Phytosociological Studies of Some Medicinal Trees from Dongargan Sacred Grove from Ahmednagar district, Maharashtra, India

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ABSTRACT:

During the Phytosociological study of Dongargan sacred grove of Ahmednagar district of Maharashtra 20 tree species used for medicinal purpose by the local people are considered. Local people utilize these plants for treating various diseases/ailments. For the purpose of study Quadrate method is used. Quadrates of 100m X 100m size were randomly laid to study the trees species. Analytical characters such as frequency, density and abundance are calculated with the help of standard formulae.

KEYWORDS: Sacred grove, Medicinal Plants, Quadrates, Analytical characters.

INTRODUCTION:

A Sacred grove is a terrestrial segment containing dense flora having local biodiversity, protected by local people or ethnic people in admiration of the deity exist in that grove, this grove is locally called as Deorai. Sacred groves are not only substantial sites for regional biodiversity but also deliver fundamental natural resources to local people. Some local people having ethnic knowledge about the vegetation, which are used as remedy in treating different diseases were referred. The information about dispersal, habitat, demographic features and value of these plant species are transmitted from one generation to other generation (Gadgil*et.al*: 1993). Sacred groves preserve useful plant species which are threatened and endemic due to over exploitation and rapid urbanization. For maintaining the biodiversity, ecological study of sacred grove is necessary. The statistical data gives focuson species, which are dominant in communities to know their dominance certain analytical characters such as Frequency, Density and Abundance of species in a community are expressed in quantity by using quadrate method.

MATERIAL AND METHOD:

The current study was carried out in the Dongargan sacred grove for knowing the ecological status of plant species. Quadrate method is used for determination of data. The total area of the sacred grove is 37 acres. Apart from this sacred forest region dense area of forest used for study. This area was divided into 5 quadrates randomly, 100m x 100m size of single quadrate taken for tree species. The data was collected during rainy season. No. of individual species in each quadrate are recorded and percentage frequency, density and dominance were determined as per Curtis and McIntosh, (1950).The plants are identified with the help of Flora of Ahmednagar district (Pradhan & Singh, 1999). Counted the number of individuals of each species occur in the

quadrate. The frequency of individual species calculated. Abundance of any species is expressed as a percentage of the total number of species present in community and therefore it is a relative measure. In sampling the abundance of species, individual species are counted instead of just noting their presence or absence was done while stthe frequency of a species.

 Formulas used for calculating Frequency, Density and Abundance

Frequency (%) = Number of quadrates in which the species occurred X 100

Total number of quadrates studied.

Density = Total number of individuals of a species in all quadrates

Total number of quadrates studied.

Abundance = Total number of individuals of a species in all quadrates

Total number of quadrates in which the species occurred

Table 1: Observations.

Sr. no.	Botanical name of plant species	Individual in a quadrate					Total no of individuals in a quadrate	Total no of quadrate s which species occurred	Density /Unit area	Abundance	Frequency%	Frequency Class
1	*Albizia lebbeck* (L.) Bth.	-	-	-	-	1	01	01	0.2	1.0	20	A
2	*Acacia chundra* (Roxb. ex Rottle.) Willd.	-	2	-	-	1	03	02	0.6	1.5	40	B
3	*Acacia nilotica* (L) Willd.	4	7	3	5	3	22	05	4.4	4.4	100	E
4	*Aegle marmelos* (L.) Corr	2	-	-	1	2	05	03	1.0	1.6	60	C
5	*Azadirachta indica* A. Juss.	3	2	-	2	3	10	04	2.0	2.5	80	D
6	*Bauhinia variegata* L.	3	-	4	2	-	09	03	1.8	3.0	60	C
7	*Cassia auriculata* L.	5	3	3	4	-	15	04	3.0	3.7	80	D
8	*Catunaregam spinosa* (Thunb) Tirveng	1	-	-	1	-	02	02	0.4	1.0	40	B
9	*Citrus limon* (L)	-	-	1	-	-	01	01	0.2	1.0	20	A
10	*Gmelina arborea* Roxb.	2	-	-	-	1	03	02	0.6	1.5	40	B

11	*Helicteres isora* L.	2	-	-	1	-	03	02	0.6	1.5	40	B
12	*Lawsonia inermis* L.	-	1	-	-	-	01	01	0.2	1.0	20	A
13	*Melia azadirach* L.	2	-	-	3	1	06	03	1.2	2.0	60	C
14	*Pongamia pinnata* (L) Pierre	-	2	3	-	4	09	03	1.8	3.0	60	C
15	*Syzgium cumini* (L) Skeels	-	-	2	1	1	04	03	0.8	1.3	60	C
16	*Tamarindus indica* L.	3	2	-	2	3	10	04	2.0	2.5	80	D
17	*Tephrosia purpurea* (L.) Pers.	2	3	-	-	1	06	03	1.2	2.0	60	C
18	*Tectona grandis* L. f.	-	2	-	1	-	03	02	0.6	1.5	40	B
19	*Terminalia bellirica* (Gaertn.) Roxb.	-	3	-	-	2	05	02	1.0	2.5	40	B
20	*Terminalia cuneata* Roth	-	-	-	1	1	02	02	0.4	1.0	40	B

On the basis of percentage values various species are distributed into five classes, according to Raunkiaer (1934).

Table 2: Raunkiaer's percentage values various species.

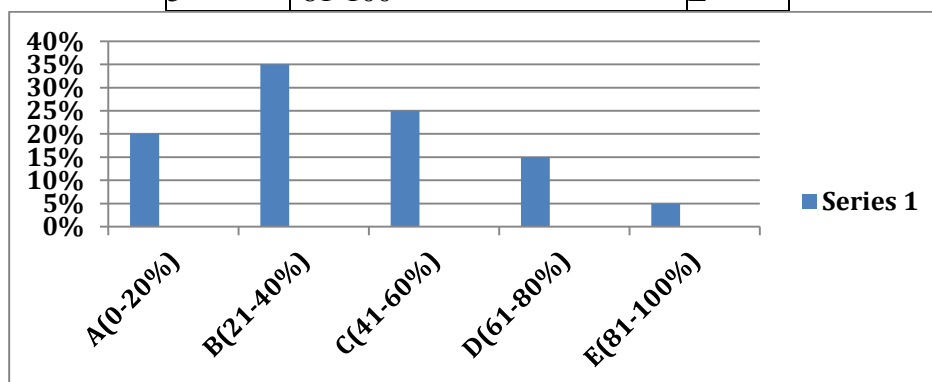| Sr. No.	Frequency of plants (in %)	Class
1	0-20	A
2	21-40	B
3	41-60	C
4	61-80	D
5	81-100	E

Fig 1: Frequency class and Frequency percentage and compare with Raunkiaer's value.

X-axis: Percentage of total number of species.   Y-axis: Frequency Classes.

Table 3: Percentage values various species.

Frequency class	Class Value	Raunkiaers value	Frequency class Vegetation
A	0-20	53	20%
B	21-40	14	35%
C	41-60	09	25%
D	61-80	08	15%
E	81-100	16	5%

CONCLUSION

The Frequency value refer to the values of Raunkiaer's formula A>B>C<D<E. The current study shows the frequently occurring species and dominating species found in this sacred grove. The present ecological study of medicinal plant species shows that the given vegetation frequency does not match with Raunkiaer,s normal frequency hence vegetation found in Dongargan sacred grove is heterogeneous

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