P: ISSN NO.: 2394-0344 RNI No.UPBIL/2016/67980 VOL-2* ISSUE-6* September- 2017
E: ISSN NO.: 2455-0817 *Remarking An Analisation*

Assessment of Phytodiversity of A Grassland Community of Mayurbhanj District in Odisha, India

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Abstract

Assessment of phytodiversity of a grassland community of Maharajpur (21^0 56' 30" N ; 86^0 46' E) in the district of Mayurbhanj was studies during 2015. The community comprises with 28 numbers of taxa belonging to 27 genera, grouped under 13 families. Among tham 9 species were grasses and 19 were non-grasses. The members of the family Poaceae showed dominant (32.14%) in the community followed byAsteraceae, Fabaceae and Verbinaceae (10.71% each) and Rubiaceae (7.14%) whereas a sharing of 3.57% each was exhibited by the members of the family Acanthaceae, Capparaceae, Convolvulaceae, Cyperaceae, Euphorbiaceae, Malvaceae, Nictagenaceae and Violaceae. This variation in angiospermic taxa in the grassland communities may vary from time to time depending upon the topography, climatic conditions and biotic interferences of the locality.

Keywords Phytodiversity, Grassland Community, Floristic Composition.

Introduction

Grasses are regarded as an important source of food for human being including many of the domesticated animals and wild animals. Based on trophic level most of the herbivores are directly dependent of grasses whereas the carnivores are indirectly dependent on the grassland flora. Besides supplying Oxygen, the grassland flora provides recreation, prevent soil erosion and maintain biodiversity. Grassland occurs naturally on all continents except Antarctica. They are found in most ecoregions on the earth surface and are always exposed to grazing, fire and some other man made activities in the name of development. Grasslands are of vital importance for raising livestock for human consumption and for milk and other dairy products and are exploited as pasture in general. From the pre historic times to till date man has been dependent on grasses for food, shelter and unani medicine. In view of this the present work was undertaken to study the phytodiversity of a grassland community of Mayurbhanj district in Odisha.

Review of Literature

Literature reviewed reveals a lot of work on the structural and functional aspects of various grassland communities in India and abroad by Odum (1960), Sant (1965), Ambasht and Maurya (1970), Singh and Ambasht (1980) Redmann (1975), Misra and Misra (1984, 1986), Barik and Misra (1998), Ejrnaes and Bruun (2000), Batalha and Martins (2004), Ghani and Khalik (2006), Patel and Patel (2010), Kar **et al.** (2010), Rahim **et al.**(2011), Pandey **et al**.(2011), Nair (2011), Baldu and Jaiswal (2014), Dash and Barik (2015), Barik **et al.** (2015), Rout and Barik (2016), Bhuyan and Barik (2017), Sahu and Barik (2017) and many others. However, very little work has been done so far on the phytodiversity of a grassland community, especially in the North - East region of the state, Odisha. Keeping all these facts in view, an attempt has been made to study the phytodiversity of a grassland community in this region.

Aim of the Study

The aim and objectives of this investigation is to assess the phytodiversity of a grassland community of Maharajpur in the district of Mayurbhanj, Odisha.

Study Site and Environmental

The experimental site was selected at Maharajpur (21^0 56' 30" N ; 86^0 46' E) in the district of Mayurbhanj (Fig. 1 & 2) with an average elevation of 36m. The site is about 0.7 kms from North Orissa University and 7.5 kms from Baripada, the district head quarter of Mayurbhanj, Odisha.

Fig. 1 Location of the Experimental Site

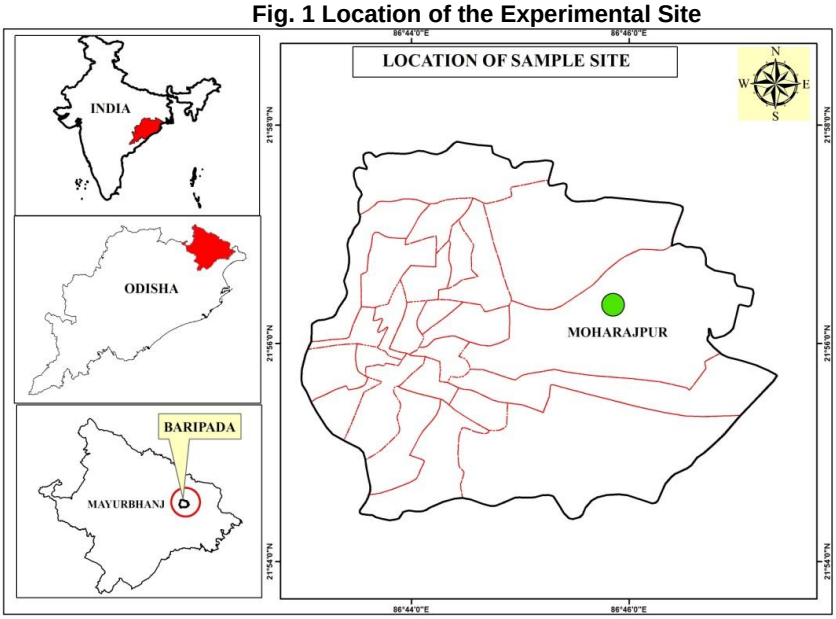

Fig. 2. Experimental Grassland of Moharajpur

The climate of the experimental site was monsoonal with three distinct seasons i.e. summer (March to June), rainy (July to October) and winter (November to February). The total rainfall during the study period was found to be 1800 mm, of which a maximum of 411 mm was recorded during July. The mean minimum and mean maximum atmospheric temperature recorded during the study period were found to be normal throughout the year. December showed the minimum temperature (5.0^{o}C) whereas April exhibited the maximum temperature (42.6^{o}C). Table-1, reveals the monthly mean minimum and mean maximum atmospheric temperature and rainfall of the experimental site during the study period.

Table 1: Monthly Rainfall, Mean Minimum and Mean Maximum Atmospheric Temperature of the Experimental Site during the Study Period.

Month		Atmospheric temperature (˚C)		Rainfall (mm)
		Mean minimum	Mean maximum	
Jan.	2015	13.4	27.1	11
Feb.	2015	16.2	29.8	30
Mar.	2015	20.8	34.6	35
Apr.	2015	24.7	42.6	60
May	2015	26.8	38.0	142
Jun.	2015	26.7	35.3	288
Jul.	2015	26.0	31.7	411
Aug.	2015	25.9	31.6	349
Sep.	2015	25.7	31.7	288
Oct.	2015	23.1	31.1	143
Nov.	2015	17.1	29.0	26
Dec.	2015	5.0	16.0	17
Total				1800

Materials and Methods

All the plant specimens encountered from the experimental grassland community 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 & Brahmam, 1994-96; Panigrahi & Murti, 1989; Murti & Panigrahi, 1999; Verma **et al**. 1993; Mudgal **et al**. 1997 and Singh **et al.** 2001) and herbarium specimens were prepared with standard methodology (Jain & Rao, 1977). The voucher specimens were housed in Herbarium, P.G. Department of Botany, North Orissa University for future reference and use.

Results and Discussion

The floristic list of an experimental grassland community of Maharajpur in the district of Mayurbhanj has been enlisted with their respective families in Table 1. The grassland community comprises with 28 species, belonging to 27 genera. They are grouped under 13 families (Poaceae, Cyperaceae, Asteraceae, Violaceae, Nictagenaceae, Verbenaceae, Rubiaceae, Malvaceae, Fabaceae, Convolvulaceae, Acanthaceae, Capparaceae and Euphorbiaceae). Out of 28 species in the community 9 species were grasses *(Aristida setacea, Brachiaria reptans, Chrysopogon aciculatus, Chrysopogon verticillatus, Cynodon dectylon, Heteropogon contortus, Ischaemum indicum, Pennisetum pedicellatum and Vetiveria zizanioides) and 19 were non-grasses (Ageratum conyzoides, Boerhavia dissusa, Chromolaena odorata, Cleome viscose, Clerodendrum infortunatum, Croton bonplandianus, Cyperus rotundus, Desmodium triflorum, Evolvulus nummularius, Oldenlandia verticillata, Hybanthus enneaspermus, Lantana camara, Mimosa pudica, Ruellia tuberose, Sida acuta, Spermacoce ramanii, Tephrosia purpurea, Vernonia cinerea and Vitex negundo).*

Table 1. List of Flora Occurring in the Experimental Site during the Study Period

Sl. No.	Name of the Species	Family
Grasses		
1	*Aristidia setacea* Retz.	Poaceae
2	*Brachiaria reptans* (L.) Gardner & Hubbard	Poaceae
3	*Chrysopogon aciculatus* (Retz.) Trin.	Poaceae
4	*Chrysopogon verticillatus* (Roxb.) Trin. ex Steud.	Poaceae
5	*Cynodon dactylon (*L.) Pers.	Poaceae
6	*Heteropogon contortus* (L.) P. Beauv. ex Roem. & Schult.	Poaceae
7	*Ischaemum indicum* (Houtt.) Merr.	Poaceae
8	*Pennisetum pedicellatum* Trin.	Poaceae
9	*Vetiveria zizanioides* L. Nash	Poaceae
Non Grasses		
10	*Ageratum coryzoides (L.)* L.	Asteraceae
11	*Boerhavia diffusa* L.	Nictagenaceae
12	*Chromolaena adorata* L. R.M. King & H, Rob.	Asteraceae
13	*Cleome viscosa* L.	Capparaceae
14	*Clerodendrum infortunatum* L.	Verbenaceae
15	*Croton bonplandianus* Baill.	Euphorbiaceae
16	*Cyperus rotundus L.*	Cyperaceae
17	*Desmodium triflorum* L. DC.	Fabaceae
18	*Evolvulus nummularius (L.)* L.	Convolvulaceae
19	*Oldenlandia verticillata* L.	Rubiaceae
20	*Hybanthus enneaspermus* (L.) F. Muell.	Violaceae
21	*Lantana camara* L.	Verbenaceae
22	*Mimosa pudica* L.	Fabaceae
23	*Ruellia tuberosa* L.	Acanthaceae
24	*Sida acuta* Burm. f.	Malvaceae
25	*Spermacoce ramanii* Siver.& Nair	Rubiaceae
26	*Tephrosia purpurea* (L.) Pers.	Fabaceae
27	*Vernonia cineria* (L.) Less	Asteraceae
28	*Vitex negundo* L.	Verbenaceae

The community was mostly dominated by the members of the family Poaceae (32.14%). The sharing of species was found to be 10.71% each in case of the family Asteraceae, Fabaceae and Verbinaceae whereas 7.14% in case of Rubiaceae. The rest of the members of eight family shared only 3.57% each in the community (Table 2).

Table2. Percentage Contribution of Various Families in Respect to their Number of Species Occurring in the Experimental Site

Sl. No.	Name of the family	No of species	Percentage contribution
1	Acanthaceae	1	3.57
2	Asteraceae	3	10.71
3	Capparaceae	1	3.57
4	Convolvulaceae	1	3.57
5	Cyperaceae	1	3.57
6	Euphorbiaceae	1	3.57
7	Fabaceae	3	10.71
8	Malvaceae	1	3.57
9	Nyctaginaceae	1	3.57
10	Poaceae	9	32.14
11	Rubiaceae	2	7.14
12	Verbinaceae	3	10.71
13	Violaceae	1	3.57
Total		28	99.97

Conclusion

The experimental grassland community of Maharajpur in the district of Mayurbhanj, Odisha was rich in grasses, sedges and other associated herbs and shrubs.The topography, geographical distribution, soil characteristics, climatic condition, biotic interference etc. might be responsible for variation in floristic composition of the experimental site.

Acknowledgements

The authors are thankful to the District Agriculture Officer, Mayurbhanj, Govt. of Odisha, Baripada for providing necessary meteorological data. Financial assistance extended by National Remote Sensing Cartre (NRSC), ISRO, Govt. of India, Hyderabad in the form of National Carbon Project is highly acknowledged.

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