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RESEARCH ARTICLE

Floristic Studies in *Bulbostylis* Kunth (Cyperaceae)

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ABSTRACT

Present study is on our own critical observations on fresh plant material collected from the different parts. The observations are also based on herbarium specimens. Relevant data from literature have been referred for comparative study and conclusion including recent nomenclature. The study of *Bulbostylis* Kunth provides a detailed taxonomic description, illustration and relevant information for its easy identification in the field. Three species are collected and are described. The present report is hoped to provide basic material for further research in Cyperaceae.

Keywords : *Bulbostylis*, Floristic, Cyperaceae

INTRODUCTION

The genus *Bulbostylis* is often confused with *Fimbristylis* Vahl s.l. (including *Abildgardia* Vahl). However, nearly all species (except a few) are recognized by the long white cilia-like hairs near orifice of sheaths and the style base which is somewhat dilated often persistent on the mature nuts. (There are few species lacking this character) The species of present paper have both these features. These two features are not found to occur in any of the species of *Fimbristylis* s.l. and thus species of *Bulbostylis* can be recognized by the presence of any of the two features. *Bulbostylis* was sometimes merged in *Abildgardia* Vahl by K. Ley (1981-87) which was regarded distinct generically from *Fimbristylis*, Later he considered *Bulbostylis* again distinct generically. Vander Veken (1966) found differnt embryos type in *Bulbostylis* and *Fimbristylis* s. str. but similar in the species of *Abildgardia* and *Bulbostylis*.

The shape of epidermal cells of nuts has also been weighed for generic distinction of the two genera. However these features have proved to be variable in the species of *Bulbostylis* (Kern, 1974). However the morphological features mentioned above, appears to be sufficient to distinguish *Bulbostylis* generically. 90-100 species distributed throughout the world with high species concentration in the tropical Africa. In India the genus is represented by 6 (Clarke 1893), 7 with addition of *Bulbostylis swamyii* Govind.

Type: *Bulbostylis capillaris* (L.) Kunth ex Clarke

Annuals or perennials; stems tufted, erect, very slender, angular, striate or sulcate leafy only at the base. Leaves: very narrow, nearly always capillary; sheaths generally bearded in the throat wtih long white hairs, sometimes disappearing with age. Inflorescence: terminal sutended by foliaceous involucral bracts capitate or anthelate sometimes reduced to a single spikelet. Spikelets usually not compressed, angular, several to many flowered. Rhachilla persistant, narrowly winged. Gumes spiral, acropetally caducous, with strong midnerve; lower 1-2 empty. Flowers achlamydeous (hypogynous bristles or scales absent), bisexual, the uppermost often male or barren. Stamens 1-3; anthers oblong or linear, with shortly produced connective. Style articulate with the ovary, slender glabrous; stigmas 3, very rarely 2; style base incrassate, bulbiform, persistant on the apex of the nut as minute, darker coloured button. Nut trigonous or triquetrous, rarely biconvex, obovate, obtuse, scarcely stipitate.

TAXONOMIC TREATMENT

Bulbostylis barbata (Rottb.) Kunth. ex Clarke in Hook. f. Fl. Brit. India 6:651.1893; Fischer in Gamble Fl. Pres. Madras (1931) 3:1662 (repr.ed.)1994; Kern in Steenis Fl. Malesiana 1.7(3): 539.1974; Koyama in Dassan. & Fosb. Rev. Hand. Fl. Ceylon 5:327.1985; Brahmam & Saxena in Fl. Orissa: 4. 2094.1996; L'narsimhn in Sharma et al Fl. Maharashtra: 272.1996; Pullaiah & Hanumanth.Cypr. In Fl. Andhra Pradesh: 3.1049.1997; W. Khan in Naik Fl. Marathwada 2:915.1998. Scirpus barbatus Rottb. Progr. 27.1722. et Descr. Ic. Pl. 52. t. 17. f. 4.1773. *Stenophyllus barbatus* (Rottb.) Cooke Fl. Pres. Bombay 2:887.1908.

subsp. **barbata**

Densely tufted, slender annual, 5-20 cm tall; roots fibrous; stems triquetrous, 0.3-1 mm wide, slender to filiform. Leaves: sheaths glabrous, with needle like white hairs at the orfice; blades capillary, attenuated from the dilated sheaths, often shorter than the stems, long acuminate. Inflorescence: consisting of sessile, terminal, capitate, solitary heads with 2-several clustered spikelets; involucral bracts often 3, setaceous with dialted, glume-like, scarious bases, and the longest often are overtopping the umbels. Spikelets lanceolate, 3-6 x 1-1.5 mm, angular, brown, acute; rachilla winged. Glumes ovate, 1.5-2.5 x 1-1.2 mm, deltoid, strongly keeled, with 3-nerved, green keel; sides nerveless, brown banded around the keel, broadly hyaline on margins, which are minutely ciliolate, acute at apex with erect or recurved mucro. Stamen-1; anther linear *ca* 0.5 mm long, shortly, white appendiculate at tip. Nuts trigonous, obovoid, 0.5-0.6 x 0.5 mm, finely reticulate on faces in between the rib-like angles, crowned by the white, button-like tumor. Styles 3-fid, longer than the stigmas (Fig.1).

Common on wet-slopes of hills, marshes of open grassland.

Flowers and Fruits: September to October.

Fig 1. ***Bulbostylis barbata*** (Rottb.) Kunth
Habit, Nut, Spikelet and Glume.

Specimens examined: A.P. Chittoor Dist. Vinayakpuram, *Shaikh R. I.* 838; East Godavari Dist. Annavaram, *Shaikh R. I.* 961; Krishna Dist. Vijaywada, *Shaikh R. I. 701*; Nellore Dist. Akkarapaka, *Shaikh R. I.* 876; Visakhaptnam Dist. Talapalem, *Shaikh R. I.* 915,Vectory Beach, *Shaikh R. I.* 940, Hudda Beach, *Shaikh R. I.* 948. Areku road side, *Shaikh R. I.* 918. T.N. Tirunelveli Dist. *Taur R. D.* 336.

Notes: A variable taxon. It can be distinguish from its close allies by its somewhat elongated, loosely arranged, reddish to yellowish pale brown spikelets in hemispherical capitate heads, the shorter glabrous to subglabrous glumes with shorter mucro and always single stamen.

subsp. **pulchella** (Thw.) Koyama Bot. Mag. (Tokyo) 93:341.1980 et in Dassan. & Fosb. Rev. Hand. Fl. Ceylon 5:328.1985; *Isolepis pulchellus* Thw. En. Pl. Zeyl. 350. 1864. *Scirpus thwaisii* Boeck. Linnaea 38. 380.1874. *Bulbostylis barbata* Rottb. ex Clarke subsp. *pulchella* (Thw.) Clarke in Hook. f. Fl. Brit. India 6:652.1893.

Plants more rigid than subsp. *barbata*; stems 0.5-1 mm thick; head 10-15 mm across, more densely bearing numerous spikelets; glumes 3-3.6 mm long, wholly subdensely pilose with often tubercle-based brownish hairs, the midrib thick, not clearly nerved, projecting beyond the glume apex forming a recurved awn-like cusp. 0.5-0.6 mm long, otherwise as in subsp. *barbata*. Common in sandy soil.

Specimens examined: T.N. Cuddalore Dist. Neduncheri Road, *Shaikh R. I.* 1023; Tiruchchirappalli Dist. near Bharatidasan University, *Shaikh R. I.* 763.

Bulbostylis puberula (Poir.) Kunth ex Clarke in Hook. f. Fl. Brit. India 6:652.1893. Fischer in Gamble Fl. Pres. Madras (1931) 3:1662 (repr.ed.)1994. Kern in Steenis Fl. Malesiana 1.7(3): 540. f. 37.1974; Koyama in Dassan. & Fosb. Rev. Hand. Fl. Ceylosn 5:326.1985; Pullaiah & Hanumanth.Cypr. in Fl. Andhra Pradesh : 3.1050.1997 *Scirpus puberulus* Poir in Lam. Ency. 6:767.1804.

Annual; densely tufted, 10-35 cm tall; stems very slender, puberulous or glabrous, often hispid below the inflorescence, 0.4-0.5 mm thick. Leaves : much shorter than stem, setaceous to filiform acute at apex, 0.3-0.5 mm wide, puberulous on the lower surface and margins; sheaths membranous, puberulous, stramineous; orifice with long, white needle-like hairs some of the leaves reduced to sheaths. Inflorescence : simple, rarely subcompound, often congested to almost head-like, rarely reduced to a single spikelet, 1-1.5 cm wide, with 1-few spikelets; involucral bracts 2-4, filiform, longest usually overtopping the inflorescence, up to 3 cm long; rays up to 5, 1-6 mm long. Spikelets solitary, oblong-ovoid or ovoid-angular, subacute at apex, 3-8 x 1.5-2 mm, 5-15-flowered. Glumes spiral, membranous, broadly ovate, mucronulate at apex, strongly keeled, 2-2.2 x *ca* 1.5 mm, densely pubescent, pale to dark brown; mucro excurved finally. Stamen 1; anther linear-oblong, *ca* 0.8 mm long. Nut triquetrous, broadly obovoid, *ca* 1 x 0.8 mm, transversely wavy-wrinkled, stramineous, minutely stipitate; epidermal cells longitudinally oblong. Style 3-fid *ca* 1 mm long; stigmas shorter than style (Fig.2).

Common in sandy soil.

Flowers and Fruits: August to January.

Specimens examined: A.P. Vishakhapatnam Dist. Botawara, *Shaikh R. I.* 931. T. N. Viluppuram Dist. On the way of Chennai to Pondicherry, *Shaikh R. I.* 737.

Notes: A distinct species with contracted umbel. Usually a coastal species. The pubescence of stems is variable. Spikelets are reddish brown to dark brownish.

Bulbostylis swamyii Govind. in Proc. Indian Acad. Sci. (Plant Sci.). 94(1):11. f. 1. 1985; Karthik et al Fl. Indic. En. Monocots: 33.1989.

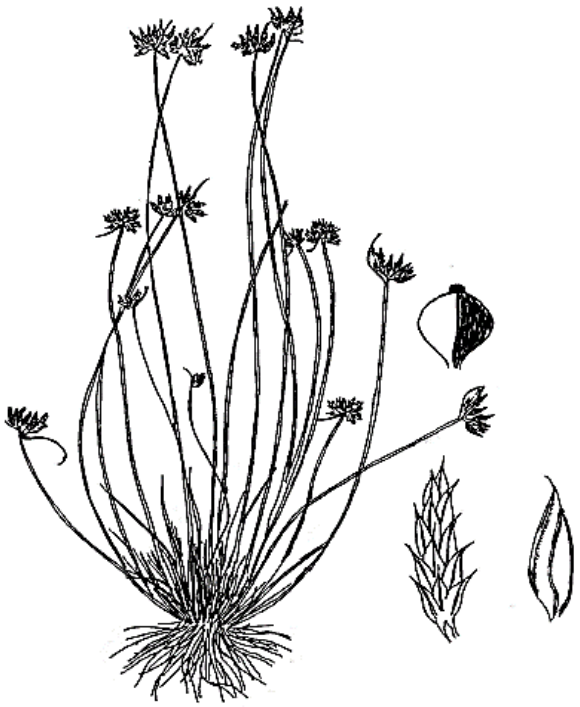

Fig.2. ***Bulbostylis puberula*** (Poir.) Kunth ex Clarke Habit, Spikelet, Nut, and Anther.

Annual. Stems caespitose setaceous, glabrous, smooth, 3-10 cm x 0.3-0.5 mm. Leaves: capillary, scabrid throughout, 0.3-0.4 mm broad; sheaths with membranous 3-5 prominently nerved sides and with long hairs densely in the distal half margins. Inflorescence : capitate, hemispherical consisting of 5-10 spikelets, 5-8 mm across; involucral bracts 2-5, leaf-like, 2-3 times longer than inflorescence with dilated scarious hairy margin as in sheaths, 1.5-3 cm long, upwardly and variously curved, scabrid on margin. Spikelets sessile, urceolate, 6-8 flowered, 3-5 x 1.5-1.8 mm. Glumes oblong with almost parallel sides, membranous, deeply bilobed at apex, mucronate, keeled with nerveless sides and densely scabrid throughout and with long hairs at distal margin of lobes, cinnamomeous brown, 0.8-1 mm broad; mucro recurved, 0.5-0.7 mm long. Stamens 3; anther oblong linear, orange yellow or reddish brown, minutely spurred at base and apiculate, 1.4-1.5 mm long. Style slender, sparsely hairy, 1.5-2 mm long; stigmas 3, much shorter than style, papillate, 0.5-0.6 m long. Nut globose, trigonous densely granulate whitish or stramineous, minutely stipitate 0.7-0.8 x 0.5-0.6 mm.

Specimens examined: T.N. Pudukkottai Dist. way to Dindigul, Shaikh *R. I.* 1049; Tirunelveli Dist. Idinthakarai, *Geetha S.* 44 (MH).

Notes: - The glumes with spongious swollen base (not described by original author, it is more distinct when wet), thick keel, bilobed ciliate apex and parallel sides are interesting features. With its distinctive features described above Govindrajalu (l.c.) rightly described it specifically distinct not amply related to any of the known species.

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