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Importance Value Index (IVI) study of some Satana Forest of Nashik District (MS), India

J. T. Jadhav

Department of Botany, M.S.G.College, Malegaon, Dist. Nashik (MS). India

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ABSTRACT

Frequency (%), density and basal areas data converted into relative frequency, relative density and relative basal area. The sum of all the three gives an Importance Value Index (IVI) of each species. This will gives an overall picture of ecological importance of a species with respect to community structure.

Key words: *Importance ValueIndex, Frequency, Phytosociology, Satana.*

Inrtoduction

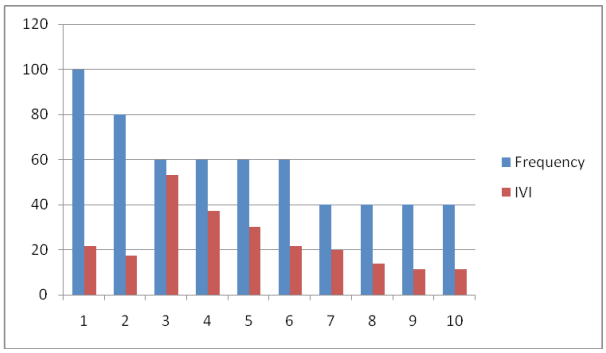
Phytosociology deals with the qualitative study of the structure of the vegetation with an emphasis on quantitative relationship of a few species which are judged to be dominant on the belief that these largely control the community and there by the occurrence of a large number of rare species. As far as the author are aware, there are detailed accounts on the Phytosociology of (I) Chhotaudepur (Shah, Yadav and Parabia, 1979) (II) Panchamahals (Shah and Bhatt, 1980) and (III) Phytosociological studies on Dang forest (Yadav, 1979). (IV) Phytosociological studies on Trymbakeshwer, Vani and Saptashringi forest of Nashik District (Jadhav, 2002, 2004, 2016, 2018, 2019 and (2020). A similar investigation is carried out in this study area with a view to study the communities in different localities and to analyse them.

The data on frequency (%), density and basal area are converted into relative frequency, relative density and relative basal area. The sum of all the three gives an importance value index (IVI) of each species. This will gives an overall picture of ecological importance of a species with respect to community structure.

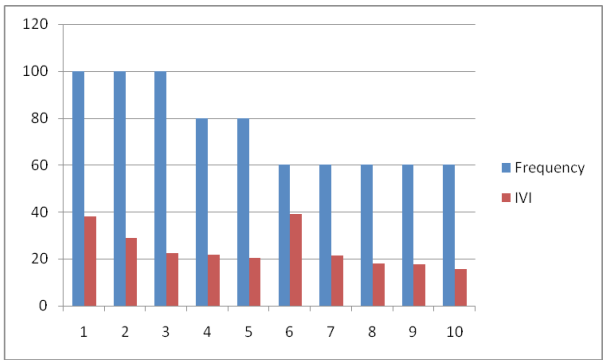
Materials and Methods

Four areas located randomly in the forests of Satana. Quadrats of 10 x 10m were laid down in different directions in each of the places in different forests, so that quadrats represented almost all species in the area. 20 plots were laid for trees and shrubs. Sampling was done for a total area of 2000 Sqm. Frequency (%); density and abundance were calculated by the formulae given by Raunkiaer (1934). The comparison between species of a community, the data collected on dispersion frequency (%) is index for the establishment of species in communities based on frequency (%) of all species,suggested by Pichi –Sermolli (1948), number (density and abundance) and cover (basal cover) can also be profitably used in comparing the vegetation composition of two or more stands, or of same stand over a period of time. The importance value index gives a total picture of sociological structure of a species in a community community but it does not give the dimention or share of relative values of frequency, density and basal cover.

Results



Histogram 1. Showing values of frequency (%) and Importance Value Index (IVI) of 10 dominant species from Stand No -1 of Satana forest area.



Histogram 2. Showing values of frequency (%) and Importance Value Index (IVI) of 10 dominant species from Stand No -2 of Satana forest area.

Discussion & Conclusion

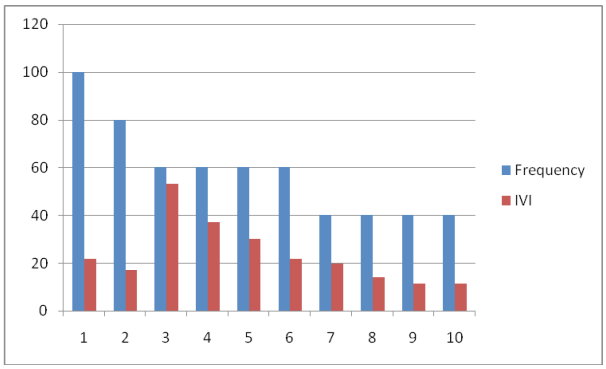
The ecological success of every species can be observed by the highest Importance Value Index (IVI) to the decreasing order.As stated by Braun-Blanquest (1932) a degree of regularity of a species in community is determined by by the presence of a species in a community. The species with highest IVI values are always ecologically best adapted species and with low IVI values, are poorly adapted

Table 1. Showing values of frequency (%) and IVI of 10 dominant species from Stand No- 1, 2, 3 and 4 of Satana forest area.

No	Stand-1		Stand-2		Stand-3		Stand-4	
	F	IVI	F	IVI	F	IVI	F	IVI
1	100	53.27	100	61.71	100	21.69	100	37.91
2	100	21.69	100	22.9	80	17.19	100	28.93
3	80	30.18	80	22.24	60	53.27	100	22.39
4	80	21.75	80	22.19	60	37	80	21.67
5	80	11.5	80	19.07	60	30.18	80	20.23
6	80	11.3	80	18.65	60	21.75	60	39.16
7	80	10.56	80	16.29	40	19.75	60	21.28
8	80	8.23	60	33.93	40	13.89	60	18.13
9	80	7.49	60	22.04	40	11.5	60	17.72
10	60	19.75	60	15.5	40	11.3	60	15.52

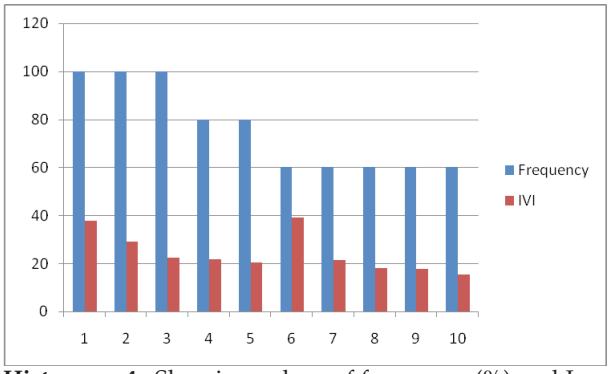
Table 2. Showing 10 dominant species with higher values of frequency (%) in decreasing order each from Stand no-1, 2, 3 and 4 of Satana forest area.

	Stand-1	Stand-2	Stand-3	Stand-4
1	*Tectona grandis*	*Tectona grandis*	*Annona squomosa*	*Tectona grandis*
2	*Annona squomosa*	*Annona squomosa*	*Cassia fistula*	*Bauhinia racemosa*
3	*Bauhinia racemosa*	*Mangifera indica*	*Tectona grandis*	*Annona squomosa*
4	*Syzygium cumini*	*Syzygium cumini*	*Mangifera indica*	*Cassia fistula*
5	*Tamarindus indica*	*Albezia lebbeck*	*Bauhinia racemosa*	*Sesabania grandiflora*
6	*Acacia nilotica*	*Acacia nilotica*	*Syzygium cumini*	*Acacia arebica*
7	*Azadiracta indica*	*Tamarindus indica*	*Caesalpinia pulcherima*	*Syzygium cumini*
8	*Dalbergia sissoo*	*Bauhinia racemosa*	*Acacia arebica*	*Azadiracta indica*
9	*Sesabania grandiflora*	*Acacia arebica*	*Tamarindus indica*	*Caesalpinia pulcherima*
10	*Caesalpinia pulcherima*	*Sesabania grandiflora*	*Acacia nilotica*	*Albezia lebbeck*



Histogram 3. Showing values of frequency (%) and Importance Value Index (IVI) of 10 dominant species from Stand No-3 of Satana forest area.

species. Species with low frequency and IVI are not suitable or unsuited to the environmental conditions and are under process of migration from one place to other. May be under the process of replacement by some one species or due to biotic interference.



Histogram 4. Showing values of frequency (%) and Importance Value Index (IVI) of 10 dominant species from Stand No- 4 of Satana forest area.

Their existence is always threatened.*Tectona grandis* is best adapted species with high value of IVI than *Bauhinia racemosa* in stand no-1and 2 while *Mangifera indica* in stand No-3. Interesting feature is *Acassia arebica* is best adapted species with high value of IVI than *Tectona grandis* in the last stand No-4. A study of 10 dominant species in stand No-1, 2, 3 and 4 of Satana forest is represented by histograms to compare the frequency (%) and their IVI values.

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