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Floristic Diversity or Floristic Compositionat Panhala Fort and Masai Plateau, Kolhapur, Maharashtra

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Abstract:

The objective of this study was to To study the floristic composition at different strata (at hill foot, slope and topplateau) at selected site in Panhala and To study seasonal variation in floristic composition at each strata in Panhala fort and Masai Plateau . A total of 95 species belonging to 35 families were identified in the study area. The maximum average density of (plants/m²) was recorded of Cyodondactylonpers.at all Two sides, fallowed by,Seneciobombayensis TrifoliumrepensL. etc. Highest frequency was achieved by Cynodondactylonpers. fallowed by by, Trifoliumspp. Poaspp.etc. Abundance to frequency ratio of most of species was between greater than 0.05 indicating Contagious distribution. was)Simpsons index of Dominance was found higher at altitude and decreases towards lower altitudes. Maximum similarity index was found between Panhala and Masaiplatue.

Keywords: Floristic Composition ,Panhala Fort , Masai Plateau , Simposons Index , Shenon Index

Introduction :

The Western Ghats block southwest monsoon winds from reaching the Deccan Plateau. The average elevation is around 1,200 m (3,900 ft) and has over 7,402 species of flowering plants, 1,814 species of non-flowering plants. It is likely that many undiscovered species live in the Western Ghats. At least 325 globally threatened species occur in the Western Ghats. Panhala tehsil is located on corridors of Western Ghats connecting Konkan and Deccan plateau. Panhala fort was former capital of Kolhapur presidency. It is popular as hill station and tourist point. Masai plateau is isolated concurrent plateau. The presence of several plant species and genotypes within the same tropical level appear to play a significant role in the ecosystem services. So scientists usually defined biodiversity in terms of genes, species and ecosystems and of plant and animal life within species(genetic diversity), among species (species diversity) and among ecosystems

(ecosystem diversity), corresponding to three fundamental and hierarchically kind of biodiversity i.e. genetic diversity, species diversity or taxonomic diversity and ecosystem diversity (Heywood and Watson, 1995). Harrison (2004) distinguishes seven levels of biodiversity: genetic diversity, species diversity, ecosystem diversity, community diversity, landscape diversity, population diversity and organism diversity However, none of the floristic works mention or comment upon the flora specific to particular habitat and seasonal changes there in. Many ecological and biodiversity investigations undertaken during the last three

decades focusing on aspects such as biodiversity, forest ecology, medicinal plants and coastal ecosystems, remote sensing and GIS applications. However detail studies on diversity

distribution and seasonal variation in local flora are lacking.

There is very less information available on composition of plant communities on selected area is i,e, Panhala fort and Masai plateau . These surveys are important tools for ecologists to evaluate & assess the vegetation types of given ecosystem. The quantitative information about each individual species is essential to understand their ecology.

Materials and Methods:

Site Location: The present investigation entitled "**Floristic diversity or floristic composition at Panhala fort and Masai plateau ,Kolhapur, Maharashtra.**" was conducted in Panhala fort and MasaiPlautea , Kolhapur district in Maharashtra India during 2010-20. TheLatitude of Panhala is 16°48'38.47"N and a Longitude of Panhala is 74°7'5.24"E. Latitude of Masai plateau is 16°50'2.26"N and a Longitude of Masai plateau is 74°04'50.32"E.. The area is rich in terms of floral diversity and possesses some unique kind of flora due to sloping terrain.. Kolhapur's climate is a blend of coastal and inland elements common to Maharashtra. The temperature ranges between 10 to 35 °C (50 to 95 °F). Summer in Kolhapur is comparatively cooler, but much more humid, than neighbouring inland cities. Maximum temperatures rarely exceed 35 °C (95 °F) and typically range between 33 and 35 °C (91 and 95 °F). Lows during this season are around 24 to 26 °C (75 to 79 °F).. The normal annual rainfall by the district is **1239 mm**. It varies from about 500 to 6000 mm across the district. The evergreen vegetation of forest mainly consists of Family Myrtaceae ,Anacardiaceae, Astaraceaeect (Flora of Kolhapur)

Floristic composition of lower and subalpine meadows/ and other phytosociological characteristics of the vegetation were studied through field surveys at three altitudinal sites along altitudinal gradient. The vegetation analysis was carried out by Multistage sampling design. Quadrats of 1m×1m and was laid at all the sites.

Layout of Sampling Plot:

The present study on floristic composition was carried out in the sample plots/transects laid out in of different compartments of Pahnala fort and Masai Platue along altitudinal gradient. The blank pasture/meadow areas of the selected area were divided into three altitudes and each altitude was divided into three sites.. In all the 21 visites sampling plots is 63 was laid on all the three sites/altitudes.(Selection of sites of hill foot, slope and top plateau for study of floristic composition.)

Number of Quadrats per site	18
Size of Quadrat	1m× 1m
No of Quadrats per altitude	3
Total no. of Quadrats	63

Floristic Composition:

Species presence or absence was recorded for each sampling season at selected sites (Curtis and McIntosh, 1950) [8].

a) Simpson (1949) Index of Dominance:

Simpson index of dominance gives probability that individuals, selected at random belonged to the same species. It is to calculated by Simpson's index,

$$D = \Sigma (pi)2.$$

Where,

D = Simpson index of dominance, *p*i = the proportion ni and N i.e, *p*i = *n*i/N, *n*i = Total number of individuals of one species, N = Total number of individuals of all species.

As D increases, diversity decreases and Simpson's index will therefore usually be expressed as 1–D or 1/D.

Simpson's Diversity (reciprocal) Index:

Species Name	Replica I					Replica II					Replica III				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
1) Leucasstelligera	14	16	0	2	0	0	1	1	0	0	0	0	0	0	0
2)Seneciobombayensis	54	36	11	27	1	0	0	0	0	2	0	1	0	0	0
3)Lichen Crustose	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4)Cyanotisfasciculata	560	51	164	50	0	0	0	3	216	178	0	0	0	0	0
5)Nostoc balls	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
6)Grasses	20	25	10	10	20	45	25	56	32	23	12	45	26	23	52
7)Murdania	2	0	0	38	0	0	0	0	10	0	0	25	0	2	0
8)Smithiahiruasta	156	0	0	0	0	35	36	29	0	0	26	26	50	32	30
9)Rungiarepens	3	224	163	124	2	49	2	7	0	11	2	10	3	11	19
10)Exacumlawii	0	8	0	0	2	0	0	0	0	0	0	1	0	1	3
11)Oldenlandiacorymbosa	1	5	0	8	1	1	2	4	5	6	0	0	0	0	0
12)Blumealanceolaria	0	0	0	0	0	29	0	0	2	0	0	4	2	0	0
13)Indigoferadalzelii	10	15	0	2	12	10	2	42	3	20	20	12	15	23	14
14)Linummysurense	12	2	13	7	25	0	2	1	5	2	2	5	0	5	0
15)Eragrostisunioloides	10	25	19	46	1	56	14	23	8	5	12	100	2	4	4
16)Cyprus rotundas	12	42	52	10	10	45	12	10	2	2	10	23	5	4	1

Species Name		n/N	Log Pi		
	ni	Pi	lnpi	pi*lnpi	pi2
1) Leucasstelligera	34.00000	0.00872	-4.74186	-0.04136	0.00008
2)Seneciobombayensis	132.00000	0.03386	-3.38542	-0.11464	0.00115
3)Lichen Crustose	8.00000	0.00205	-6.18878	-0.01270	0.00000
4)Cyanotisfasciculata	1222.00000	0.31349	-1.15997	-0.36365	0.09828
5)Nostoc balls	16.00000	0.00410	-5.49563	-0.02256	0.00002
6)Grasses	424.00000	0.10877	-2.21849	-0.24131	0.01183
7)Murdania	77.00000	0.01975	-3.92441	-0.07752	0.00039
8)Smithiahiruasta	420.00000	0.10775	-2.22796	-0.24006	0.01161
9)Rungiarepens	630.00000	0.16162	-1.82250	-0.29455	0.02612
10)Exacumlawii	15.00000	0.00385	-5.56017	-0.02140	0.00001
11)Oldenlandiacorymbosa	33.00000	0.00847	-4.77171	-0.04040	0.00007
12)Blumealanceolaria	37.00000	0.00949	-4.65730	-0.04421	0.00009
13)Indigoferadalzelii	200.00000	0.05131	-2.96990	-0.15238	0.00263
14)Linummysurense	81.00000	0.02078	-3.87377	-0.08050	0.00043
15)Eragrostisunioloides	329.00000	0.08440	-2.47216	-0.20866	0.00712
16)Cyprus rotundas	240.00000	0.06157	-2.78758	-0.17163	0.00379
	3898	1	-58.2576	-2.12752	0.1636309

D=N(n-1)/ E(n(n-1))

1/D = 6.111315165

Results and Discussion:

Table 1-4 shows the phytosociological characters, Simpsons Index of Dominance Panhala fort and MasaiplatueaeVegetation composition is a measure of species diversity in

community. Consequently, it helps in identifying systematic types. Although it is a long term process to give conclusive information of vegetation composition in an area as it is expected to change with season. Effects of biotic as well as abiotic variables in a community and their interactions influence the vegetations (Whittaker, 1970). A total of 95species belonging to 35 families were identified in the study area.

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