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A checklist of grasses from Kishanpur Wildlife Sanctuary (KWLS), U.P., India

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ABSTRACT

During survey and collection of voucher specimens of plants from the KWLS area covering all the seasons, we have documented a total of 65 species of grasses falling under 52 genera. A list of all taxa of grasses alongwith their common name, collection number, habit and Phenology is also provided. A generic key for easy identification of taxa of the family Poaceae form the KWLS is also included here.

Figures : 04 References : 22 Table : 01
KEY WORDS : Generic Key; Grassland; Kishanpur; KWLS; Poaceae; *Saccharum*.

Introduction

Family Poaceae Barnhart is the fifth largest family of the angiosperms, falling under the category of monocotyledonous plants amounting to 780 genera and 12000 species distributed worldwide[4]. Approximately 1506 grass species plus infra-specific taxa are reported from India falling under ten sub-families[10]. They have adopted wind pollination mechanism for better adaptability to varied climatic conditions leading them to the successful terrestrial life form on earth[22]. From pre-historic times they have been domesticated and utilized by mankind for various purposes like food, fodder, shelter and breeding material for earlier crops[22]. The grasses itself represent an important component of the ecosystem in both, contributing biodiversity and protecting the land from soil erosion due to natural calamities as well as from anthropogenic activities as a soil binder. Therefore, the floristic survey of grasses is very important. Hooker[5] recorded 146 genera and 838 species from India in his monumental work "Flora of British India"[5]. Most reliable and historical work was done dealing with the taxonomy and identification on grasses documents 242 genera and 1243 species from India[3]. Workers documented 260 genera and 1300 species of grasses from India[9]. Perusal of literature reveals the names of various workers who did extensive work on grasses in the upper Gangetic plains[14-17]. Workers reported 300 species[11], recorded 110 genera and 310 species from Uttar Pradesh[20]. They reported 65 species of grasses from Katerniaghat Wildlife Sanctuary[2], 54 genera and 76 species of grasses from Dudhwa National Park[18] and reported 91 species from Sohelwa Wildlife Snactuary[12]. Since, no account is available on the grasses of Kishanpur Wildlife Sanctuary which prompted the authors to carry out extensive survey on the grasses of the sanctuary.

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Table-1: List of grass species from KWLS

S. No.	Taxa	Family	Voucher No.	Habit	Phenology
1.	*Apluda mutica*	Poaceae	LWG-303559	H	September-January
2.	*Avena fatua*	Poaceae	LWG-317023	H	February-April
3.	*Bothriochloa kuntzeana*	Poaceae	LWG-315149	H	September-January
4.	*Bothriochloa pertusa*	Poaceae	LWG-315156	H	September-January
5.	*Brachiaria ramosa*	Poaceae	LWG-303548	H	July-November
6.	*Capillipedium assimile*	Poaceae	LWG-315107	H	August-December
7.	*Chloris barbata*	Poaceae	LWG-304019	H	August-October
8.	*Chrysopogon aciculatus*	Poaceae	LWG-315196	H	July-November
9.	*Coix lacryma-jobi*	Poaceae	LWG-307410	H	October-February
10.	*Cymbopogon citratus*	Poaceae	LWG-304003	H	September-January
11.	*Cymbopogon flexuosus*	Poaceae	LWG-315122	H	September-December
12.	*Cynodon dactylon*	Poaceae	LWG-307411	H	Most part of the year
13.	*Cyrtococcum patens*	Poaceae	LWG-315124	H	August-December
14.	*Dactyloctenium aegyptium*	Poaceae	LWG-303520	H	June-November
15.	*Dendrocalamus strictus*	Poaceae	LWG-317028	T	February-June
16.	*Desmostachya bipinnata*	Poaceae	LWG-305552	H	June-November
17.	*Dichanthium annulatum*	Poaceae	LWG-307355	H	June-January
18.	*Digitaria ciliaris*	Poaceae	LWG-305565	H	June-November
19.	*Echinochloa colona*	Poaceae	LWG-303529	H	August-February
20.	*Echinochloa crus-galli*	Poaceae	LWG-315174	H	August-December
21.	*Eleusine indica*	Poaceae	LWG-304025	H	August-November
22.	*Enteropogon dolichostachyus*	Poaceae	LWG-315123	H	September-December

S. No.	Taxa	Family	Voucher No.	Habit	Phenology
23.	*Eragrostis atrovirens*	Poaceae	LWG-314942	H	August-November
24.	*Eragrostis japonica*	Poaceae	LWG-304062	H	September-January
25.	*Eragrostis unioloides*	Poaceae	LWG-315164	H	September-November
26.	*Eragrostis viscosa*	Poaceae	LWG-304020	H	August-February
27.	*Eulalia leschenaultiana*	Poaceae	LWG-314964	H	September-November
28.	*Eulaliopsis binata*	Poaceae	LWG-305573	H	July-October
29.	*Hackelochloa granularis*	Poaceae	LWG-315109	H	September-December
30.	*Hemarthria compressa*	Poaceae	LWG-307352	H	July-October
31.	*Heteropogon contortus*	Poaceae	LWG-317005	H	September-December
32.	*Hygroryza aristata*	Poaceae	LWG-314983	H	September-February
33.	*Hymenachne amplexicaulis*	Poaceae	LWG-304053	H	September-November
34.	*Imperata cylindrica*	Poaceae	LWG-311602	H	April-October
35.	*Ischaemum rugosum*	Poaceae	LWG-315177	H	August-December
36.	*Leptochloa chinensis*	Poaceae	LWG-314950	H	September-November
37.	*Miscanthus fuscus*	Poaceae	LWG-305578	H	May-August
38.	*Oplismenus burmanni* .	Poaceae	LWG-314956	H	September-December
39.	*Oplismenus compositus*	Poaceae	LWG-315125	H	August-January
40.	*Oryza rufipogon*	Poaceae	LWG-317010	H	October-November
41.	*Panicum humile*	Poaceae	LWG-314965	H	September-December
42.	*Paspalidium flavidum*	Poaceae	LWG-305564	H	July-November
43.	*Paspalum distichum*	Poaceae	LWG-304008	H	August-October
44.	*Paspalum scrobiculatum*	Poaceae	LWG-305580	H	August-October
45.	*Pennisetum polystachion*	Poaceae	LWG-317039	H	September-February

S. No.	Taxa	Family	Voucher No.	Habit	Phenology
46.	*Perotis indica*	Poaceae	LWG-304036	H	August-November
47.	*Phalaris minor*	Poaceae	LWG-317022	H	January-April
48.	*Phragmites karka*	Poaceae	LWG-304015	H	October-February
49.	*Poa* annua	Poaceae	LWG-317029	H	December-February
50.	*Polypogon monspeliensis*	Poaceae	LWG-317017	H	January-May
51.	*Pseudopogonatherum contortum*	Poaceae	LWG-305567	H	July-November
52.	*Rottboellia exaltata*	Poaceae	LWG-315127	H	August-December
53.	*Saccharum bengalense*	Poaceae	LWG-304074	H	October-November
54.	*Saccharum narenga*	Poaceae	LWG-303591	H	October-December
55.	*Saccharum spontaneum*	Poaceae	LWG-304005	H	September-December
56.	*Sacciolepis myosuroides*	Poaceae	LWG-314993	H	July-December
57.	*Setaria glauca*	Poaceae	LWG-314936	H	August-October
58.	*Setaria pumila* .	Poaceae	LWG-304010	H	August-December
59.	*Setaria verticillata*	Poaceae	LWG-315188	H	August-November
60.	*Sorghum halepense*	Poaceae	LWG-315126	H	September-December
61.	*Sorghum nitidum*	Poaceae	LWG-304009	H	September-December
62.	*Sporobolus diandrus*	Poaceae	LWG-314941	H	September-November
63.	*Themeda arundinacea*	Poaceae	LWG-303593	H	August-November
64.	*Urochloa panicoides*	Poaceae	LWG-314957	H	August-November
65.	*Vetiveria zizanioides*	Poaceae	LWG-303546	H	August-November

Study Area

Uttar Pradesh, currently stands as the fourth largest state of India spanning between the coordinates 23º52'-30º25' N and 77º3'-84º39' E. The state occupying an area of about 2,40,928 km^2, however, its total recorded forest cover is 14,806 km^2, which is only 6.15% of its geographical area[1]. Dudhwa Tiger Reserve lies north of tropic of cancer between 28°062 -22°422 N and 80°182 - 81°192 E comprises of following three Protected areas, *viz.,* Dudwa National Park, Katerniaghat Wildlife Sanctuary and Kishanpur Wildlife Sanctuary and remaining part includes the areas of North Kheri Forest

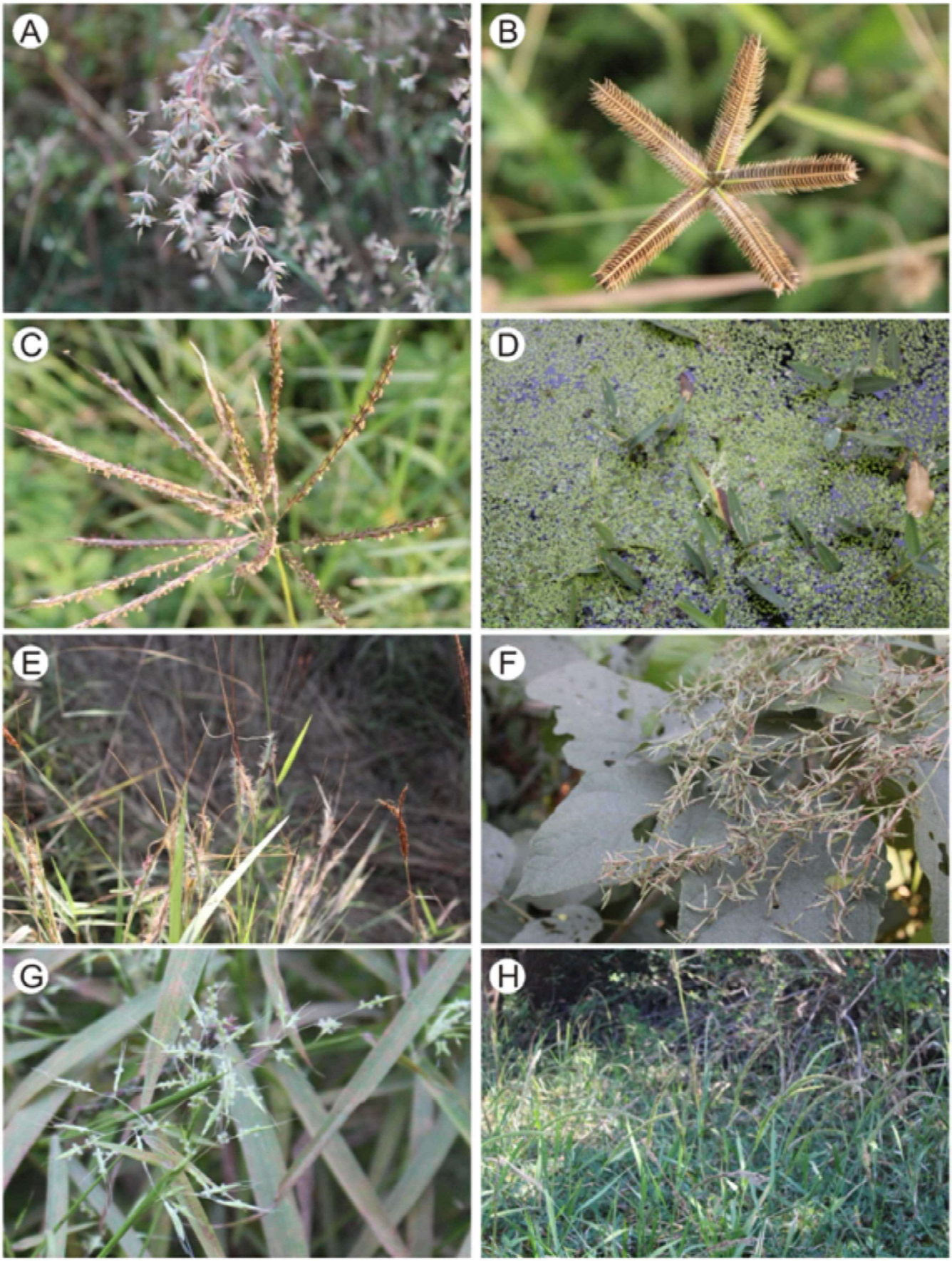

Fig. 1 : A. *Aludu mutica*, B. *Dactyloctenium aegyptium*, C. *Dichanthium annulatum*, D. *Hygroryza aristata*, E. *Heteropogon contortus*, F. *Cymbopogon flexuosus*, G. *Capillipedium assimile*, H. *Hymenachne amplexicaulis*

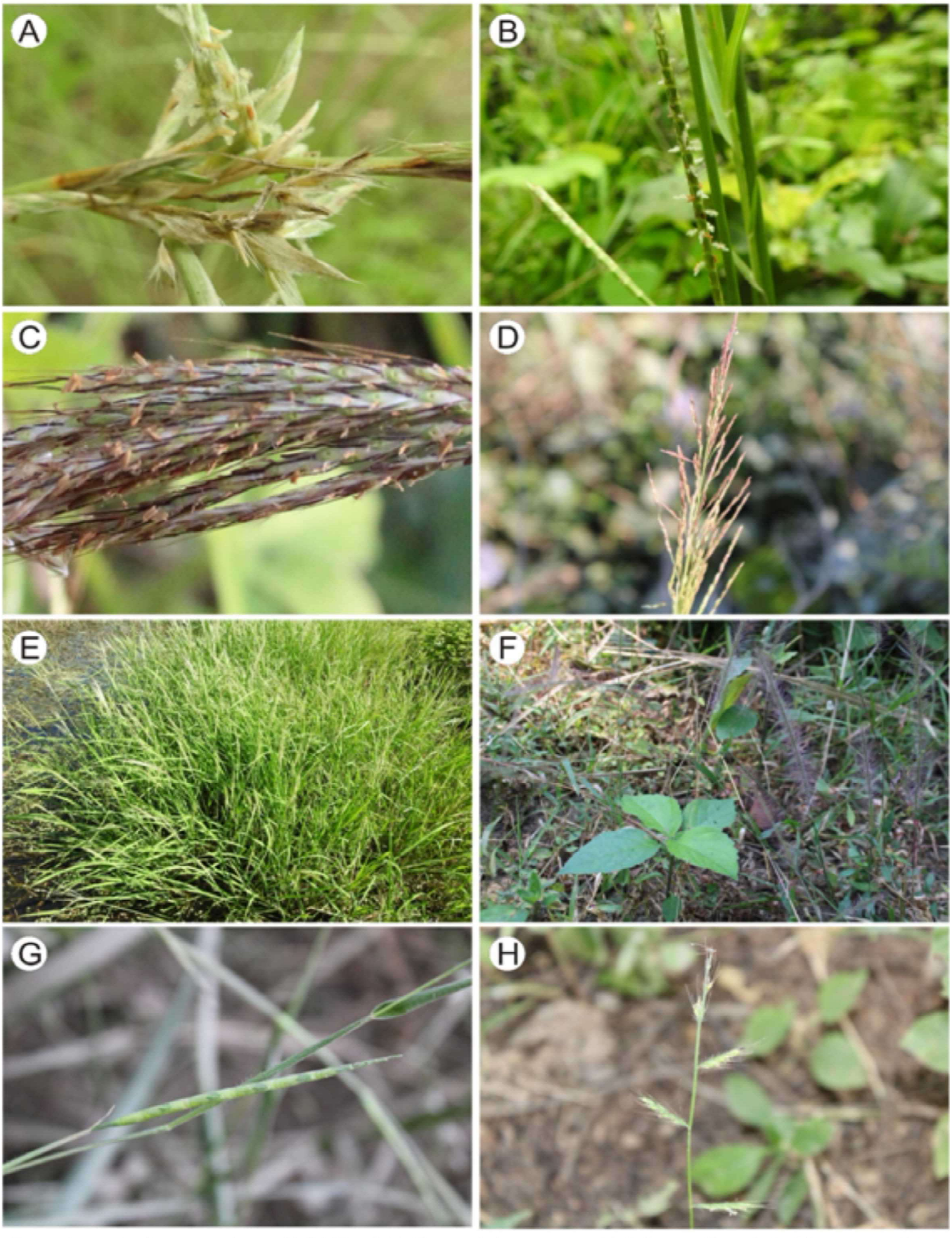

Fig. 2 : A. *Cymbopogon citratus*, B. *Hemarthria compressa*, C. *Bothriochloa pertusa*, D. *Vetiveria ziznoides*, E. *Oryza rufipogon,* F. *Perotis indica*, G. *Rottboellia exaltata*, H. *Oplismenus burmanii*.

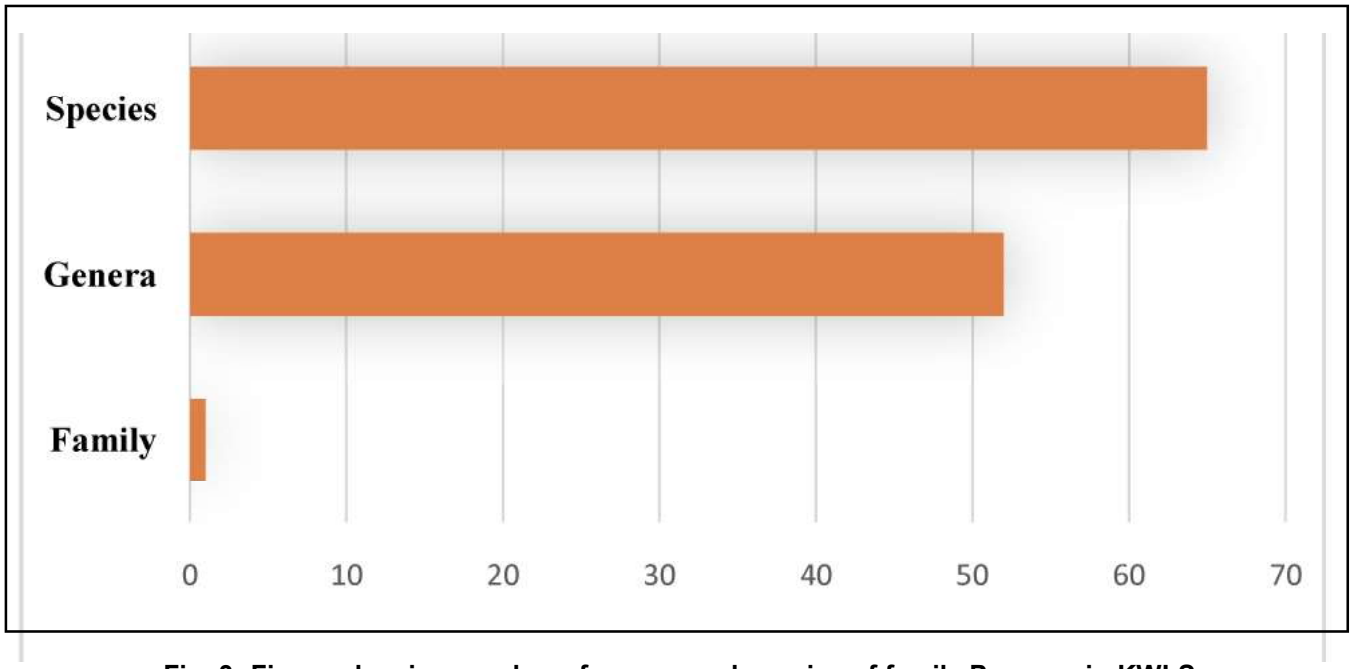

Fig. 3: Figure showing number of genera and species of family Poaceae in KWLS

Division and South Kheri Forest Division and Shahjahanpur Forest Division. The total area of the DTR is 2201.77 Km^2, of which 1093.79 Km^2 is core and rest 1107.98 Km^2 is buffer[19]. Kishanpur Wildlife Sanctuary having an area of *ca*. 227 km^2 lies between the latitudes 28°-28°422 N and longitudes 80°- 80°502 E. It was established on 1.1.1973 in continuation of orders issued vide G.O.U.P. notification no. 111/14-3-31/1972 dated 7.10.1972. It touches the contiguous range of both South Kheri Forest Division in Gola Tehsil of Lakhimpur district and small reserve forest area in Powayan Tehsil of Shahjahanpur district in Uttar Pradesh. To further protect swamp deer, a part of the South Kheri Forest Division (SKFD) was declared as part of Kishanpur Wild Life Sanctuary (KWLS) in 1981[19]. The sanctuary is fragmented by revenue villages and associated agricultural lands. This beautiful emerald sanctuary is situated in Terai region (water logged alluvial plain or a plain with a high sub-soil water table) of Uttar Pradesh and supports rich flora and fauna.

Material and Methods

In the course of our exploration studies during the period of 2015-2020 the entire area was thoroughly surveyed covering different seasons. Voucher specimens were collected from different locations of sanctuary. The collection and preparation of voucher specimens was done according to the standard procedure[6,13]. Voucher specimens were mounted on Herbarium sheets. All the collected specimens have been deposited in the Herbarium of the CSIR-National Botanical Research Institute, Lucknow (LWG) for future reference after their proper identification. The identification of specimens was done based on the detailed study of morphological characters of live as well as of dried & mounted specimens with the help of floras, revisions, monographs and other important taxonomic literature[5,7,8,18,21]. The specimens were examined under a trinocular stereozoom microscope (Leica). After consulting the literature, specimens were also matched with the previously housed authenticated specimens in various Indian herbaria like CSIR-National Botanical Research Institute, Lucknow (LWG), CSIR-Central Drug Research Institute, Lucknow (CDRI), Central National Herbarium, Howrah (CAL), Forest Research Institute, Dehradun (DD).

Results and Discussion

During our survey and collection of voucher specimens of plants from KWLS area covering all the seasons, we could document a total of 65 species falling under 52 genera. Amongst the following species after analysis of data we could analyse that only few taxa have been reported from the area that has two to four species viz., *Bothriochloa* Kuntze 2 species, *Oplismenus* P. Beauv. 2 species, *Sorghum* Moench 2 species, *Setaria* P. Beauv. 3 species, *Saccharum* L. 3 species, *Eragrostis* Wolf 4 species while remaining genera represented by single species. Grasses like *Phragmites karka* (Retz.) Trin. ex Steud. and *Saccharum spontaneum* L., mainly grows along the river banks and *Sacciolepis myosuroides* (R.Br.) Chase ex E. G. Camus & A. Camus, *Hymenachne amplexicaulis* (Rudge) Nees mainly grows in marshy and swampy areas while *Hygroryza aristata* (Retz.) Nees ex Wight & Arn. and *Oryza rufipogon* Griff. predominantly growing in the aquatic habitats. The beds of grasslands

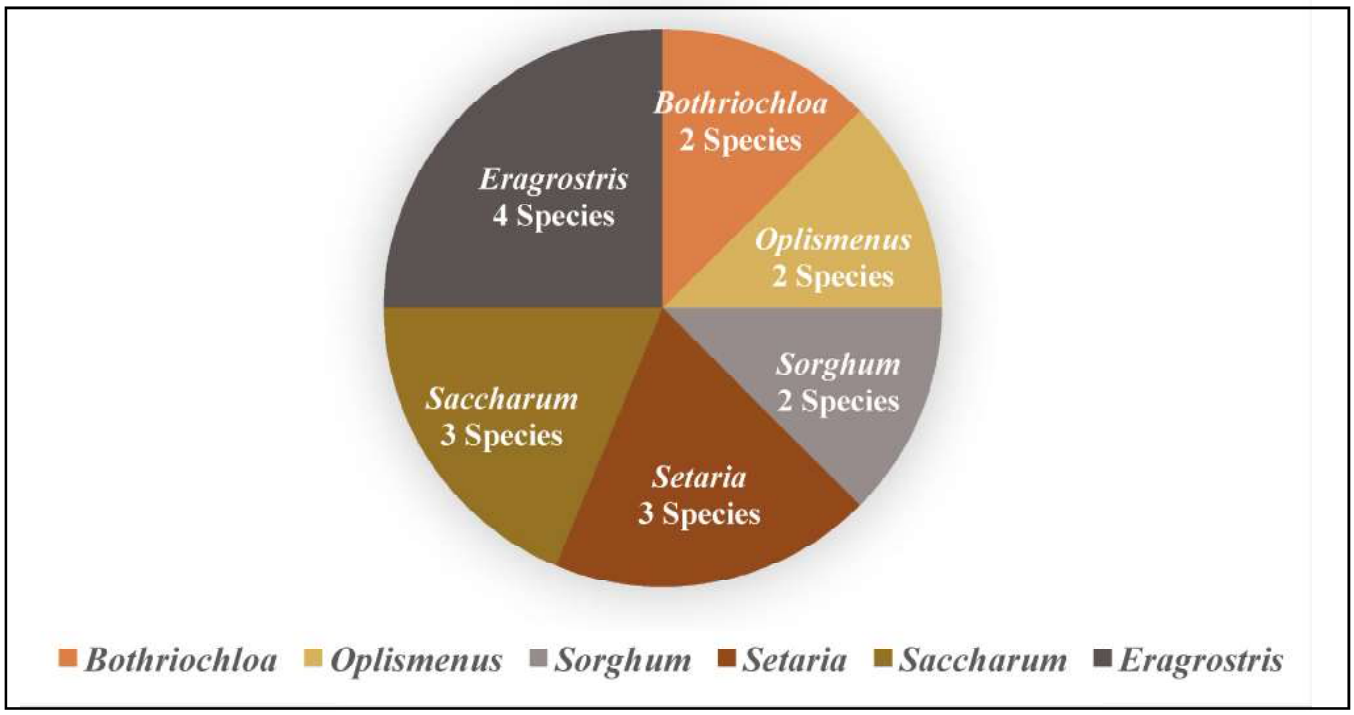

Fig. 4 : Figure showing genera with highest diversity of species from KWLS

mainly attract small birds and invertebrates of open habitation while tall one attracts hoverflies, butterflies, moths and bees. The grasslands are also important for maintaining populations of small animals especially mammals and reptiles.

Conclusion

A total of 65 species of grasses were collected and identified from KWLS area covering all the seasons. Few grasses dominate the grassland of the sanctuary area like, *Apluda mutica*, *Cymbopogon flexuosus*, *Miscanthus fuscus*, *Phragmites karka*, *S. bengalense*, *S. spontaneum*, *S. narenga*, *Themeda arundinacea*, *Vetiveria zizanioides*. The grasslands of this sanctuary are important in maintaining and sustaining the wildlife through providing the shelter as well as food and fodder to the animals. Apart from this they also provide pioneer habitats to early colonizing plant members during successional processes in plant communities and their role in balancing the ecosystems is also very impressive in terms of micro and macro-habitat maintenance and regulation of nutrient cycle in open and closed ecosystems.

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