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STATUS OF FLORESTIC DIVERSITY OF ROADSIDE VEGETATION OF SELECTED AREA FROM KACHCHH DISTRICT, GUJARAT STATE

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ABSTRACT:

Floral diversity is one of the most important words in the field of conservation of biodiversity. The study of floral diversity helps us to improve enumeration and documentation of the plant wealth, its Potentiality, and its significance in any given area. It also helps us to understand the basic aspects of ecology such as speciation, isolation, endemism, and evolution. Flora of any area is not fixed up and its floristic components change from time to time due to various abiotic and biotic factors. The floristic composition may be changed, the total number of species may be changed invasion of exotic species may be occurred, dominant species may be replaced by other species, etc. thus the floristic study is important for the documentation of the present status of the vegetation of the given area. The present study deals with the documentation of the floral diversity of the selected study site. i.e. road-side vegetation on the Mandvi-Bhuj highway. The study was carried using a random sampling method to enumerate the status of the floral diversity of the selected study site. A total of 56 species of 49 genera belonging to 28 families were recorded. Out of the total 56 species, trees were recorded with 18 species, shrubs were recorded with 9 species while herbs and climbers were recorded with 29 species, respectively. The focus of this study provides the Current status of a floristic wealth of the selected study site.

KEYWORDS: *Floral diversity, Roadsides vegetation, Mandvi, Bhuj, Kachchh.*

INTRODUCTION:

The term 'biodiversity' was coined by Walter G. Rosen in 1985 as a catchy replacement for 'biological diversity' (Sarkar 2002). Biodiversity is defined as "the full range of life in all its forms." This includes the habitats in which life occurs, the ways that species and habitats interact with each other, and the physical environment and the processes necessary for those interactions (Norse et al. 1986; Wilson 1988; Heywood & Baste 1995). At the beginning of the 21st century, as we are losing our biological diversity, and the delicate balance of the ecosystem, the need to initiate conservation plans is greater than ever before. Many of our diverse living forms have already disappeared and several of them are on the verge of being pushed into oblivion.

As with the growing time government of every country wants the best and economic technique should be adopted in each part of the country for the conservation of Biodiversity in their region. Roadside vegetation is an alternative technique for the conservation of biodiversity in Particular areas. Roads are an integral part of daily life for most people in India providing, mobility across our landscape. The structure and composition of roadside vegetation very frequently from grasses to herbs and shrubs to trees and from artificial landscaping to natural plant communities. An avenue is a traditionally straight road with a line of trees or shrubs running along each side which emphasize arrival at a landscape or architectural feature. Due to urbanization more and more land is used for constructing a home, building, etc. due to which land is used for vegetative purposes is shorten. Due to urbanization soil, air, and water pollution is increasing which affects the quality of vegetation. The role of roadsides in acting as reservoirs of biodiversity can be expressed differently for each species, biological group, and community type (Auffret& Cousins 2013). Roadside vegetation helps in controlling noise pollution from vehicles. Healthy roadside vegetation also reduces carbon emission. It also reduces soil erosion, runoff of water and improves water quality and water infiltration. In this way, the roadside vegetation provides good environmental services in many ways. Thus, the documentation of the floristic status of roadside vegetation should be at hand.

STUDY AREA:

Kachchh is a district of Gujarat state in western India covering an area of 45,674 km^2. It is the largest district in India. The present study has conducted between Mandvi- Bhuj highway of Kachchh district of Gujarat. It is located between **22˚50.807**'N **and 069˚ 22.531**'E **to 23˚12.957**'N and **069˚37.506**'E**.** The selected study area i.e. Mandvi-Bhuj highway is approximately 50 km^2 in the distance which is passing through 8 local villages of which Koday, Dahinsara, and Mirzapar are the major villages.

METHODOLOGY:

1. SAMPLING DESIGN FOR ENUMERATION OF PLANT SPECIMEN

For the enumeration of the floral wealth, the random sampling method was carried out. A total of 100 sample plots of equal size of i.e. 20 X 3m were laid down in a zigzag manner (Fig. 1) on both sides of the road. Two sample plots of size 20 X $3m^2$ were laid down in 1000 meters. Two successive sample plots were 960 m apart from each other in each 1000m. In each sample plot of 20 X $3m^2$ size, five sample plots of size of $3m^2$ were laid down for enumeration of shrub species, and each sample plot of size $3m^2$, one sample plot of size $1m^2$ was laid down for the enumeration of herbs and climber species respectively. The detail of the sample plot method is as given in fig.2.

2. METHOD OF FLORESTIC STUDY

Several study trips were arranged during the research period, to obtain floristic data. After the Obtained floristic data, the Identification of plant species was done by compiling different available floras and authenticated by experts. The photographs of plant species were taken during the field trips. The survey of Floristic data was made for a year from November 2019 to April 2020. The plant list categorized according to their systematic positions following Bentham & Hooker's classification system.

After the Obtained floristic data, numbers of genera and species of different families were measured. All the families were arranged in decreasing order (i.e. high to low) based on the number of genera and species to obtain the top ten dominated families of the forest area. The various plant species of the forest area recorded in the sample plots are distributed among the different life-forms. According to Raunkiaer (1934), the plants are categorized in different life-forms as follows:

Phanerophytes (Ph): Plants that grow taller than 50 cm

Chamaephytes (Ch): plants that remain perennially below 50 cm level.

Hemicryptophytes (He): Perennial reduction of the complete shoots system to storage organs that are embedded in the soil.

Geophytes (Ge): Periodic reduction of the complete shoot to storage organs that are embedded in the soil.

Therephytes (Th): Annual plants whose shoot and root system die after seed production.

RESULT AND DISCUSSION:

A biological spectrum of the study site i.e. Mandvi – Bhuj Highway:

Out of 56 plant species recorded in the study site i.e. Mandvi - Bhuj Highway, 25 plant species belonging to phanerophytes, 3 plant species belonging to chamaephytes, 28 plants belonging to therophytes while no plants recorded from hemicryptophytes and geophytes (Table: 1).

The biological spectrum represented in Table: 1 shows the highest percentage of Therophytes i.e. 50% which is followed by phanerophytes 44.64% and chamaephytes 5.36% while hemicryptophytes and geophytes are absent in the selected study site.

1. Structure and composition of vegetation in the study area

The present work is based on a survey and sampling result of Four months of intensive and extensive study of the plants of the selected study area.

Mandvi-Bhuj Highway reveals the richness in species diversity in the Angiosperm group. Total 56 plant species and 49 genera belonging to 28 families have been recorded from the study area, of which 18 species belong to tree, 29 species herb & climbers and 9 species belong to shrub respectively.

2. Floral Diversity

The selected study site shows floral diversity of 56 species belonging to 49 genera and 28 families. The checklist of plant species with their botanical name, local name, family, habitat and life form is represented in the table 3.

Out of 56 species recorded in the study area, dicotyledons contributed by 53 plant species belonging to 46 genera of 26 families, which is higher than that of monocotyledons. Among dicotyledons, polypetalae was represented by 28 species of 24 genera belonging to 13 families, while gemopatalae and monochlamydae were represented by 16 species belongs to 15 genera of 9 families and 9 species and 7 genera belonging to 4 families respectively. Monocotyledons were represented by only 3 species of 3 genera belonging to 2 families.

The ratio of the total number of genera to species was recorded0 1:0.9, which is rather low in comparison to that corresponding ratio for the whole of India (1: 7).

Among families, Mimosaceae (9 species) was the most dominant family, followed by Amaranthaceae (5 species), Asteraceae (4 species), Cucurbitaceae (3 species) and Fabaceae (3 species) while family Acanthaceae(2 species) was the least dominating family amongst the all dominant families.

Among families, 16 families were monogeneric while 14 families were monospecific (Table - 7)

Among 49 genera, *Accasia* (4 species) was the most dominant genera followed by Prosopsis (2 species), Ipomoea (2 species), Aerva, and Ficus (2 species).

The present work is a result of about six months of work on the vegetation of the selected Sites of Mandvi-Bhuj Highway. During the present study, 56 plant species belonging to 49 genera and 28 families are recorded. Out of which 56 plant species, 18 species of trees, 09 species shrub, and 29species of herb sand climbers are recorded respectively. Out of which 56 plant species, Dicotyledones were represented by 53 plant species while monocotyledons were represented by

only 03 species. Among Dicotyledones, polypetalous is represented by 28 species, gemopetalae is represented by 16 species and monochlamidae is represented by 9 species. The proportional ratio of the total number of genera to species recorded was 1:09 which is rather low in comparison to a corresponding ratio for whole India (1:7); Gujarat state (1:2.1) reported by shah (1978).Out of 56 plant species recorded in the study site i.e. Mandvi - Bhuj Highway, 25 plant species belonging to phanerophytes, 3 plant species belonging to chamaephytes, 28 plants belonging to therophytes while no plants recorded from hemicryptophytes and geophytes. Among 49 genera, Acacia (4 species) was the most dominant genera followed by *Prosopsis* (2 species), *Ipomoea*, *Aerva* and *Ficus* (2 species). Among families, Mimosaceae (9 species) was the most dominant family, followed by Amaranthaceae (5 species), Asteraceae (4 species), Fabaceae (3 species), and Cucurbitaceae (3 species).

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Table: 1. Biological spectrum of the study site i.e. Mandvi - Bhuj Highway

Lifeforms	Ph	Ch	He	Ge	Th	Phytoclimate
Normal spectrum of Raunkiaer	46	9	26	6	13	
Total species of the area	25	3	0	0	28	Therophytes
Biological spectrum of the study site	44.64%	5.36%	0	0	50%	

Table: 2. Total number of plant species recorded in Mandvi- Bhuj Highway.

Type of plant species	Total Species recorded	Percentage (%)
Tree	18	32.14
Shrubs	09	16.07
Herbs & Climber	29	51.78
Total	56	100

Table: 3. List of plants recorded in selected study site i.e. Mandvi-Bhuj Highway

Sr. No.	Name of Species	Family	Local Name	Habitat	Life Form
1	*Tamarixdiocia*Roxb.	Tamaricaceae		S	Ph
2	*Capparas decidua* (Forssk.) Edgew	Capparaceae	Kerdo	H	Ch
3	*Abutilon indicum* (L.) Sweet, Hort.	Malvaceae	Khapt	S	Th
4	*Sida tiagii* Bhandari			H	Th
5	*Fagonia cretica* L.	Zygophyllaceae	Dhamasa	H	Th
6	*Balanites aegyptiaca* (L.) Del.	Balanitaceae	Ingorio	T	Ph
7	*Azadirachta indica A. Juss.*	Meliaceae	Limado	T	Ph
8	*Ziziphus nummularia* (Burm. F.) Wight. &Arn	Rhamnaceae	ChaniyaBor	S	Ph
9	*Goniogyna hirta* (Willd.) Ali	Fabaceae		H	Th
10	*Pongamia pinnat* (L.) Pierre		Karanj	T	Ph
11	*Tephrosia purpurea* (L) Pers.		Sarpankh	H	Ch
12	*Delonix regia (*Boj.) Raf	Ceasalpinaceae	Gulmohor	T	Ph
13	*Parkinsonia aculeata*L.		Ram baval	T	Ph
14	*Acacia nilotica (*L.) Del.	Mimosaceae	Baval	T	Ph
15	*Acacia bivenosa*DC.		Nanniavicinia	S	Ph
16	*Acacia Senegal* (L.) Wild		Goradiyo	T	Ph
17	*Acasia catechu* Willd.		Khair	T	Ph
18	*Albizialebbeck* (L.) Bth.		Kalosiris	T	Ph
19	*Lecuaena leucocephala* (Lam.) de Wit		Subaval	T	Ph
20	*Pithecellobium dulce* (Roxb.) Benth.		GorasAmli	T	Ph
21	*Prosopis cineraria* (L.) Druce		Khijado	T	Ph
22	*Prosopis juliflora* (Sw.) DC.		GandoBaval	S	Ph
23	*Terminalia catappa* L.	Combretaceae	Badam	T	Ph
24	*Syzgiumcumini (L) Skeels*	Myrtaceae	Jambu	T	Ph
25	*Citrullus colocynthis* (L) Schrad	Cucurbitaceae	KadvaIndervarna	H	Th
26	*Ctenolepiscerasiformis*		Ankhfutamani	H	Th

Sr. No.	Name of Species	Family	Local Name	Habitat	Life Form
	(Stocks) Hk. f.				
27	*Mukiamaderaspatana* (L.) M. Roem		Chanak-chibhadi	H	Ch
28	*Glinuslotoides*L.	Molluginaceae	Mithookharad	H	Th
29	*Sonchus asper* (L.) Hill.	Asteraceae	Sonsadi	H	Th
30	*Tridaxprocumbens*L.		Pardesibhangro	H	Th
31	*Vernonia cinereal* (L.) Less		Sahadevi	H	Th
32	*Xanthium strumarium* L.		Gaderiyo	H	Th
33	*Nerium indicum* Mill.	Apocynaceae	Karen	S	Ph
34	*Thevetia peruviana* (Pers.) Merrill		Pili	S	Ph
35	*Calotropis gigantea* (L.) R. Br.	Asclepiadaceae	Moto Akdo	S	Ph
36	*Pergulariadaemia* (Forsk.) Chiov		chamaldudheli	H	Th
37	*Helitropiumsubulatum* Hochst.	Boraginaceae	Hathisundhi	H	Th
38	*Ipomoea aquatica*Forsk.	Convolvulaceae	Nada ni vel	H	Th
39	*Ipomeadichroa* (R. & S.) Choisy		Safed panvalifudardi	H	Th
40	*Datura metel*L.	Solanaceae	Gathovalo	S	Th
41	*Solanum xanthocarpum*		Bhoyringani	H	Th
42	*Andrographis paniculate* (Burm.f.) Wall.exNees	Acanthaceae	LiluKariatu	H	Th
43	*Barleriaacanthoides*Vahl			H	Th
44	*Leucas cephalotes*(Roxb. Ex Roth) Spr.	Lamiaceae	Dosi no Kubo	H	Th
45	*Bougainvillea glabra* Choisy	Nyctaginaceae	Boganvel	H	Th
46	*Aervajavanica* (Burm. f.) Juss. ex J.A. Schultes	Amaranthaceae	GorakhGango	H	Th
47	*Aervalanata* (L.) Juss.		KapuriMahuri	H	Th
48	*Alternanthera sessilis (L.) Dc.*			H	Th
49	*Amarnthusspinosus*L.		JangliTandaljo	H	Th
50	*Celosia argentea*L.		Lampdi	H	Th
51	*Euphorbia hirta*L.	Euphorbiaceae		H	Th
52	*Ficus benghalensis*L.	Moraceae	Vad	T	Ph
53	*Ficus religiosa* L.		Pipalo	T	Ph
54	*Cocus nucifera* L.	Areceae	Nariyal	T	Ph
55	*Phoenix sylvestris* (L.) Roxb		Khajuri	T	Ph
56	*Desmostachyabipinnata* (L.) Stapf	Poaceae	Dabhado	H	Th

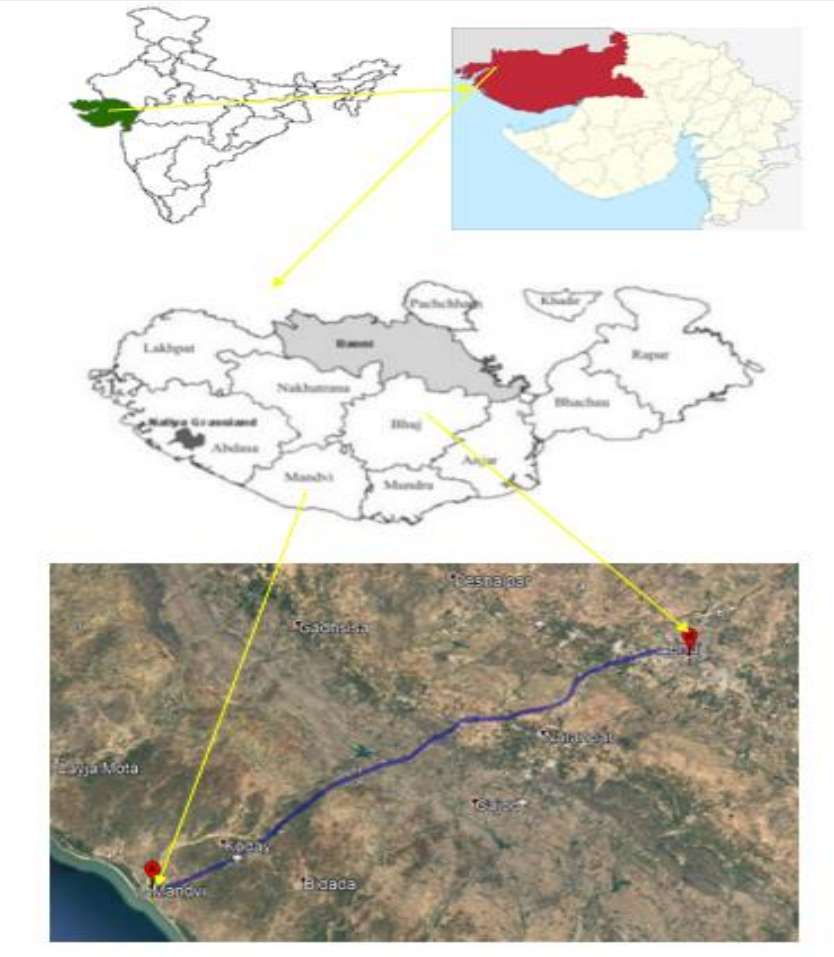

Fig.1: Showing study area

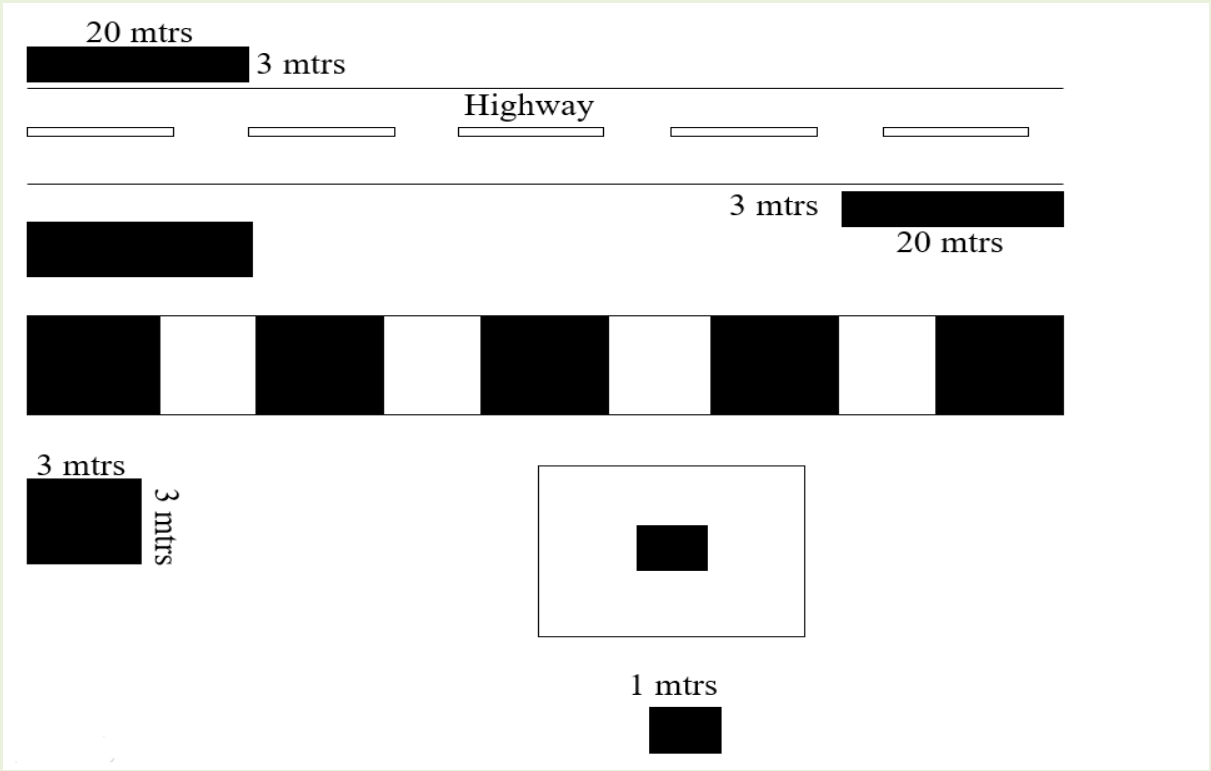

Fig. 2. Sampling Design for enumeration of Plant Specimen