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STUDY OF FLORAL SPECIES DIVERSITY OF DAHOD DISTRICT (GUJARAT) WESTERN INDIA

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ABSTRACT:

The present paper deals with different floral species diversity of Dahod district of Gujarat, western India. Plants were collected from the various villages and forests area including hill and hillocks. This area lie between parallels of latitude 22^0 30' N and 23^0 18'N and meridians of longitudes 73^0 48' E and 74^0 29'E. Total 182 species belonging to 127 genera and 52 families have been enumerated. 60 and 36 genera of trees and herbs were observed while11 genera of climbers. In the enumeration, the collected plants were arranged habit and botanical name wise.

KEY WORD: *Climbers, Grasses, Herbs, Shrubs, Trees, Diversity, Dahod District.*

INTRODUCTION:

'Biological diversity' or biodiversity is that part of nature which includes the differences in genes among the individuals of a species, the variety and richness of all the plant and animal species at different scales in space, locally, in a region, in the country and the world, and various types of ecosystems, both terrestrial and aquatic, within a defined area.

Tropical forests are frequently referred to as one of the most species diverse terrestrial ecosystems, and create a multiplicity of natural resources to help prolong the livelihood of local communities[1]. The tropical dry forests inhabit 38 % of the total forest area in India[2]. The vegetation communities of tropical

dry forests have been documented as the most endangered ecosystems in the tropics[3]. These forests are declining at alarming rates due to deforestation for extraction of timber and other forest produce[4&5].

Plants form the major structural and functional basis of tropical forest ecosystems and can serve as robust indicators of changes and stresses at the landscape scale. Many tropical forests are under great anthropogenic pressure and require management intervention to maintain the overall biodiversity, productivity and sustainability. These forests are rich in medicinal and economically important plants. Over-exploitation has resulted in a rapid loss of tropical forests which is considered as one of the most serious environmental and economic problems all over the world[6].

The exploitation of natural resources by the local populations has resulted in depletion of the biodiversity of forest communities[7]. Exploitation is usually accompanied by species extinction, reduction in biodiversity and decrease in primary productivity. Consequently, there is a growing interest in quantifying habitat characteristics like forest structure, floristic composition and species richness in Indian forests[8&9]. A study on tree species diversity of tropical forests is ecologically significant besides its usefulness in forest management. Understanding species diversity and distribution patterns is important for helping managers evaluate the complexity and resources of these forests. This study investigates species diversity of different species of tropical dry deciduous forest of western India.

MATERIALS AND METHODS:

Tropical dry deciduous type of forest of Dahod district (Dahod district well known as Devgadh Baria of Gujarat, Western India) was studied. The forests of Baria division of Dahod district lie between parallels of latitude 220 30’ N and 230 18’N and meridians of longitudes 730 48’ E and 740 29’E with an annual rainfall of 600 mm to 1200 mm. Most of the land is mountainous with stones. Baria forest division consists of 14 ranges with total forest area of 82792.77 ha. As per revised classifications made by Champion and Seth10, the forests of Dahod fall in subtype C1 Dry Teak forest of type 4^ Southern Tropical Dry Mixed Deciduous Forests.

The objective of the study was to find different species of climbers, grasses, herbs, shrubs and trees. The species were collected from the 14 different forests areas including hill and hillocks of the Dahod district. The collected plants were brought to the laboratory, identified and classified to their respective species level[11-15].

RESULTS:

During present study recorded total 182 species, 127 genera and 52 families were thoroughly observed, in which 88 tree species, 11 shrubs, 51 herbs, 14 climbers and 18 grasses (Table 1). Table 2 shows the dominating top five families with highest number of species. Maximum number of genera and species were found among trees while least number was found among shrubs (Fig 1).

From the above observation, it can be concluded that among trees Mimosaceae is the dominant and leading family, species wise (10) as well as genera (04) wise, followed by Ceasalpiniaceae, Moraceae, Rubiaceae, Ceasalpiniaceae and Papilionaceae. For shrubs and herbs Rubiaceae (genera 2, species 2) and Acanthaceae (genera 8, species 10) were dominant and leading families. Papilionaceae (genera 4, species 4) and Convolvulaceae (genera 2, species 4) were the dominating families among climbers and for grasses (genera 15, species 18) were found during the study.

Out of 52 families, total 20 families were monogeneric and monospecific.

DISCUSSION:

During the present study, 14 different areas of forests of Dahod district were visited thoroughly and frequently to record different wildly growing species. A total of 182 species, 127 genera and 52 families were observed, in which 88 tree species, 11 shrubs, 51 herbs, 14 climbers and 18 grasses. As forests constitute an integral part of the social life of tribal groups and are home to the people who are entirely or partly dependent on forests for their livelihood[16]. Of nearly 170 million people living in and around forests in India, more than half of them are tribal and depend on forest plants, especially trees for medicine, food, fuel, fodder and other non-timber forest products. They have names in their own dialect and identification practices for every species. Plants have indirect and incremental impacts on local economies, food security and health. Due to over exploitation and deforestation, the forest resources are under severe threat and dwindling diversity of forest trees and availability of non-timber forest products have substantially deprived the rural poor of a supplementary source of both income and food.

Deforestation has many ecological, social and economic consequences, one of which is the loss of biological diversity. Although it is widely believed that tropical regions are experiencing losses of biodiversity at unprecedented rates, we lack information about the rate of habitat loss. So it is the prime requirement to have data of the present species diversity of tropical forests.

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Table 1: Enumeration of floral species of Dahod district of Gujarat, Western India

Sr. No.	Botanical Name	Local Name	Family
	Climbers		
1	*Asparagus racemosus* Willd	Shtavari	Liliaceae
2	*Butea parviflora* Roxb	Khakhar vel	Papilionaceae
3	*Cayratia auriculata* (Roxb) Gamble	Khakhatumbo	Vitaceae
4	*Cayratia carnosa* (Lam) Gagnep	Jungli Draksh	Vitaceae
5	*Cucumis callosus* (Rottl) Cogn	Kadvu kothimadu	Cucurbitaceae
6	*Hemidesmus indicus* (L) Schult	Dudh vel	Periplocaceae
7	*Ipomoea eriocarpa* R Br	-	Convolvulaceae
8	*Ipomoea nil* (L) Roth	Nagkarni	Convolvulaceae
9	*Ipomoea pes-tigridis* L	-	Convolvulaceae
10	*Merremia tridentata* (L) Hall f	-	Convolvulaceae
11	*Mucuna prurita* Hk f	Kuvech	Papilionaceae
12	*Rhynchosia minima* (L) DC	Athi-mathi	Papilionaceae
13	*Sarcostemma acidum* (Roxb) Voigt	Chip	Asclepiadaceae
14	*Teramnus labialis* (L f) Spr	-	Papilionaceae
	Grasses		
15	*Apluda mutica* L	Bhoktu, Bhokti	Poaceae
16	*Aristida adscensionis* L	Survali, Suliyu	Poaceae
17	*Bothrichloa pertusa* (L) A Camus	Jinjavo	Poaceae
18	*Brachiaria ramosa* (L) Stapf	Fuladi ghas	Poaceae
19	*Cenchrus biflorus* Auct	Dhaman, Bhantiya	Poaceae
20	*Cenchrus ciliaris* L	Boriyo zaro	Poaceae
21	*Cymbopogon martinii* (Roxb) Wats	Rohdo	Poaceae
22	*Cynodon dactylon* (L) Pers	Dharo/Dharudi	Poaceae
23	*Dactyloctenium aegyptium* (L) P Beauv	Taroliyu	Poaceae
24	*Dactyloctenium sindicum* Boiss	Taroliyu, Mansi	Poaceae
25	*Dendrocalamus strictus* Nees	Vans, Vahdo	Poaceae
26	*Desmostachya bipinnata* (L) Stapf	Dabh	Poaceae
27	*Dichanthium annulatum* (Forsk) Stapf	Jinjvo	Poaceae
28	*Echinochloa colonum* (L) Link	Samo	Poaceae
29	*Eragrostis pillosa* (Thunb) Trin	Fulkaniyu	Poaceae
30	*Eragrostis tenella* (L) P Beauv	Bhoomsi	Poaceae
31	*Heteropogon contortus* (L) P Beauv ex R & S	Kagdo,	Poaceae
32	*Tetrapogon tenellus* (Roxb) Chiov	-	Poaceae
	Herbs		
33	*Achyranthus aspera* var *aspera* L	Adhedi	Amaranthaceae
34	*Amaranthus spinosus* L	Dhemara	Amaranthaceae
35	*Andrographis echioides* (L) Nees	Andhadi, Agari	Acanthaceae
36	*Argemone mexicana* L	Darudi	Papavaraceae
37	*Bidens bippinata* L	-	Asteraceae
38	*Blepharis maderaspatensis* (L) Roth	Pura	Acanthaceae

Sr. No.	Botanical Name	Local Name	Family
39	*Blepharis repens* (Vahl) Roth	Pura	Acanthaceae
40	*Boerhavia verticillata* Poir	Satodi	Nyctaginaceae
41	*Borreria articularis* (L f) F N Will	-	Rubiaceae
42	*Cassia pumila* Lam	-	Caesalpiniaceae
43	*Cassia tora* L	Puvad	Caesalpiniaceae
44	*Celosia argentea* L	Lepadu	Amaranthaceae
45	*Commelina erecta* L	Nanu shishmuliyu	Commelinaceae
46	*Commelina forskalaei* Vahl	Shishmuliyu	Commelinaceae
47	*Corchorus capsularis* L	Kagda chunch	Tiliaceae
48	*Corchorus tridens* L	-	Tiliaceae
49	*Crotalaria burhia* Buch-Ham ex Beth	-	Papilionaceae
50	*Crotalaria medicaginea* Lam	Jinjrut	Papilionaceae
51	*Desmodium gangeticum* (L) DC	-	Papilionaceae
52	*Dicliptera verticillata* (Forsk) Christ	Bhuva	Acanthaceae
53	*Echinops echinatus* Roxb	Unt kanto	Asteraceae
54	*Eranthemum roseum* (Vahl) R Br	-	Acanthaceae
55	*Euphorbia hirta* L	Dudhli	Euphorbiaceae
56	*Euphorbia linearifolia* Roth	-	Euphorbiaceae
57	*Euphorbia orbiculata* H B K	-	Euphorbiaceae
58	*Goniogyne hirta* (Willd) Ali	Gobar	Papilionaceae
59	*Indigofera angulosa* Edgew	-	Papilionaceae
60	*Justicia diffusa* Willd	-	Acanthaceae
61	*Justicia simplex* Don	-	Acanthaceae
62	*Lepidagathis trinervis* Wall ex Nees	Harancharo	Acanthaceae
63	*Leucus aspera* (Willd) Spr	Kubi/Ganthiyu	Lamiaceae
64	*Leucus longifolia* Bth	Kubo	Lamiaceae
65	*Neuracanthus sphaerostachyus* (Nees) Dalz	-	Acanthaceae
66	*Ocimum canum* Sims	Aavachi-Bavachi	Lamiaceae
67	*Ocimum gratissimum* L	Bapsi (Moti Tulsi)	Lamiaceae
68	*Ocimum sanctum* L	Tulsi	Lamiaceae
69	*Pavonia zeylanica* Cav	Ladvo	Malvaceae
70	*Peristrophe bicalyculata* (Retz) Nees	Bodi Andhedi	Acanthaceae
71	*Sida acuta* Burm f	-	Malvaceae
72	*Sida alba* L	Bod	Malvaceae
73	*Sida cordata* (Burm f) Bross	-	Malvaceae
74	*Solanum indicum* L	Kadvi Bhotangdi	Solanaceae
75	*Tephrosia tinctoria* (L) Pers	Sangetro	Papilionaceae
76	*Tephrosia villosa* (L) Pers	Pilva / Zil	Papilionaceae
77	*Tridax procumbens* L	Pardesi bhangro	Asteraceae
78	*Triumfetta pentandra* A Rich	Jipti	Tiliaceae
79	*Triunfetta rhomboidea* Jacq	Jipti	Tiliaceae
80	*Vernonia cinerea* (L) Less	Kalhad	Asteraceae

Sr. No.	Botanical Name	Local Name	Family
81	*Waltheria indica* L	-	Sterculiaceae
82	*Withania somnifera* (L) Dunal	-	Solanaceae
83	*Xanthium strumarium* L	Gadariyu	Asteraceae
	Shrubs		
84	*Capparis decidua* (Forsk) Edgew	Kerdo	Cappraceae
85	*Capparis spinosa* L	Kantadi kanthar	Cappraceae
86	*Carissa congesta* Wt	Kali kanther	Apocynaceae
87	*Datura metel* L	Dhaturo	Solanaceae
88	*Holarrhena antidysenterica* (Hyne ex Roth) Wall	Kado	Apocynaceae
89	*Ixora arborea* Roxb ex Smith	-	Rubiaceae
90	*Jatropha gossypifolia* L	Kamboe	Euphorbiaceae
91	*Lantana camara* Auct non L	Ful bankavari	Verbinaceae
92	*Morinda tomentosa* Heyne ex Roth	Aal	Rubiaceae
93	*Prosopis juliflora* (Sw) DC	Gando Baval	Mimosaceae
94	*Zizyphus horrida* Roth	Bordi	Rhamnaceae
	Trees		
95	*Acacia catechu* Willd	Kalo khair	Mimosaceae
96	*Acacia leucophloea* (Roxb) Willd	Aniyar	Mimosaceae
97	*Acacia nilotica* (L) Dell	Deshi baval	Mimosaceae
98	*Acacia planiformis* Koen ex Wt	Akhri baval	Mimosaceae
99	*Acacia senegal* Willd	Parpal (Gorad)	Mimosaceae
100	*Acacia tortiles* (Forsk) hyne ex Roth	Isaraili baval	Mimosaceae
101	*Adina cordifolia* (Roxb) Bth & Hk f ex Brand	Haldu	Rubiaceae
102	*Aegle marmelos* (L) Corr	Bili	Rutaceae
103	*Ailanthus excelsa* Roxb	Arduso	Simaroubaceae
104	*Alangium salvifolium* (L f) Wang	Aankol	Alangiaceae
105	*Albizia lebbeck* L Bth	Shirish	Mimosaceae
106	*Albizia procera* (Roxb) Bth	Dholo sirish	Mimosaceae
107	*Annona squamosa* L	Sitafal	Annonaceae
108	*Anogeissus latifolia* (Roxb) Wall ex Bedd	Safed Dhav	Combretaceae
109	*Anogeissus pendula* Edgew	Dhav	Combretaceae
110	*Anogeissus sericea* Brandis	Androk	Combretaceae
111	*Azadirachta indica* A Juss	Limdo	Meliaceae
112	*Balanites aegyptiaca* (L) Del	Ingoriyo	Balanitaceae
113	*Bauhinia racemosa* Lam	Zenju	Caesalpiniaceae
114	*Bauhinia tomentosa* L	Aashitri	Caesalpiniaceae
115	*Bombax ceiba* L	Sebar	Bombacaceae
116	*Boswellia serrata* Roxb	Salai gugal	Burseraceae
117	*Butea monosperma* (Lam) Taub	Khakhro	Papilionaceae
118	*Canthium parviflorum* Lam	Gengani	Rubiaceae
119	*Capparis grandis* L f	Vattbor	Cappraceae
120	*Cassia fistula* L	Garmalo	Caesalpiniaceae

Sr. No.	Botanical Name	Local Name	Family
121	*Cassia siamea* Lam	Kashid	Caesalpiniaceae
122	*Cordia dichotoma* Forst	Gundo	Ehretiaceae
123	*Cordia gharaf* (Forsk) E & A	-	Ehretiaceae
124	*Cordia perrottetii* Wt	-	Ehretiaceae
125	*Crateva nurvala* Buch Ham	Vay varno	Cappraceae
126	*Dalbergia latifolia* Roxb	Pahi, Patrali	Papilionaceae
127	*Dalbergia paniculata* Roxb	Sisam	Papilionaceae
128	*Dalbergia sissoo* Roxb	Sisam	Papilionaceae
129	*Delonix elata* (L) Gamble	Sandesro	Caesalpiniaceae
130	*Derris indica* (Lam) Bennet	Kanjo	Papilionaceae
131	*Diospyros melanoxylon* Roxb	Timru	Ebenaceae
132	*Diospyros montana* Roxb	Makrod	Ebenaceae
133	*Dolichandrone falcata Seem* var *lawii*	-	Bignoniaceae
134	*Ehretia laevis* Roxb	-	Ehretiaceae
135	*Erythrina suberosa* Roxb	Dhed khakhro	Papilionaceae
136	*Eucalyptus globulus* Labill	Nilgiri	Myrtaceae
137	*Ficus arnottiana* Miq	Khad piplo	Moraceae
138	*Ficus benghalensis* L	Vad	Moraceae
139	*Ficus hispida* L	Dhed umbi	Moraceae
140	*Ficus microcarpa* L	-	Moraceae
141	*Ficus racemosa* L	Umro	Moraceae
142	*Ficus religiosa* L	Piplo	Moraceae
143	*Ficus rumphii* Bl	Pipli	Moraceae
144	*Ficus virens* Ail	-	Moraceae
145	*Flacourtia indica* (Burm f) Merr	Katedi	Flacourtiaceae
146	*Gardenia resinifera* Roth	-	Rubiaceae
147	*Garuga pinnata* Roxb	Kakad	Burseraceae
148	*Gmelina arborea* L	Sevan	Verbinaceae
149	*Grewia tiliaefolia* Vahl	Dhaman	Tiliaceae
150	*Holoptelia integrifolia* (Roxb) Planch	Kanji	Ulmaceae
151	*Hymenodictyon excelsum* (Roxb) Wall	Madh mahudo	Rubiaceae
152	*Lannea coromandelica* (Houtt) Herrill	Golaru, Gondlo	Anacardiaceae
153	*Limonia acidissima* L	Kothi	Rutaceae
154	*Manilkara hexandra* (Roxb) Dub	Rayan	Sapotaceae
155	*Maytenus emarginata* (Willd) D Hou	Kankayo, Viklo	Celastraceae
156	*Miliusa tomentosa* (Roxb) Sinclair	Umbiyo	Annonaceae
157	*Mitragyna parvifloa* (Roxb) Korth	Kadam	Rubiaceae
158	*Moringa concanensis* Nimmo	Sargavo	Moringaceae
159	*Phoenix sylvestris* (L) Roxb	Khajuri	Araceae
160	*Pithecellobium dulce* (Roxb) Bth	Goras-ambli	Mimosaceae
161	*Prosopis cineraria* (L) Druce	Khijdo	Mimosaceae
162	*Salvadora oleoides* Decne	Piludi, Vagdo	Salvadoraceae

Sr. No.	Botanical Name	Local Name	Family
163	*Salvadora persica* L	Pilu, Vagdo	Salvadoraceae
164	*Sapindus emarginatus* Vahl	Arithi	Sapindaceae
165	*Sapindus laurifolius* Vahl	Arithi	Sapindaceae
166	*Schrebera swietenioides* Roxb	Mokho	Oleaceae
167	*Sterculia colorata* Roxb	Kodaro	Sterculiaceae
168	*Sterculia urens* Roxb	Kadayo	Sterculiaceae
169	*Streblus asper* Lodr	Haredo	Moraceae
170	*Syzygium cumini* (L) Skeels	Jambu	Myrtaceae
171	*Tamarindus indica* L	Ambli	Caesalpiniaceae
172	*Tamarix troupii* Hole	-	Tamaricaceae
173	*Tecomella undulata* (Sw) Seems	Roydo	Bignoniaceae
174	*Tectona grandis* L. f.	Saag	Verbenaceae
175	*Terminalia crenulata* Roth	Sadad	Combretaceae
176	*Vitex negundo* L	Nagod	Verbinaceae
177	*Wrightia tinctoria* R Br	Dudhkudi	Apocynaceae
178	*Wrightia tomentosa* (Dominant) R & S	Nani dudhkudi	Apocynaceae
179	*Xeromphis spinosa* (Thunb) Keay	Medholi	Rubiaceae
180	*Xeromphis uliginosa* (Retz) Mahesh	-	Rubiaceae
181	*Zyziphus nummularia* (Burm f) W & A	Bor	Rhamnaceae
182	*Zyziphus xylopyra* (Retz) Willd	Ghatbor,	Rhamnaceae

Table 2: Dominating top ten families with highest number of species

Sr.No.	Family	Genus	Species
1	Poaceae	15	18
2	Papilionaceae	12	17
3	Mimosaceae	4	11
4	Rubiaceae	9	10
5	Acanthaceae	8	10
6	Moraceae	2	9
7	Caesalpiniaceae	4	8
8	Tiliaceae	3	5
9	Lamiaceae	2	5
10	Asteraceae	5	5

Fig 1: Number of Genus, Species and Families at different Levels of Plants of Dahod District of Gujarat