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EFFECT OF CLIPPING AND GRAZING ON VARIOUS VEGETATIONAL PARAMETERS OF GRASSLAND COMMUNITIES IN BUNDELKHAND REGION (U.P.)

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ABSTRACT

Two grassland communities of Bundelkhand region, one on the managed (periodically clipped) and protected site of G.I.C. ground (site I) and the other moderately grazed, open natural site of D.V. (P.G.) College Campus (site II) were selected and analysed for the comparison of various vegetational parameters. Out of the total 46 species, 19 were common to both sites, 7 species occurred exclusively at site I and 20 species at site II. The majority of the species at both the sites were fortuitous. On managed site, only a few species showed high values of phytosociological indices while open natural and moderately grazed site showed more even distribution of values. Upper strata species like *Desmostachya bipinnata*, *Fimbristylis dichotoma* and *Vernonia cinerea* were rare in abundance at managed site while *Chrysanthellum indicum*, *Dactyloctenium aegypticum* and *Cassia tora* were rare at natural site. The community at site I showed markedly higher dominance and the lower diversity and evenness values as compared to those at site II. A high species turnover of 8.8 indicates considerable differences between the managed and natural sities with respect to species richness and population size of key species.

INTRODUCTION

The various aspects of plant community of grassland vegetation in different parts of India have been studied by a number of workers at grassland vegetation of Bombay (Bharucha and Dave, 1944); Varanasi (Ambasht *et al.*, 1972; Misra, 1972; Singh, 1967); Jodhpur (Gupta and Sharma, 1973); Kurukshetra (Singh and Yadava, 1974); Sagar (Trivedi, 1976); Jhansi (Trivedi, 1991) and Orai (Gupta, 1993; Ratan, 2004).

Inspite of these efforts, the grassland communities of western U.P. specially the Bundelkhand region largely remained under un-explored except for a few studies on population interaction, and productivity of selected species (Ashthana, 1975; Dwivedi, 1978). Least informations are available on the impact of disturbance on these communities. In general the effect of disturbance on the richness and abundance of species within old-field communities have been assessed (Armesto and Pickett, 1985; Tilman and Pacala, 1993; Cole, 1995; Hulme, 1996). Liddle (1975) made a selective review of the ecological effects of human trampling on natural ecosystems.

The present analysis, therefore, compares the quantitative characters of a natural grassland vegetation, open to moderate grazing and a managed and closed grassland community facing periodic clipping and moderate trampling.

MATERIALS AND METHODS

The Study Site

The present study site located at 25°59' NL and 79°37' E L and 141.61 m above mean sea level, represents a dry sub humid typically monsoonic climate with average annual rainfall about 1186.8 mm (90% rainfall during monsoon period). The mean annual temperature of study site (Orai) is 24.8°C but mean monthly values considerably vary from their annual means (14.5 to 35.5°C) and consequently their ranges are high. The temperature start rising rapidly in March and reaches at a maximum of 42°C in May. In winter season the temperature varied between 10 to 25°C and the night temperature some times dropped below 6°C. The soil of the region is alluvial, sandy loam and usually light olive brown in colour, having a slightly alkaline pH range (pH 7.3-7.6).

Due to human settlement and agricultural practices, natural vegetation has been degraded to thiny scrub forest and grassland vegetation which represents a state of arrested succession. The G.I.C. ground (site I), a managed grassland, is periodically clipped and faces moderate trampling. The site is about 40 years old and covers over 2 hectares area within close boundaries. The grassland (site II) at the campus D.V. (P.G.) College is open to moderate grazing. It is over 35 years old and covers about 1.5 hectares area.

The two grasslands, selected as representative grassland communities of western part of Bundelkhand region (U.P.), were analysed for the comparison of various phytosociological attributes on the basis of data recorded during the peak growing season (August-November). The requisite size of quadrat (50x50 cm) was determined through species area curve method (Mueller-Dombois and Ellenberg, 1974). A total of 100 quadrats were laid within each community. The

Self Attested