelets linear, almost parallel sided, upto 2 mm wide, always chestnut purple to black; glumes more or less curved withincurved margins, not or obscurely hyaline margined; anthers linear, 0.4 - 0.5 mm long.....**P. nilagiricus**



*Pycneus flavidus*(Retz.) Koyama (1788)



*Pycneus nilagiricus* Steud. (1855)



*Pycreus strictus*(= *Cyperus strictus* Lam. 1791)

#### Aknowledgements

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