



## RESEARCH ARTICLE

### STATUS OF TREE DIVERSITY OF MANDVI TOWN OF MANDVI TEHSIL OF KACHCHH DISTRICT, GUJARAT STATE, INDIA

\*Malsatar Alpesh P. and Mehta, P.K.

Department of Environmental Science, School of Science, Gujarat University- Ahmadabad  
Government Science College, Mandvi- Kachchh-370465

Received 22<sup>nd</sup> February, 2018; Accepted 22<sup>nd</sup> March, 2018; Published 30<sup>th</sup> April, 2018

#### ABSTRACT

Floristic studies help us to assess the plant wealth and its potentiality of any given area. Floristic studies also help us to understand the basic aspects of biology such as speciation, isolation, endemism and evolution. Flora of any area is not fixed up and it changes from time to time. Various ecological factors, mostly biotic, change the floristic components. The total number of species may be changed; dominant species may be replaced with other species; the floristic composition, i.e., family: genus: species ratio may be changed. The present study deal with enumeration of tree species belonging to Angiospermic plants which grows in the area of Mandvi town of Mandvi tehsil, Gujarat state, India. Tree species play an important role in urban ecosystem. Urban area and developing city need proper plantation in large number of Tree species. In this research work Tree species has been listed in systematically including indigenous, cultivated and naturalized plants. The study area show Tree diversity comprise of 35 genera and 46 species belonging to 23 Angiospermic families. The present study provides the status of Floristic details of selected study area.

**Key words:** Trees, Diversity, Mandvi, Kachchh

**Copyright © 2018, Malsatar Alpesh and Mehta, P.K.** This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Citation: Malsatar Alpesh P. and Mehta, P.K., 2018.** "The role and responsibility of pschiatric socail work in promotional aspects of health" *International Journal of Current Research in Life Sciences*, 7, (04), 1780-1783.

#### INTRODUCTION

The term biological diversity was used first by wildlife scientist and conservationist Raymond F. Dasmann in the 1968 advocating conservation (Dasmann 1968). 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; Washington Biodiversity Council 2007). The term biodiversity encompasses a broad spectrum of biotic scales, from genetic variation within species to biome distribution on the planet (Wilson 1992; Gaston 1996; Purvis & Hector 2000; Mooney 2002; Hooper et al. 2005). Globally, there are about ~8.7 million (61.3 million SE) eukaryotic species, of which, 2.2 million (60.18 million SE) are dwelling in the ocean depths (Mora et al. 2011). However, scientists have estimated that the number of species of plants and animals on earth could vary from 1.5 to 20 billion.

\*Corresponding author: Malsatar Alpesh, Mehta, P.K.

Department of Environmental Science, School of Science, Gujarat University- Ahmedabad Government Science College, Mandvi-Kachchh-370465, India.

Thus the majority of species are yet to be discovered. India is the seventh largest country in the world and Asia's second largest nation with an area of 3,287,263 square km. India hosts 7.6% of all mammalian, 12.6% of all avian, 6.2% of all reptilian, 4.4% of all amphibian, 11.7% of all piscine, and 6.0% of all flowering plant species. Surveys conducted so far in India have inventoried over 45,500 species of plants and over 91,000 species of animal's accounts around 7-8% of the World's recorded species (MoEF 2008). Gujarat has territory of 1, 96,024 sq/km and is endowed with great diversity of natural ecosystem ranging from desert, semi-arid, mangroves and forest with dry deciduous and evergreen trees. The angiosperm flora of Gujarat is mostly varied in extent and composition. There are 2198 species of higher plants belonging to 902 genera and 155 families which represent 12.91% of the total flora of country. On the begging of 21<sup>st</sup> century, as we are losing our biological diversity and the delicate balance of ecosystem, the need to initiate conservation plans is greater than ever before. Living components of earth is exposed to great danger due to two reason 1) growth of human population and 2) accelerating deterioration of the environment. Urban vegetation refers to all types of plants that grow in urban environments, such as forest parks, roadsides, and wasteland area (Jiang 1993). As a significant part of urban ecosystems, urban vegetation can not only help clean and freshen air quality

by reducing dust and environment pollution, but it can also help maintain the ecological balance of urban environment. Urban vegetation also helps an important role in indicating and monitoring environmental pollution. In most Cities that have experience recent and rapid development urban expansion has not always been properly planned, leading to the destruction of almost, all natural environments. Remands of native ecosystem terms in urban landscapes are therefore precious because of their capacity to ameliorate problems caused by over urbanization, such as air pollution, soil impermeabilization, climatic warning and other besides the amenity value provided by vegetation and fauna, especially birds. Angiospermic diversity has acquired increasing importance in recent years in response to need of developing and under developing countries to assess their plant wealth. Here prepared with a view to incorporate data on the synoptic analysis and comparison of the flora.

## Study Area

Mandvi is located in the Kachchh district, which is located at western part of Gujarat state. It located between 22.81 N and 69.36 E. Mandvi was developed by Rao of Kachchh state, Khengarji in 1580.

**Table 1: List of trees species listed in Mandvi town**

No.	Scientific name	Family	local name
1	<i>Polyalthia longifolia</i> (Soon) Thw.	Annonaceae	Asopalav
2	<i>Thespesia populnea</i> (L.) Sol. Ex correa	Malvaceae	Paraspipdo
3	<i>Grewia asiatica</i> L.	Tiliaceae	Falsa
4	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	Balipatra
5	<i>Citrus lemon</i> (L.) Burm.f.		Limbu
6	<i>Citrus limetta</i> Risso		Mosambi
7	<i>Citrus medica</i> L.		Bijoru
8	<i>Citrus sinensis</i> (L.) Osbeck		Santara
9	<i>Limonia acidissima</i> L.		Kothu
10	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Limdo
11	<i>Melia azedarach</i> L.		Bakanlimdo
12	<i>Zizyphus mauritiana</i> Lam.	Rhamnaceae	Bor
13	<i>Mangifera indica</i> L.	Ancardiaceae	Ambo, keri
14	<i>Moringa oleifera</i> Lam.	Moringaceae	Sargavo
15	<i>Bauhinia variegata</i> (L.) Benth.	Fabaceae	Kanchnar
16	<i>Butea monosperma</i> (Lam.) Benth.		Khakhro
17	<i>Pethecellobium dulce</i> (Roxb.) Benth.		Mithiamli
18	<i>Pongamia pinnata</i> L.		Kanaji
19	<i>Cassia fistula</i> L.	Caesalpiniaceae	Garmalo
20	<i>Delonix regia</i> (Boj.) Raf		Gulmohar
21	<i>Parkinsonia aculeate</i> L.		Rambaval
22	<i>Peltorum pterocarpum</i> (DC.) Backer ex. K.		Tamrafali
23	<i>Prosopis cineraria</i> (L.) Druce	Mimosaceae	Khijado
24	<i>Terminaliaarjuna</i> (Roxb.) Wight & Arn.	Combretaceae	Arjunsadad
25	<i>Terminalia Catappa</i> L.		Badam
26	<i>Eucalyptus glabrum</i> L.	Myrtaceae	Nilgiri
27	<i>Syzygium Cumini</i> (L.) Skeels		Jambu
28	<i>Punica granatum</i> L.	Lythraceae	Dadam
29	<i>Manilkara sapota</i> L.	Sapotaceae	Chiku
30	<i>Manilkara zapota</i> (L.) P. Royen		Rayana
31	<i>Santalum album</i> L.	Santalaceae	Chandan
32	<i>Myristica fragrans</i> Hoult.	Myristicaceae	Jamfal
33	<i>Cordia dichotoma</i> G. Forst	Boraginaceae	Motagunda
34	<i>Cordia myxa</i> L.		Lihari
35	<i>Cordia sebestena</i> L.		Kordia
36	<i>Kigellia pinnata</i> (Lam.) Benth.	Bignoniaceae	Topgolo
37	<i>Millingtonia hortensis</i> L.f.		Buch
38	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Aamla
39	<i>Tamarindus indicus</i> L.		Khatiamli
40	<i>Ficus bengalensis</i> L.	Moraceae	Vad
41	<i>Ficus carica</i> L.		Anjir
42	<i>Ficus racemosa</i> L.		UmARO
43	<i>Ficus religiosa</i> L.		Pipalo
44	<i>Ficus rumpfi</i> Bl.Bijdr.		Pipadi
45	<i>Casuarina equisetifolia</i> L.	Casuarinaceae	Saru
46	<i>Phoenix sylvestris</i> (L.) Roxb	Arecaceae	Khajuri

It is about 56 km south of regional capital of Bhuj and 446 km from Mega city of Gujarat i.e. Ahmadabad. The maximum and minimum temperatures recorded in the area are 2 C in the winter and 40C to 45C in summer. June to September is monsoon period. The Average annual rainfall is approximately 14 inches.

## MATERIALS AND METHODS

The study on angiosperms plants of Mandvi town Kachchh district Gujarat state India, the results obtained from extensive field survey in all seasons of the area. Field survey was carried out for observation and collection of plants. Identification of plant species during field work was done by compiling different available floras and authenticated by experts. The photographs of plant species were taken during field trip. Survey of plants made for a year during September 2016 to May 2017. The plant list categorized according to their systematic positions following Bentham & Hooker's classification system.

## RESULTS AND DISCUSSION

### Analysis of Angiosperm

Out of 46 species recorded in Mandvi city area, dicotyledons contributed 45 plant species belonging to 34 genera of 24 families, which is quite higher than that of monocotyledons. Among dicotyledon, polypetalae was represented by 28 species of 24 genera belonging to 14 families, while gemopatalae and monochlamydae were represented by 9 species belongs to 6 genera of 5 families and 8 species and 4 genera belonging to 3 families respectively. Monocotyledons were represented by only 1 species of 1 genera belonging to 1 family.

**Table 2. Comparative study of plants species in Mandvi town range among families, genera and species**

Categories	Family		Genera		Species	
Dicotyledonae	14	22	24	34	28	45
Polypetalae			6		9	
Gemopetalae			5		8	
Monoclamdae	3		4			
Monocotyledon	1	1	1	1	1	1
Total		23		35		46

**Table 3. Number and percentage of families, genera and species of each class**

Class	Families		Genera		Species	
	No.	%	No.	%	No.	%
Dicotyledonae	22	95.65	34	97.14	45	97.83
Monocotyledon	1	4.35	1	2.86	1	2.17
Total	23	100	35	100	46	100

Proportional ratio of the monocotyledons to dicotyledons is reported as follows; Families 1: 22.0, Genera 1:34.0 and Species 1: 45.0.

**Table 4. Ratio between Monocotyledons And Dicotyledons**

Family	1:22.0
Genera	1:34.0
Species	1:45.0
Genera to species	1:1

Among 23 families, Rutaceae (6 species) was the most dominant family followed by Moraceae (5 species), Febaceae (4 species) and Caesalpiniaceae (4 species).

Top - 3 Species		
No.	Name of family	No. of species
1	Rutaceae	6
2	Moraceae	5
3	Fabeceae	4
4	Caesalpiniaceae	4

Among 35 genera, Ficus (5 species) was the most dominant genera followed by Citrus (4 species) and Cordia (3 species). Among families, 15 families were monogeneric while 11 families were monospecific. (Table-5)

Top - 3 Genera		
No.	Genus Name	No. of species
1	Ficus	5
2	Citrus	4
3	Cordia	3

**Table 5. Family wise genera and species recorded in Mandvi town**

No.	No. of Family	No. of Genus	No. of species
1	Rutaceae	3	6
2	Moraceae	1	5
3	Fabeceae	4	4
4	Caesalpiniaceae	4	4
5	Boraginaceae	1	3
6	Meliaceae	2	2
7	Combretaceae	1	2
8	Myrtaceae	2	2
9	Sapotaceae	1	2
10	Bignoniaceae	2	2
11	Euphorbiaceae	2	2
12	Mimosaceae	1	1
13	Annonaceae	1	1
14	Rhamnaceae	1	1
15	Arecaceae	1	1
16	Malvaceae	1	1
17	Tiliaceae	1	1
18	Ancardiaceae	1	1
19	Moringaceae	1	1
20	Lythraceae	1	1
21	Santalaceae	1	1
22	Myristicaceae	1	1
23	Casuaraceae	1	1

## Acknowledgement

I would like to thank the people of Mandvi town who shared their knowledge and information regarding to some tree species. I am very thankful to Dr. P. K. Mehta, I/C Principal and Assi. Professor of Government Science College, Mandvi for constant approach for research investigation. My special thanks to my friends Mr. Pankaj Vaghmashi and Mr. Bharat Solanki for helping me during field work. I am also thankful to staff members of my college for their encouragement during my research work.

## REFERENCES

- Dasmann, RF. 1968. A Different Kind of Country. pp. 276. MacMillan Company, New York
- Gaston, KJ. (ed.) 1996. Biodiversity. A biology of numbers and difference. Blackwell, Oxford, UK
- Heywood, VH. and Baste, I. 1995. Introduction. pp. 5-19. In: V. H. Heywood (ed.) Global Biodiversity Assessment. Cambridge University Press, Cambridge.

**Table 6. Number of individuals of each plant species**

Plants Name	No. of Tree
<i>Azadirachta indica</i> A. Juss.	1963
<i>Polyalthia longifolia</i> (Soon) Thw.	894
<i>Delonix regia</i> (Boj.) Raf	846
<i>Peltoforum pterocarpum</i> (DC.) Backer ex. K	415
<i>Terminalia Catappa</i> L.	245
<i>Ficus Oreliogosa</i> L.	197
<i>Pethecellobium dulce</i> (Roxb.) Benth.	153
<i>Casuarina equisetifolia</i> L.	143
<i>Mangifera indica</i> L.	139
<i>Ficus bengalensis</i> L.	131
<i>Myristica fragrans</i> Houutt.	125
<i>Moringa oleifera</i> Lam.	121
<i>Pongamia pinnata</i> L.	111
<i>Cordi amyxa</i> L.	100
<i>Punica granatum</i> L.	92
<i>Parkinsonia aculeate</i> L.	88
<i>Eucalyptus glabrum</i> L.	72
<i>Cordia sebestena</i> L.	71
<i>Aegle marmelos</i> (L.) Correa	70
<i>Manilkara sapota</i> L.	56
<i>Thespesia populnea</i> (L.) Sol. Ex correa	54
<i>Syzygium Cumini</i> (L.) Skeels	50
<i>Zizyphus mauritiana</i> Lam.	39
<i>Citrus lemon</i> (L.) Burm.f.	36
<i>Ficus rumphi</i> Bl.Bijdr.	36
<i>Tamarindus indicus</i> L.	33
<i>Melia azedarach</i> L.	31
<i>Phyllanthus emblica</i> L.	27
<i>Bauhinia variegata</i> (L.) Benth.	23
<i>Cassia fistula</i> L.	17
<i>Terminalia arjuna</i> (Roxb.) Wight & Arn.	16
<i>Prosopis cineraria</i> (L.) Druce	14
<i>Manilkara zapota</i> (L.) P. Royen	14
<i>Citrus medica</i> L.	13
<i>Millingtonia hortensis</i> L.f.	9
<i>Cordia dichotoma</i> G. Forst	8
<i>Phoenix sylvestris</i> (L.) Roxb	8
<i>Limonia acidissima</i> L.	4
<i>Ficus carica</i> L.	4
<i>Grewia asiatica</i> L.	3
<i>Kigellia pinnata</i> (Lam.) Benth.	3
<i>Citrus sinensis</i> (L.) Osbeck	2
<i>Citerus limetta</i> Risso	1
<i>Butea monosperma</i> (Lam.)	1
<i>Santalum album</i> L.	1
<i>Ficus racemosa</i> L.	1
<b>Total</b>	<b>6480</b>

- Hooper, DU., Chapin, III FS., Ewel, JJ., Hector, A., Inchausti, P., Lavorel, S., Lawton, JH., Lodge, DM., Loreau, M., Naeem, S., Schmid, B., Setälä, H., Symstad, AJ., Vandermeer, J. and Wardle, DA. 2005. Effects of biodiversity on ecosystem functioning: a consensus of current knowledge. *Ecological Monographs*, 75 (1): 3-35.
- Jiang Gaoming, 1993. Urban vegetation: Its characteristic, type and function. *Chinese Bulletin of Botany*, 10, 21-27 [in Chinese with English summary].
- MoEF, 2008. National biodiversity action plan. pp. 78. Ministry of Environment and Forests, Government of India, New Delhi
- Mooney, H.A. 2002. The debate on the role of biodiversity in ecosystem in functioning. In: Loreau, M., Naeem, S., and Inchausti, P. (eds.). Biodiversity Ecosystem functioning. Oxford University Press, Oxford, UK, pp. 12 – 17.
- Mora, C., Tittensor, DP., Adl, S., Simpson, AGB. and Worm, B. 2011. How many species are there on earth and in the ocean? *PLoS Biology* 9(8): e1001127. doi:10.1371/journal.pbio.1001127

- Norse, EA., Rosenbaum, KL., Wilcove, DS., Wilcox, BA., Romme, WH., Johnson, DW. and Stout, ML. 1986. Conserving biological diversity in our national forests. The Wilderness Society, Washington, D.C
- Purvis, A. and Hector, A. 2000. Getting the measure of biodiversity. *Nature*, 405:212-219
- Sarkar, S. 2002. Defining "Biodiversity"; Assessing Biodiversity. *The Monist*, 85 (1): 131-155
- Shah, G. L. 1978. Flora of Gujarat state. Vol.I and II, University press, Vallabh Vidhya Nagar., Gujarat.
- Wilson, EO. 1992. The diversity of life. Norton, New York, USA
- Wilson, EO. (ed.) 1988. Biodiversity. National Academy Press, Washington, D.C

\*\*\*\*\*