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GRT PHYTOSOCIOLOGICAL STUDIES ON PLANT DIVERSITY OF KALSUBAI REGION WITH RESPECT TO ENVIRONMENTAL CONSERVATION

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Abstract:-The present project was undertaken to study the phytosociological analysis of vegetation from Kalsubai region of Akole taluka. The study deals with the characteristic, classification, relationship and distribution of plant communities with the view of environmental conservation. The important ecological aspects covered under the study are, frequency index, frequency class, relative frequency, density, abundance, relative density, relative dominance and important value index (IVI).

Keywords: Environmental Conservation , Phytosociological , Plant diversity , important value index (IVI).

INTRODUCTION

The north and northwest region of Ahmednagar comes under Sahyadri hill belt and receives heavy rainfall. The North West side of district receives heavy rainfall. The study area has been declared as part of 'Kalsubai-Harishchandragad Wild-life Sanctuary. Though the area is declared as wild-life Sanctuary, it is not explored, for its ecological and environmental aspects. Recently there is high human interference in the area. Biotic pressure is chiefly due to, cutting of trees, grazing of animals and fires. The local people depends on forest for grazing, fuel, wood, timber and non timber forest products. Now a day, large number of tourist has started to visit the area.

OBJECTIVES:

- a. To collect the comprehensive data on distribution status of the plants.
- b. The study will include occurrence, distribution, ecological association, natural regeneration and utility.
- c. Status of ecosystem, to suggest plant species and site, for conservation.
- d. Note the species diversity and study the comprehensive phytosociology.
- e. To assess the environmental impact on species diversity.
- f. To preserve certain plant species in their natural habitat.
- g. To take field trials for conservation of habitat at different localities.
- h. To provide a Platform form for researchers, working in areas of environment and biodiversity conservation.
- i. To suggest the measures, regarding conservation of biodiversit

MATERIALS AND METHODS:

For the present investigations, several visits were made in the study area. Generally visit tours were arranged in different seasons. The topographic maps were obtained from the concern departments. Accordingly the study area was demarcated. Previous records of Wild life sanctuary were referred. Available literature and the standard floras; books were also referred for the identification. Ecological and vegetational aspects were studied. Plants were listed. Herbarium in the form of photographs of some important plants were made and preserved in department of Botany, N. M. Deshmukh College, Rajur..

OBERVATIONS AND DISCUSSION

Months 2011	Kalsubai region
January	---
February	----
March	----
April	5.2
May	18.2
June	459.8
July	1422.45
August	938.85
September	333.25
October	77.8
November	30.1
December	3.5
Total	3289.15

Table No.1: Monthly average rain fall in mm, at study sites.

Floristically this region shows sparse vegetation as compare to other regions The average elevation of this region ranges from 1200m to 1646m. Kalsubai Hill is the highest peak of western Ghats in Maharashtra. The slope of this area is moderate to steep Some villages are situated around it .

Botanical Name	% Freq.	Freq. Class	Rel. Freq.	Abundance	Density	Relative Density	Dominance	Relative Dominance	IVI
<i>Madhuca longifolia</i>	70	D	4.19	1.14	0.8	5.97	0.5	25.43	35.59
<i>Mangifera indica</i>	90	E	5.39	1.22	1.1	8.21	0.26	13.56	27.16
<i>Syzygium cumini</i>	70	D	4.19	1.43	1	7.46	0.14	7.17	18.82
<i>Terminalia bellirica</i>	70	D	4.19	1	0.7	5.22	0.14	7.4	16.82
<i>Terminalia chebula</i>	60	C	3.59	1.17	0.7	5.22	0.13	6.7	15.51

Phytosociological Studies On Plant Diversity Of Kalsubai Region With Respect To Environmental Conservation

<i>Bombax ceiba</i>	60	C	3.59	1	0.6	4.48	0.13	6.7	14.77
<i>Tectona grandis</i>	50	C	2.99	1.2	0.6	4.48	0.13	6.17	14.77
<i>Ficus racemosa</i>	60	C	3.59	1	0.6	4.48	0.12	6.03	14.1
<i>Bridelia retusa</i>	60	C	3.59	1	0.6	4.48	0.07	3.45	11.52
<i>Carissa congesta</i>	80	D	4.79	1	0.8	5.97	0	0	10.76
<i>Atalantia racemosa</i>	60	C	3.59	1.17	0.7	5.22	0.02	1.02	9.84
<i>Flacourtia indica</i>	70	D	4.19	1	0.7	5.22	0	0	9.42
<i>Annona squamosa</i>	40	B	2.4	2.25	0.9	6.72	0	0	9.11
<i>Erythrina stricta</i>	50	C	2.99	1	0.5	3.73	0.05	2.33	9.05

<i>Lagerstroemia parviflora</i>	50	C	2.99	1	0.5	3.73	0.05	2.33	9.05
<i>Capparis spinosa</i>	60	C	3.59	1.17	0.7	5.22	0	0	8.82
<i>Careya arborea</i>	20	A	1.2	1	0.2	1.49	0.11	5.71	8.4
<i>Butea monosperma</i>	40	B	2.4	1	0.4	2.99	0.04	2.23	7.61
<i>Terminalia crenulata</i>	50	C	2.99	1	0.5	3.73	0.02	0.86	7.59
<i>Grewia tiliifolia</i>	50	C	2.99	1	0.5	3.73	0.01	0.44	7.17
<i>Clematis wightiana</i>	50	C	2.99	1	0.5	3.73	0	0	6.73
<i>Macaranga peltata</i>	50	C	2.99	1	0.5	3.73	0	0	6.73
<i>Ziziphus rugosa</i>	50	C	2.99	1	0.5	3.73	0	0	6.73
<i>Memecylon umbelatum</i>	40	B	2.4	1.25	0.5	3.73	0	0	6.13
<i>Cordia dichotoma</i>	40	B	2.4	1	0.4	2.99	0.01	0.74	6.12
<i>Cassine glauca</i>	40	B	2.4	1	0.4	2.99	0	0	5.38
<i>Woodfordia fruticosa</i>	40	B	2.4	1	0.4	2.99	0	0	5.38
<i>Phyllanthus emblica</i>	50	C	2.99	0.6	0.3	2.24	0	0	5.23
<i>Olea dioica</i>	30	B	1.8	1	0.3	2.24	0	0.22	4.25

<i>Capparis rotundifolia</i>	30	B	1.8	1	0.3	2.24	0	0	4.04
<i>Mallotus philippensis</i>	30	B	1.8	1	0.3	2.24	0	0	4.04
<i>Leea indica</i>	30	B	1.4	1	0.3	1.67	0	0	3.06
<i>Bauhinia racemosa</i>	20	A	1.2	1	0.2	1.49	0.02	0.99	3.68
<i>Canthium dicoccum</i>	20	A	1.2	1	0.2	1.49	0	0	2.69
<i>Ixora brachiata</i>	20	A	1.2	1	0.2	1.49	0	0	2.69
<i>Cyclea peltata</i>	20	A	0.93	1	0.2	1.11	0	0	2.04
<i>Pterocarpus marsupium</i>	20	A	0.93	1	0.2	1.11	0.02	0.46	2.51
<i>Sapindus laurifolius</i>	20	A	0.93	1	0.2	1.11	0.02	0.53	2.57
<i>Sterculia roxburghii</i>	20	A	0.93	1	0.2	1.11	0.12	3.42	5.46
<i>Tectona grandis</i>	20	A	0.93	1	0.2	1.11	0.01	0.29	2.33

Table: 2. Phytosociological analysis of vegetation at Kalsubai region

Diversity: In the study area, vegetation is considerably disturbed by the human activities, such as cutting of wood, electrification, grazing animals, and construction of dams. There is no significant species variation between the three regions. As per phytosociological analysis, it can be noted that overall species number rank order is Kalsubai region < Ratangad region < Harishchandragad region.

Region	Species richness	Shannon Index
Kalsubai	34	3.1427

Table No. 3. Shannon diversity index.

Shifting cultivation: Most of the natural vegetation was found disturbed due to shifting cultivation. Local tribal people have cut the forest areas, periodically, and brought them under cultivation. This practice is a shifting cultivation. Government policy is also responsible for this activity. It is regularly done without permission of the forest department. Most of the tribal communities depend upon forest resources to full fill their needs. Products like Honey, Gum, Fruits, Rhizomes, Tubers and Medicinal plants are obtained form the forest. Shifting cultivation is one of the causes for deforestation. Due to this, natural ecosystem was disturbed and moving towards the instability. It is not harmony with the nature. It is also responsible for soil degradation.

Sacred grooves: Sacred grooves are traditionally protected natural pockets, locally known as 'Deorai'. The local communities conserve the pockets as cultural and religious traditions (Gadgil and Vertak, 1976). Sacred grooves exhibit rich biodiversity and climax vegetation. It also helps in water and soil conservation and provides good manures. Visits were arranged, in sacred grooves from the study area mainly, Kalsubai (Bari), Maruti-ban (Udadawane), Kaloba-ban (Ratanwadi), Maruti-ban (Koltemba) and Raghoba-ban (Pachnai). These sacred grooves represent the natural status of vegetation. They comprise huge number of rare, endemic and medicinal plant species. It is noted that, trees and shrubs are common and carefully protected. The climbers, herbs, epiphytic plants and orchids were also noted.

SUMMARY AND CONCLUSION :

Recently there is high interference in kalsubai area. Biotic pressure is chiefly due to cutting of trees, grazing animals and fires. The local people are dependent on forest for their grazing animals, fuel wood, timber and non timber forest products. Tourists have started to visit this area. It is also one of the important causes, to disturb the natural environment. Hence, it is important to balance the environment and conservation of diversity. Keeping this view in mind the research studies has been undertaken.

It is observed that vegetation is very important from botanical point of view. Attention has been paid to economically important plant species and conservation of vegetation. In general, climate in the study area was found dry and hot. The area receives high rain fall (4182 mm); In the Kalsubai region, biotic interference and developmental activity have affected the vegetation. Biotic pressure is mainly due to grazing of animals, cutting of trees, shifting cultivation and Tourism. Due to this, there is severe damage to the ecosystem. It affects the environment. Hence it is essential to conserve the plants and balance the ecosystem. It is observed that, shifting cultivation causes the deforestation.. It is also responsible for soil degradation. 'Deorai' helps in water and soil conservation. Measures should be taken immediately, to conserve the sacred grooves.

Following components should be included for eco-restoration:

1. Hill slope cultivation be done.
2. Incentives are given to local population.
3. Strictly control the pollution.
4. Roads in the forested areas are avoided.
5. Responsibilities should be given to local people of vegetation protection.
6. Soil conservation measures are raised.
7. Useful indigenous species were widely planted.

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