

A NOTE ON VEGETATION POTENTIAL OF DARRA ADAM KHEL HILLS, KOHAT PASS

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Abstract

Vegetation plays an important role in Darra Adam Khel. It was degraded severely through exploitation in the past. Vegetation was analyzed and communities identified. Vegetation rehabilitation through social forestry, involvement of schools and religious institutions is necessary for the multiplication of economic and ecological benefits.

Introduction

Darra Adam Khel is a tribal territory near Kohat district. The entire tract is hilly, much broken into spurs, ravines and valleys. Valleys are sometimes cultivated but more often remain bare. However, bulk of the strata consists of nummulitic limestones, hard rocks of gypsum series and sandstones.

The climate of the tract is subtropical with capricious rainfall and monsoon rains usually do not occur. The winter is very cold and mean minimum temperature falls down to 2°C in December and January. In December, 1996, almost 0.5 meters snow fell on the adjoining mountainous ranges of Kotal and Tor Chappar was observed. The hot season is oppressive and temperature rise up to 43°C in June and July. The spring and autumn months are pleasant. Livestock and agriculture is the mainstay of the inhabitants, however, some are skillfull in weaponry industry.

Once the area was rich in vegetation and was considered as the tract of Olive (*Olea ferruginea*) and Phulai (*Acacia modesta*). However, Gurgura (*Monothea buxifolia*) and Sanatha (*Dodonaea viscosa*) were very common. Ber (*Zizyphus mauritiana*) trees were generally found near the hamlets, in cultivated

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areas, mulberry was also common (Anon, 1961). The vegetation of the area was depleted gradually due to ever increasing human and livestock pressure. No detailed research work has been carried out so far. However, a preliminary report on the vegetation of the area has been written (Khan et al., 1992). The objectives of the present study are to survey the vegetation and to find out plant communities for better improvement of environment and suggestions for the establishment of wildlife park or game reserve in the area for the conservation and protection of wildlife.

Material and methods

Vegetation survey was carried out in 1996 by Quadrat method systematically. The size of the quadrat was 200 m² in the homogenous stands of comparatively undisturbed sites. A total of 25 quadrats were laid during spring season and a total of 5000 m² area was surveyed. The data on plant coverage and abundance percentage, presence, frequency, constancy etc were recorded and ecological notes on direction, elevation, aspect, slope percentage, mother rock etc. were taken at each spot. Plants were identified and incorporated in the PFI, herbarium. The data thus collected were analyzed according to Braun-Blanquet method (1965) and nomenclature followed of Stewart (1972). Importance value were calculated according to Curtis, 1959; Relative Frequency + Relative Density and Relative Cover.

Result and Discussion

Near nullahs and in the flat area, inhabitants cultivated agriculture crops and some keep livestock. The major natural tree species of the area were *Olea ferruginea*, *Acacia modesta*, *Reptonia buxifolia*, *Morus alba* and *Zizyphus mauritiana*. Whereas, Eucalyptus, Poplars, Guava, Bakain and Heaven tree were planted along cultivated fields under agro-forestry system. The vegetation of the area were the same as of subtropical scrub forests (Champion et al 1965).

Vegetation of the disturbed area (Table 1) were mostly herbaceous and almost of unpalatable species. More prominent species of the area were *Rhazya stricta* and *Withania coagulans* with scattered plants of *Dodonaea viscosa*, *Adhatoda vasica* and *Zizyphus nummularia*. The area was mostly grazed by livestock. Scientific management like rotation grazing may be adopted for better growth of palatable species. Though the area has been much degraded, yet there

is great potential for the improvement of vegetation in the valley. *Beorhaavia diffusa* (4.90), *Asparagus gracilis* (3.80) and *Taraxacum officinale* (3.12) are rare species in the area.

Vegetation of the undisturbed area (Table 2) comprised mainly of trees, shrubs and grasses indicate that there is great potential for vegetation improvement. The trees and shrub species provide shade and shelter to the wild animals. *Solanum xanthocarpum* (5.40) and *Chrysopogon acheri* (3.36) are the rare species.

The comparison of both sites, (disturbed and undisturbed) indicates that the area need special attention for further enhancement of many species. Since the area is rainfed, therefore, better vegetation management will improve ground water recharge and reduce surface runoff. It can be improved with collaborative efforts of local communities, forest Department and civil Administration.

Table 1. Summary of vegetation Analysis of disturbed stand

S.No	Species	Relative Density (RD)	Relative Frequency (RF)	Relative Coverage (RC)	Importance value (IV = RF + RD + RC)
1.	<i>Rhazya stricta</i>	40.00	30.00	25.80	95.80
2.	<i>Withania coagulans</i>	28.00	32.40	22.00	82.40
3.	<i>Fagonia cretica</i>	35.00	12.26	23.00	70.26
4.	<i>Solanum xanthocarpum</i>	17.00	11.06	27.00	55.06
5.	<i>Cynodon dactylon</i>	11.16	19.16	13.00	43.32
6.	<i>Otostegia limbata</i>	6.00	15.00	10.00	21.00
7.	<i>Medicago denticulata</i>	8.00	7.35	13.00	28.35
8.	<i>Achyranthus aspera</i>	4.00	12.40	8.00	24.40
9.	<i>Medicago minima</i>	5.00	6.00	11.40	22.40
10.	<i>Zizyphus nummularia</i>	4.00	8.35	8.35	20.70
11.	<i>Digitaria bipinnata</i>	4.00	3.30	8.00	15.30
12.	<i>Chenopodium album</i>	2.05	8.06	1.34	11.45
13.	<i>Amaranthus sp.</i>	2.05	2.05	6.00	10.10
14.	<i>Beorhaavia diffusa</i>	1.20	0.80	2.90	4.90
15.	<i>Asparagus gracilis</i>	0.86	1.24	1.70	3.80
16.	<i>Taraxacum officinale</i>	0.08	2.43	0.61	3.12

Table 2. Summary of vegetation analysis of undisturbed stand

S.No	Species	Relative Density (RD)	Relative Frequency (RF)	Relative Coverage (RC)	Importance Value (IV = RD + RF + RC)
1.	<i>Adhatoda vasica</i>	20.05	30.50	35.01	85.56
2.	<i>Dodonaea viscosa</i>	37.00	20.00	21.20	78.20
3.	<i>Qlea ferruginea</i>	28.00	13.31	22.00	63.31
4.	<i>Acacia modesta</i>	18.00	8.68	29.00	55.68
5.	<i>Cenchrus ciliaris</i>	17.00	12.55	18.17	47.72
6.	<i>Monothea buxifolia</i>	22.00	16.00	4.00	42.00
7.	<i>Zizyphus mauritiana</i>	12.35	8.40	18.00	38.25
8.	<i>Zizyphus nummularia</i>	3.00	12.00	15.00	30.00
9.	<i>Withania coagulans</i>	9.30	12.44	6.00	27.84
10.	<i>Tribulus terrestris</i>	2.11	5.10	13.00	20.21
11.	<i>Fagonia cretica</i>	5.00	6.00	4.63	15.63
12.	<i>Trigonella sp.</i>	3.67	6.04	0.91	11.92
13.	<i>Mecicago minima</i>	1.95	4.36	1.34	7.81
14.	<i>Solanum xanthocarpum</i>	0.14	4.00	1.20	5.40
15.	<i>Chrysopogon acheri</i>	0.14	2.04	1.18	3.36
16.	<i>Rhazya stricta</i>	0.02	0.14	2.65	2.81

Conclusion and Recommendations

It is concluded that the area has great vegetation potential, if managed properly on scientific lines by involving local inhabitants. In flat area near water facilities, fruit orchard (Guava) may be established as it is a fast growing fruit species and pays quick return to the growers. The top highest community may be declared as Wildlife Sanctuary/Game reserve for the conservation of wildlife.

Forest Department may launch planting campaign twice a year by involving local community and schools of the area. Religious leaders may also be involved in motivating the community for making the campaign more successful.

Eucalyptus camaldulensis, *Acacia nilotica*, *Parkinsonia aculeata* and *Leucaena leucocēpha* plants may be planted along the road side.

Check dams for soil erosion control may be constructed.

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