



ASSESSMENT OF MONOCOT DIVERSITY IN SOME GRASSLANDS OF KULDIHA WILDLIFE SANCTUARY, ODISHA, INDIA

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ABSTRACT

The monocot diversity of some grasslands in Kuldiha Wildlife Sanctuary ($86^{\circ}26'15''$ to $86^{\circ}45'E$ and $21^{\circ}20'$ to $21^{\circ}27'N$) was assessed during July 2016 to June 2017. The monocot flora in grasslands of Kuldiha Wildlife Sanctuary comprised of 39 grass and sedge species. They are grouped under three families – poaceae, cyperaceae and commelinaceae. The members of the family poaceae dominated the sanctuary. The family poaceae alone contributed 64.1% among the monocots whereas the share of percentage was found to be less in case of family commelinaceae (7.69%). The cyperaceae exhibited 28.21 percentages among the family of monocot. The study reveals that the sanctuary is rich in monocot diversity of grasses, sedges and other associated herbs. However, the variation in species composition in grassland of Kuldiha Wildlife Sanctuary might be due to the topography, geographical distribution, soil characteristic, climatic conditions and biotic interference i.e. the grazing practices of wild herbivores of the sanctuary and other domesticated animals of the locality.

KEYWORDS : Grassland, monocot, phytodiversity, sanctuary, wildlife.

Introduction

Kuldiha Wildlife Sanctuary (Fig-1) situated at a distance of 37 kms away from Balasore. It is one of the major protected areas in the state of Odisha since 1984. The sanctuary got its name from nearby Kuldiha village which belongs to Nilagiri block. It covers an area of 272.75 sq. km. The forest, covers the Nato hills and Sukhupata hills and merged with the forests of Similipal Biosphere Reserve. The sanctuary possesses an undulating topography with a range of hills in it. It is situated at an average height of 600-800 ft. from the mean sea level. The hills of the sanctuary exhibit a greater degree of variation. The hills also possess some perennial and seasonal streams.

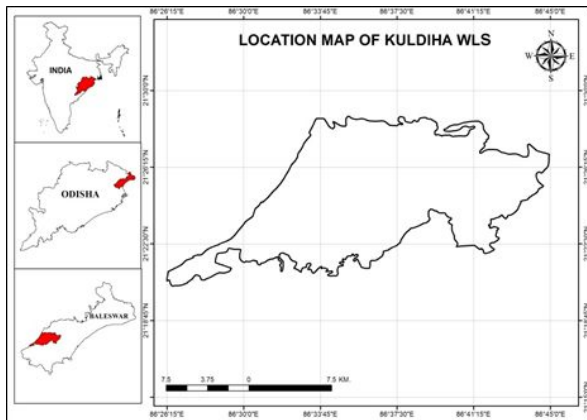


Fig.-1 Map showing the location of Kuldiha Wildlife Sanctuary.

The soil of the sanctuary is predominantly sandy and clay type. In some places black soil is also found due to the presence of huge amount of organic matters. The climate of the locality is chiefly influenced by Bay of Bengal. On an average, the area experiences a tropical climate. The usual seasons i.e. winter, summer and rainy are also experienced. However, the climate of Kuldiha Wildlife Sanctuary and its adjacent area is certainly affected by its topography. The area gets good rainfall and temperature remains comparatively low in summer because of forest cover.

Kuldiha Wildlife Sanctuary is an abode of a number of plants and animal species. Wild animals i.e. tiger, bear, elephant, deer, rabbit, leopard, sambar, bison, gaur, giant squirrel, flying squirrel, etc. are mainly found. The dense forests of the sanctuary provides shelter to many kinds of birds like hornbills, hill myna, peafowl, jungle fowl, parrots, wood pecker, etc., reptiles i.e. rat snake, trinket snake, wolf

snake, russell's viper, cobra, gecko, etc. are also found in the sanctuary area and its periphery. The forest of Kuldiha Wildlife Sanctuary is chiefly Tropical Dry Deciduous type as per revised survey of the forest types of India (Champion and Seth, 1968). Besides, other two types of forest are also seen in some places i.e. Tropical Moist Deciduous forest and Tropical Semi-evergreen forests. Grasslands are found in some places inside the sanctuary boundary. Wild herbivores like deer, rabbit, sambar, etc. chiefly depend upon these grasslands for their food.

Literature review

Monocots and dicots have great economic value. Monocots alone accounts for a very large proportion in human diet. The diet that nourishes herbivorous comes from monocot and is found abundantly in grassland in association with some dicotyledon taxa. Literature study reveals a lot of work on grasslands of various climatic regions by Golley (1965), Golley and Gentry (1966), Dix and Beidleman (1969), Singh and Yadava (1974), Misra and Misra (1979), Singh and Ambasht (1980), Rath and Misra (1980), Malana and Misra (1981), Sarmiento and Monasterio (1983), Mishra (1983), Noy-Meeir **et al.** (1989), Ram and Arya (1991), Shankar **et al.** (1991), Coupland (1992), Misra (1992), Ting-Cheng (1993), Tainton and Walker (1993), Singh and Gupta (1993), Moore (1993), Mark (1993), Herlocker **et al.** (1993), Gillison (1993), Behera and Misra (1993), Smith and Rushton (1994), Sukumar **et al.** (1995), Sala **et al.** (1996), Paruelo **et al.** (1998), Barik and Misra (1998), Austrheim **et al.** (1999), Batalha and Martins (2004), Plantureus **et al.** (2005), Iselstein **et al.** (2005), Barik (2006), Pattanaik and Reddy (2008), Kala (2009), Gibson (2009), Carlier **et al.** (2009), Kar **et al.** (2010), Baldau and Jaiswal (2014), Das and Barik (2015), Rout and Barik (2016), Barik (2017) and many others in India and abroad. However, very little work has been done on the grasslands of Kuldiha Wildlife Sanctuary in Odisha.

Aim of the Study

In this study an attempt has been made to assess the monocot diversity in some grasslands of Kuldiha Wildlife Sanctuary in the state of Odisha.

Materials and Methods

Extensive field survey was made for one year i.e. from July 2016 to June 2017. All the plant specimens encountered from the grasslands of Kuldiha Wildlife Sanctuary were collected in quadruplicates either in flowering or fruiting stage and identified taxonomically with the help of floras (Hooker 1872-1897, Haines 1921-25, Mooney 1950, Saxena and Brahmam 1989 and 1994-96, Panigrahi and Murti 1989, Murti and Panigrahi 1999, Verma **et al.** 1993, Mudgal **et al.** 1997 and Singh **et al.** 2001). Herbarium

specimens were prepared following standard methodology proposed by Jain and Rao (1977). The voucher specimens were housed in Herbarium, P.G. Department of Botany, North Orissa University, Baripada, Odisha.

Results and Discussion

Table-1, reveals the list of monocot flora and their families occurring in the grasslands of Kuldiha Wildlife Sanctuary. The monocot flora comprised of 39 species belongs to 28 genera. They belongs to three families - poaceae, cyperaceae and commelinaceae. The family poaceae exhibited a maximum number of 25 species during the study period followed by cyperaceae (11 species) and commelenaceae (3 species).

Table -1 List of monocot flora and their families occurring in the grasslands of Kuldiha Wildlife Sanctuary during the study period.

Sl. No.	Name of monocot flora	Families
1	<i>Commelina benghalensis</i> L.	Commelinaceae
2	<i>Commelina diffusa</i> Burm. f.	Commelinaceae
3	<i>Tonnigia axillaris</i> (L.) Kuntze	Commelinaceae
4	<i>Bulbostylis barbata</i> (Rottb.) C.B.Cl.	Cyperaceae
5	<i>Cyperus compressus</i> L.	Cyperaceae
6	<i>Cyperus cyperoides</i> (L.) Kuntze	Cyperaceae
7	<i>Cyperus distans</i> L.	Cyperaceae
8	<i>Cyperus iria</i> L.	Cyperaceae
9	<i>Cyperus pumilus</i> L.	Cyperaceae
10	<i>Cyperus rotundus</i> L.	Cyperaceae
11	<i>Cyperus triceps</i> Endl.	Cyperaceae
12	<i>Fimbristylis acuminata</i> Vahl.	Cyperaceae
13	<i>Fimbristylis ovata</i> (Burm. f.) Kern	Cyperaceae
14	<i>Scirpus squarrosus</i> L.	Cyperaceae
15	<i>Alloteropsis cimicina</i> (L.) Stapf	Poaceae
16	<i>Aristida setacea</i> Retz.	Poaceae
17	<i>Bothriochloa bladhii</i> (Retz.) S.T. Blake	Poaceae
18	<i>Brachiaria distachya</i> (L.) Stapf	Poaceae
19	<i>Chloris barbata</i> Sw.	Poaceae
20	<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Poaceae
21	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae
22	<i>Dactyloctenium aegyptium</i> (L.) P. Beauv.	Poaceae
23	<i>Digitaria ciliaris</i> (Retz.) Koeler	Poaceae
24	<i>Echinochloa colona</i> (L.) Link	Poaceae
25	<i>Eleusine indica</i> (L.) Gaertn.	Poaceae
26	<i>Eragrostis ciliaris</i> (L.) R.Br.	Poaceae
27	<i>Eragrostis pilosa</i> (L.) P. Beauv.	Poaceae
28	<i>Eragrostis unioides</i> (Retz.) Nees ex Steud.	Poaceae
29	<i>Heteropogon contortus</i> (L.) P. Beauv. ex Roem. & Schult.	Poaceae
30	<i>Ischaemum indicum</i> (Houtt.) Merr.	Poaceae
31	<i>Oplismenus burmannii</i> (Retz.) P. Beauv.	Poaceae
32	<i>Oplismenus compositus</i> (L.) P. Beauv.	Poaceae
33	<i>Panicum brevifolium</i> L.	Poaceae
34	<i>Paspalum scrobiculatum</i> L.	Poaceae
35	<i>Pennisetum pedicellatum</i> Trin.	Poaceae
36	<i>Perotis indica</i> (L.) kuntze	Poaceae
37	<i>Rottboellia cochinchinensis</i> (Lour.) Clayton	Poaceae
38	<i>Setaria pumila</i> (Poir.) Roem. & Schult.	Poaceae
39	<i>Sporobolus indicus</i> (L.) R. Br. var diander (Retz.) Jovet & Guedes	Poaceae

The family poaceae contributed a maximum of 64.1% among the monocot flora. The cyperaceae showed 28.21% whereas the family commelinaceae shared a minimum of 7.69 percentages among the monocot (Table-2) might be due to the variation in topography, geographical distribution, soil characteristics, climatic condition and biotic interferences of the locality.

Table -2 Percentage contribution of various families occurring in the grasslands of Kuldiha Wildlife Sanctuary during the study period.

Sl No	Name of the family	Number of species	Percentage contribution
1	Commelinaceae	03	7.69
2	Cyperaceae	11	28.21
3	Poaceae	25	64.10
Total		39	100

Conclusion

The assessment of monocot diversity in grasslands of Kuldiha Wildlife Sanctuary reveals that the Sanctuary is rich in diversity of grasses, sedges and other associated herbs. The biotic interference (grazing practices of wild herbivores of the sanctuary and the nearby domestic animals), topography, geographical distribution, soil characteristics and climatic condition of the locality might be responsible for variation in species composition of the sanctuary.

Acknowledgement

The author is thankful to the PCCF (Wildlife) & Chief Wildlife Warden, Odisha, Bhubaneswar, the staff of Kuldiha Wildlife Sanctuary, Balasore and K.K. Mandal, JRF, NRSC- NOU Collaborative National Carbon Project for their cooperation. The financial assistant extended by National Remote Sensing Centre (NRSC), ISRO, Govt. of India, Hyderabad in the form of National Carbon Project (NCP) is highly acknowledged.

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