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# A STUDY OF FAMILY CYPERACEAE FROM SAKUNA DAM, AURANGABAD DISTRICT OF MAHARASHTRA, INDIA

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**ABSTRACT**
*The paper gives an account of sedges of the Sukhana Dam, Aurangabad District. A total of 28 species under 5 genera were collected and identified during the year 2016 for the first time. Genus Cyperus found dominant having 11 species and Fimbristylis followed by Scirpus (4 species) Bulbostylis (2 species), and Pycreus have 3 species each. Species were spread widely in marshy places. The species are used economically as animal food, medicinal; while some as environmental.*

***Keywords:*** *Cyperaceae, Key, Sakuna Dam*

## INTRODUCTION

In Aurangabad district, Sukhana dam is created on Sukhana river at Garkheda, Tq. & Dist Aurangabad. It is about 32 km away from Aurangabad city of Maharashtra. It is about 3536 m in length and 18.92 m in height. The gross storing of water is 21,340,000 $m^3$. It is an earthen dam, chiefly constructed for irrigation purpose on the river Sukhana. The dam is having good capacity of water storing. The relative humidity may reach 85%. Maximum temperature during summer is about 44°C minimum temperature during winter is 26°C. The mon soon starts inthisareafromJune and rain continuous up to end of September. The winter season starts from November toFebruary.

Thereareabout16mediumirrigationprojectsinthisdistrict.of these,Sukhana dam is biggest so far as its capacity of water storage is concern. Therefore, this wetland is particular for the study of sedgesdiversity.

The sedge family is the third largest monocot family, globally it consisting of an estimated 5000 species in 104 genera. They have a cosmopolitan distribution, especially in tropics. The largest genera (approximate numbers of species) *Cyperus*, 550 spp. (excluding *Kyllinga* and *Pycreus*); *Fimbristylis*, 300 spp;and *Scleria*, 250 spp. eachand *Bulbostylis*, *Pycreus.*

The family has considerable economic importance; many members are serious agricultural weeds, whereas others provide animal food, etc. Cyperaceae also have conservation and environmental importance. They are major or even dominant workings of wetland habitats. The decline of sedge species within different types of habitats is a useful indicator of potential habitat damage. In terms of ecosystem services, they can play a particular role in the maintenance and improvement of water superiority. Constructed wetlands, artificial marshes or swamps created for anthropogenic discharge such as wastewater, storm-water, run off or sewage treatment in various parts of the world have included Cyperaceae species. Work on family Cyperaceae in different parts of India were carried out by several workers like Haines (1924),Sabnis (1960), Rao andVerma (1981),M. A. Wadoodkhan (1999).

## MATERIAL AND METHOD

A concentrated Sakuna Dam region survey of Cyperaceous members growing throughout the Sakuna Dam region was carried out during January 2015 to January 2016. Frequent visits were made to assess the flowering time of these species. The fresh plant specimens were collected at the flowering stage and other relevant information e.g., location, date, habitat, association, etc. were recorded. Plant samples were properly dried for making voucher specimens and critical morphological studies have been made and different floras and monographs have been accessed to identify the sedge species. The plants were processed into voucher specimen following standard methods. After the work is over voucher specimens were deposited in Department of Botany, Solanke Sundarrao College, Majalgaon, Dist. Beed for futureuse.

## RESULT AND DISCUSSION

The present study revealed 5 genera and 18 species of sedges growing in Sakuna Dam, Aurangabad district which are presented in the form of genera and species key. Genus *Cyperus* found dominant having 11 species followed by *Scirpus* (4 species), and *Fimbristylis* (8 species) while *Bulbostylis* and *Pycreus* have 1 species each. Species were distributed widely in grass fields. The species are used economically as animal food; while some as environmental.

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**KEY TO THE GENERA**

1. Glume fertiledistichously arranged:

2. Stigma 3 rarely 2, nutlets trigonous, glumes not winged.....***Cyperus*** 2. Stigma 2, nutletstwosided ……. ***Pycreus***

1. Glumes spirally arranged:

3. Style base limited or articulated above nut:

4. Style flat hairy,usuallypersistent……..***Fimbristylis***

4. Style linear, glabrous and usually deciduous..... ……***Bulbostylis***

3. Style base neither limited nor articulated, bristle uniformscalelike ……..…….***Scirpus***

**Key to genus *Bulbostylis***

1a. Stems 0.25-0.4 mm thick, heads with 2-20 spikelets; glumes 1.5- 2. 25 mm long, glabrous or almost ciliolate or puberulent in upper part, not withbulbous based hairs, short mucro. .....

……...**B. barbata** subsp. **barbata**

1b. Stems 0.5-1 mm thick; heads with numerous spikelets, dense, glumes 3-3.5 mm long wholly subdensely pilose from bulbous base hairs, with ca 0.6 mm long recurvd mucro.....**B. barbatasubsp. pulchella**

**Key to genus *Cyperus***

1. Spikelets digitate, stellately arranged; rhachis much shortened or condensed forming clusters, sometimes solitary ones often added or inflorescence capitate:

2. Head or cluster of spikelets single, terminal or pseudolateral; rays absent:

3. Spikelets numerous, densely and closely crowded, indistinct, not easily recognizable; glumes muticous or with 0.3-0.4 mm long mucro.....**C. squarrosus**

3. Spikelets 3-15, distinct from one another, digitately arranged, stellately spreading; glumes with 0.7-1 mm long mucro, (short in *C. niveus*).....… **C. rubicundus**

2. Heads or the clusters 2-many on primary or secondary rays or in decompound umbels:

4. Stems triquetrous with concave faces, almost 3-winged; spikelets numerous crowded in globose heads; glumes very small, 0.5-0.8 mm long, as long as, broad, often emerginate at apex, nuts almost as long as the glumes …….....… **C. difformis**

4. Stems triangular, multiangular, or if triquetrous then not 3-winged as above; spikelets up to 16 on the rays, digitately arranged; glume 1-2.5(3) mm long, longer than broad, not or rarely emerginate; nuts smaller than the glumes.....**C. tenuispica**

1. Spikelets spicately arranged at some distant from one another upon a more or less elongated rhachis:

5. Spikes oblong or cylindrically oblong, several times longer than broad. Spikelets many to numerous (more than 25); rhachis visible or invisible …….....**C. exaltatus**

5. Spikes ovate, as long as broad; spikelets 3-15 on distinct rhachis:

6. Rhachilla distinctly winged; sides of glumes nerved or nerveless:

7. Plants leafless or leaves reduced to bladeless sheaths, rarely with short 5 -7 cm long solitary blade. ……**C. scariosus**

7. Plants leafy:

8. Glumes distinctly 7-11 nerved, equally spreading over the whole breadth near to the margins; inflorescence simple small or reduced to a spike or imperfect with short, 2-3 cm long rays:

9. Stems arising from bulb-like tubers which are covered with striate, coriaceous glabrous coat, soon splitting in to black segments; involucral, bracts distantly one above the other, the lowest often little, *ca* 1 mm distant below. spikelets dark brown or chest nut purple or pale; inflorescence reduced with rays 2-3 cm long; glumes 9-11 nerved. Stolons blackish, capillary, soon disappearing.....…**C. bulbosus**

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9. Stem base not bulbous; tubers solid, covered with grey tomentum; involucral bracts close set, not spaced as above; spikelets yellowish-brown, bright. Inflorescence well developed, dense with up to 15 cm long rays; glumes 7-9 nerved. Stolons yellowish long persistant.....…**C. esculentus**

8. Glumes distinctly or indistinctly 5-7 nerved, sides almost with 2-3 nerves close to or much less prominent from the keel; inflorescence simple to subcompound, large with 10-15 cm or small 5-6 cm long rays:

10. Spikelets turgid, subterete or subangular; nuts strictly broadly ellipsoid, obtuse at both ends with one face flat and concave (depressed) in centre, black, shiny; styles indistinct or up to 0.5 mm long.....**C. stoloniferous**

10. spikelets strongly compressed; nuts obovoid or ellipsoid, often narrowed towards base, equally trigonous, grey-whitish, orange-yellow or dark brownish, not black; styles 1 mm or more long….....… **C. rotundus**

6. Rhachilla of spikelets wingless; sides of glumes often nerved…… **iria**

**Key to genus *Fimbristylis***

**KEY TO THE SPECIES**

1. Style 2-fid, nuts, biconvex or lenticular:

2. Glumes partly or wholly densely brown greyish tomentose on the back:

3. Annual, spikelets rusty brown, glumes wholly pubescent on the back, 1.5-2.8 mm long, gynophore very short, 0.1 mm long; styles sparsely fimbriate ……..... **F. pubesquama**

3. Perennials with woody rhizome; spikelets greenish-brown or ferrugineous;glumes tomentose in upper half on the back; 3.5-4.2 mm long, nuts broadly obovate, 1-1.2 mm long gynophore obdeltoid, 0.2-0.3 mm long; styles densely fimbriate throughout:

4. Lower sheaths brownish, shining; blades or cauline leaves up to 10 cm long 0.5-1.5 mm wide; involucral bracts usually shorter than the inflorescence; spikelets acute……..... **F. ferruginea**

4. Lower sheaths herbaceous; blades of cauline leaves up to 30 cm long, 1.5-2 mm wide, lowest involucral bract usually overtopping the inflorescence; spikelets obtuse…….....……..... **F. sieberiana**

2. Glumes glabrous …….....**F. alboviridis**

Styles 3-fid, nuts trigonous or triquetrous: Glumes densely red gland dotted on the back ...…..... **F. adenolepis**

5. Glumes not gland dotted: Cauline leaves reduced to bladeless sheaths; leaves of sterile shoots (lateral to stems ) well developed or altogether absent.....**F. quinquangularis**

6. Cauline leaves well developed, long bladed: Stems strongly compressed; ancipitous (2-sided) .....**F. microcarya**

7. Stems neither compressed nor ancipitous, sometimes almost flatty trigonus (dipterous).....… **F. cymosa**

**Key to genus *Pycreus***

1. Glumes awned or distinctly mucronate:

2. Sides of glumes with 1-3 nerves; Spikelets ovoid or subglobose in outline, involucral bract 2 ..... **P. nervulosus**

2. Sides of glumes nerveless; Spikelets linear oblong, usually congested and capitate; globose, straight, involucral bracts 3-5. .....**P. pumilus**

1. Glumes always muticous ……..…….....**P. sanguinolentus**

**Key to genus *Scirpus***

1. Leaves well-developed; involucral bracts 2-5, foliaceous, dorsiventrally flat (or absent in *S. fluitans*) …….....… **S. maritimus**

1. Leaves reduced to sheaths, rarely shortly laminate (sometimes stems are leafy in *S. lateriflorus* or up to 2 cm long mucronate blade in *S. subcapitatus*):

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2. Hypogynous bristles or scales present; amphicarp absent ……. **S. littoralis**

2. Hypogynous bristles or scales absent; amphicarp (female flower with very long style within the basal sheaths) often present.:

3. Stem solid, terete or angular, not septate; spikelets atleast partly peduncled and on short rays; nuts with strong transverse wavy ridges extending beyond angles giving muricate appearance ……..….....**S. lateriflorus**

3. Stems hollow, terete, faintly to strongly septate (when dry); spikelets all sessile in capitate heads; rays absent; nuts smooth or faintly to strongly undulated but never appearing muricate on angles..... **S. praelongatus**

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