



A study of family Cyperaceae from Sai Hill near Sai Temple, Deolai, Aurangabad District of Maharashtra

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Abstract

The paper gives an account of sedges of the Sai hill near Deolai, Aurangabad district. A total of 19 species under 5 genera were collected and identified during the year 2017 for the first time. Genus *Cyperus* found dominant having 7 species followed by *Fimbristylis* 5 and *Pycneus* 3 species while *Fuirena* and *Kyllinga* have 2 species each. Species were distributed widely in marshy places, pond and in wetlands. The species are used economically as animal food, medicinal and some as environmental.

Keywords: *Cyperaceae*, *Sai hill*, *economic importance*.

Introduction

Aurangabad district in the Maharashtra state of India. The main offices of the largest city in the Marathwada region. The city is known as a major production center of cotton fabric, artistic silk fabrics and bulbous educational institutions. The district has an area of 10,100 km², of which 37.55% is urban and the rest is rural. Aurangabad District is the foremost region in Marathwada. Aurangabad district, Gautala is a well-known sanctuary, Jayakwadi is also well-known for bird sanctuary. The district is situated mainly in Godavari Basin and its some part towards North West of Tapi River Basin. This District general down level is towards South and East and North West part comes in Purna-Godavari River basin. The Aurangabad district's North Longitude (Degree) is 19 and 20 and East Longitude (Degree) is 74 to 76. The average annual rainfall in Aurangabad is 725.8 mm. Annual temperatures in Aurangabad is range from 17 to 33 °C.

The Cyperaceae is the third largest monocot family, globally it consisting of an estimated 5000 species in 104 genera. They have a worldwide distribution, especially in the tropics [2]. The biggest genera (approximate numbers of species) are *Carex*, 2000 spp.; *Cyperus*, 550 spp. (excluding *Kyllinga* and *Pycneus*); *Fimbristylis*, 300 spp.; *Rhynchospora* and *Scleria*, 250 spp. each; *Eleocharis*, 200 spp.; and *Bulbostylis*, *Pycneus* and *Schoenus*, 100 spp. each [1]. The family has significant economic importance; many members are serious agricultural weeds, whereas others provide animal food, and medicines. Nearly 10% of the family is place to use by humans with the focus of use in the tropics [3]. Cyperaceae also have protection and environmental importance. They are major or even main components of marshland habitats. The weakening of sedge species within different types of habitats is a useful indicator of potential habitat injury. [12]. In terms of ecosystem services, they can play a specific role in water quality. Created wetlands, artificial marshes, or swamps created for anthropogenic releases such as wastewater, storm-water, runoff or sewage treatment in various parts of the world have included Cyperaceae species [9]. Work on family Cyperaceae in different parts of India were carried out by several workers like Rao and Verma (1981) [10], M. A. Wadoodkhan (1998, 2015) [7, 8], Singh (2007) [13], Kumar and Saxena (2012) [6], and others.

Material and Method

Collection of plant near Sai Hill, Deolai, Aurangabad district has been done using esthetic sense and scientific concentration. The field collection of Sedges from study area was finished during 2017. Critical morphological studies have been completed and different floras and largest monographs have been checked to identify the sedge species. [4, 10, 7, 8] The plants were treated into voucher specimen following standard methods [5]. After the work specimens were deposited in Herbarium of Cyperaceae, Department of Botany, Sundarrao Solanke Mahavidyalaya, Majalgaon, Dist. Beed.

Key to the genus

1a	Glumes atleast lower ones distichous.....	2
1b	Glumes spirally arranged	5
2a	Plant leafless.	Cyperus
2b	Plant leafy.	3
3a	Rhachilla articulated.....	Kyllinga
3b	Rhachilla not articulated.....	4
4a	Style 2-fid.....	Pycerus
4b	Style 3-fid	Cyperus
5a	Hypogynous scales or bristles absent	Fimbristylis
5b	Hypogynous scales or bristles present	Fuirena

Key to the species of Cyperus

1a	Spikelets digitate, stellately radiating on much shortened or condensed rhachis of spikes forming clusters, sometimes solitary ones often added	C. difformis
1b	Spikelets spicately arranged at some distant from one another upon a more or less elongated rhachis.	2
2a	Spikes oblong or cylindrically oblong, several times longer than broad. Spikelets many to numerous (more than 25); rhachis visible or invisible.	C. exaltatus
2b	Spikes ovate, as long as broad; spikelets 3-15 on visible rhachis.	3
3a	Rhachilla distinctly winged; sides of glumes nerved or nerveless.	4
3b	Rhachilla of spikelets wingless; sides of glumes often nerved, (except <i>C. iria</i>)	C. iria
4a	Plants leafless or leaves reduced to bladeless sheaths, rarely with short 5-7 cm long solitary blade.	C. scariosus
4b	Plants leafy.	5
5a	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.....	6
5b	Glumes distinctly or indistinctly 5-7 nerved, sides at most 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.	7
6a	Inflorescence reduced with rays 2-3 cm long, glumes 9-11 nerved. Stolons blackish, capillary, soon disappearing.	C. bulbosus
6b	Inflorescence well developed, dense with up to 15 cm long rays; glumes 7-9 nerved. Stolons yellowish long persistent.	C. esculentus
7a	Spikelets turgid, subterete or subangular.	C. stoloniferous
7b	Spikelets strongly compressed.	8
8a	Stems subterete in lower half, trigonous just below the inflorescence; the lower involucrel bract erect, pushing aside the small inflorescence; spikelets pale brownish or stramineous tinged with brown.	C. scariosus
8b	Stems acutely trigonous throughout, involucrel bracts spreading inflorescence large with 10-15 cm long rays; spikelets brown to yellowish-brown, usually bright.....	C. rotundus

Key to the species of Fimbristylis

1a	Styles 2-fid; nuts biconvex	2
1b	Styles 3-fids'; nuts trigonous or triquetrous.	4
2a	Glumes wholly or partly (in upper half) densely brown or greyish tomentose on the back; nuts usually smoother or finely striated	F. ferruginea
2b	Glumes glabrous, rarely minutely ciliolate on apex margins; nuts trabeculate or reticulate.....	3
3a	Nuts copiously tuberculate or verruculose	F. albovidis
3b	Nuts etuberculate or few scattered tubercles.	F. dichotoma
4a	Annual.....	F. microcarya
4b	Perennials.	F. complanata

Key to the species of Fuirena

1a	Perennials with long creeping rhizome; stems usually acutely 3-angled, hypogynous scales or bristles absent or rarely bristles reduced.....	F. cuspidata
1b	Perennials or annuals, hypogynous structures consist of scales and bristles or only bristles.	F. ciliaris

Key to the species of Kyllinga

1a	Keel of glumes distinctly winged.	K. nemoralis
1b	Keel of glumes wingless.	K. brevifolia

Key to the species of Pycerus

1a	Glumes awned or distinctly mucronate.	2
1b	Glumes muticous or inconspicuously apiculate.	P. flavidus
2a	Spikes globose; rhachilla straight mucro erect; spikelets white, silvery white, rusty brown.	P. pumilus
2b	Spikes rectangular or ovoid, rhachilla flexuous, mucro usually recurved spikelets pale to bright brown or reddish brown.	P. nervulosus

Table - 1. List of Sedges in the study region.

Sr. No.	Plant name	Fls. & Frts.	Remark	Economic Importance
1.	<i>Cyperus bulbosus</i>	September to November	Occasional, in marshes along the roads side, wet agricultural fields.	Animal food
2.	<i>Cyperus difformis</i>	October to November	Commonly, in marshes of ditches, margins of tanks.	Animal food, Environmental Use
3.	<i>Cyperus esculentus</i>	September to November	Margin of tanks, ditches.	Animal food, Environmental Use
4.	<i>Cyperus exaltatus</i>	October to February	Common, banks of water courses etc.	Animal food, Environmental Use
5.	<i>Cyperus iria</i>	September to December	Common, banks of water courses etc.	Animal food, Environmental Use
6.	<i>Cyperus rotundus</i>	September to December	Common weed of agricultural fields.	Animal food, Environmental Use
7.	<i>Cyperus scariosus</i>	September to December	Occasional, in tanks, ditches.	Animal food, Medicinal, Environmental Use
8.	<i>Fimbristylis albiviridis</i>	September to November	Occasional, in open grassland.	Animal food, Environmental Use
9.	<i>Fimbristylis complanata</i>	September to December	Common, along banks of water courses.	Animal food, Environmental Use
10.	<i>Fimbristylis dichotoma</i>	October to November	Occasional in wet open grasslands, on margins of water courses	Animal food, Environmental Use
11.	<i>Fimbristylis ferruginea</i>	Major part of the year	Common, in tanks, along margins of streams, rivers, marshes of lakes.	Animal food, Environmental Use
12.	<i>Fimbristylis microcarya</i>	September to December	Common, along banks of water courses, marshes of open grasslands.	Animal food, Environmental Use
13.	<i>Fuirena ciliaris</i>	September to December	Occasional, in marshes and margins of water	Animal food, Environmental Use
14.	<i>Fuirena cuspidata</i>	October to August	Occasional, in marshes and margins of water	Animal food, Environmental Use
15.	<i>Kyllinga brevifolia</i>	September to November	Occasional, in marshes of tanks, wet grasslands.	Animal food, Environmental Use
16.	<i>Kyllinga nemoralis</i>	September to November	Rare, margins of tank.	Animal food, Environmental Use
17.	<i>Pycurus flavidus</i>	December to March	Very common, along banks of water courses, marshes along road sides.	Animal food, Environmental Use
18.	<i>Pycurus nervulosus</i>	August to October	Open grassland	Animal food, Environmental Use
19.	<i>Pycurus pumilus</i>	August to October	Open grassland	Animal food, Environmental Use

Abbreviations- Fls. –Flowers, Frts- Frits

Result and Discussion

The present study revealed 5 genera and 19 species of sedges growing in Sai hill, near Sai Temple, Deolai, Aurangabad district which are presented in the form of genera and species key and they have been arranged in alphabetical in Table-1 with their phenology, status and economic importance. Genus *Cyperus* found dominant having 7 species followed by *Fimbristylis* 5 species, *Pycneus* 3 species while *Fuirena* and *Kyllinga* have 2 species each. Species were distributed widely in muddy soil, marshy places, grass fields, pond side, moist waste soil. The species are used economically as fodders, medicinal and some are unknown.

ACKNOWLEDGEMENTS

The authors wish to express their gratitude to Dr. M. A. Wadoodkhan. Ex. Reader & Head, Dept. of Botany, Sundarrao Solanke College, Majalgaon, Dist. Beed who confirmed the identity of the species. I thank also due to the Principal Dr. M. N. Sarnaik, Shri Muktanand College, Gangapur, Dist. Aurangabad for provided facility and encouragement.

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