Vegetation Studies of Girbanr Hills, District Swat, Pakistan

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Girbanr Hills의 식생

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ABSTRACT

Five non-stratified plant communities, Dichanthium-Artemisia-Themeda, Dichanthium-Plectranthes-Themeda, Plectranthes-Carex-Myrsine, Heteropogon- Dichanthium-Dodonaea and Artemisia-Cynodon-Berberis were recognized in Girbanr hills, District Swat, during autumn, 1992.

The indices of similarity showed that the communities were dissimilar. The percentage of leptophyllous and nanophyllous, therophytic and nanophanerophytic species were higher than other groups. These indicate dry and disturbed conditions. Due to autumn season most of the species were entering in dormant stage. There was no tree layer on southern slopes while northern slopes had a poor layer of Pinus roxburghii.

Deforestation, uprooting, terrace cultivation and overgrazing followed by erosion are the main ecological problems. The presence of isolated trees of Pinus roxburghii and stunted Olea ferruginea indicate that the original vegetation might have been of chirpine or Olea-Pinus type. The area having resource potential can be changed into a forest or rangeland by proper protection and management. Suggestions in favour of improvement are given.

Key words: Biological spectrum, Community structure, Indices of similarity, Leaf spectra, Phenological classification, Vegetation studies

INTRODUCTION

Girbanr hills are situated in the northwest of Saidu Sharif at a distance of 11km from Mingora. The average elevation of the area varies from 1,025~1,630m from mean sea level. It lies between latitude 34°50’ to 34°53’N and longitude 72°16’ to 72°20’E in Swat District. The hills run east-westwardly and is distinguished into distinct north and south facing slopes.
Sub-tropical vegetation in Pakistan and adjoining parts is under tremendous biotic-pressure including deforestation and overgrazing. This has caused the change in the original vegetational composition and at present these forests are in the form of degraded scrub or grassland, which are dominated by non-palatable and less-preferred species. Some studies in the sub-tropical zone of Pakistan have been carried out. Beg and Khan (1984) reported the present situation of the leftover vegetation in dry oak forest zone of Swat. Malik and Hussain (1987) analyzed the vegetation around Muzaffarabad. Phytosociological studies of Badana and Palalan hills near Kotli were reported by Malik and Hussain (1988). Malik et al. (1990) reported the vegetation studies of Sund Galli near Muzaffarabad. Malik and Hussain (1990) presented phytosociology of some parts of Kotli hills, Hussain and Shah (1989) and Hussain et al. (1992) analyzed the leftover vegetation of sub-tropical forests in Docut hills Swat, and Hussain and Ilahi (1991) gave an account of the sub-tropical forests of Lesser Himalayas. However, no such reference exists on the vegetation of Girbanr hills.

The present endeavors were, therefore, carried out to determine the present status of the leftover vegetation and to suggest measures for the improvement of the area and afforestation. The findings will be of interest to ecologists, foresters, range and natural resource managers and taxonomists.

**MATERIALS AND METHODS**

Girbanr hills have distinct north and south facing slopes each of which were divided into three altitudinal zones. Thus two sites each on north and south facing slopes and one site on top of the hill were established. The vegetation was analyzed using 10×14m, 10×14m and 1×1m quadrat, respectively for trees, shrubs and herbs. Twenty quadrats were laid randomly for trees, herbs and shrubs in nested manner (Hussain 1989). The herbage cover was determined by Daubenmire's cover scale (Daubenmire 1959) and basal area coverage /basal area recorded in each quadrant were converted to relative scales (Hussain 1989) and added together to get importance values (Hussain 1989). The communities were named after the three leading dominants (Hussain 1989). Indices of similarity and dissimilarity were calculated by Sorenson's index (Sorenson 1948) and matrix of the number of common species was calculated after Hussain and Tajul-Malook (1984). Leaf spectra was determined after Raunkiaer (1934), while biological spectrum was calculated after Raunkiaer (1934) and Hussain (1983). The study was conducted during October-November, 1992. Soil samples were collected from each stand up to a depth of 15cm and were analyzed in soil testing laboratory of Agriculture Research Institute, Tarnab, Peshawar, Pakistan, using methods described by Hussain (1989). Nomenclature followed here is that of Stewart (1972).