Int. J. Sci. R. Tech., 2025 2(4)
A Multidisciplinary peer-reviewed Journal
www.ijsrtjournal.com [ISSN: 2394-7063]

Original Article

Analysis of Phytodiversity and Phytosociology of Wetlands in Chandkheda, Ahmedabad, Gujrat

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ABSTRACT

Phytosociological analysis carried out for two selected wetlands of Chandkheda located at 23°07'01" N latitude and 72°34'23"E longitude namely Vadatalav wetland and Visatmata wetland in Ahmedabad. Physiochemical analysis of water and soil determines that geomorphological condition of both wetlands is adequate. This study documented a total of 101 plant species from wetlands of Chandkheda, among which 91 plant species belonging to 77 genera and 34 families documented from the Vada talav wetland; and 50 plant species belonging to 41 genera and 24 families were recorded from the Visatmata wetland. The research findings reveal that the Shannon-Wiener diversity index (H') was estimated as 4.021, Simpson's index (D) was calculated as 0.9714 while Fisher's Alpha diversity index (S) and Evenness index (e) were calculated as 24.05 and 0.6193 respectively for the Vada talav wetland. For the Visatmata wetland Shannon-Wiener diversity index (H') was calculated as 3.09, Simpson's index (c) was estimated at 0.9171 while Fisher's Alpha diversity index (S) was 13.83 and Evenness index (e) was calculated as 0.4397. The Vada talav wetland and Visatmata wetland of Chandkheda exhibits a floral population characterized by moderate to high species diversity. The data of this research will serve as a fundamental resource for management and conservation of urban wetlands in Ahmedabad.

Keywords: Ahmedabad, Chandkheda Wetland, Phytosociology, Physiochemical analysis, IVI

INTRODUCTION

Phytodiversity is the diversity of plant species present in a region. Wetlands vegetation is a significant element of wetland ecosystem by providing unique habitat for other organisms and supporting various crucial ecological functions. (Kokaly et al., 2003; Lin and Liquan 2006; Adam, 2010). A wetland is an area in which soil is covered or saturated by the water. They are the transitional ecotones between terrestrial and aquatic ecosystems (Mitsch and Gosselink 1986; Prasad et al., 2002). Wetlands often described as "kidneys of the Earth" and "Biological supermarkets" as they are the most significant and productive ecosystems on the Earth (Daryadel & Talaei, 2014). There are many definitions of wetlands but widely accepted definition of wetlands given by Ramsar convention (1971), which conclude that wetlands are "areas of marsh, fen, peatland or water, weather natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish, or salt, including areas of marine water the depth of which at low tide does not exceed six meters." The qualitative and quantitative assessment of plant species of wetlands is chore for the sustainable management of wetlands and environment. The study of plant communities and vegetation of an area is referred as phytosociology. Additionally, wetland plants are the best indicator of any chemical or physical degradation in wetland ecosystems (Dennison et al., 1993). Wetland vegetation depends on the quality and quantity of water is present in a wetland (Sikorska, 2017). Wetland plants are adapted to hydrological condition of wetlands and called hydrophytes. Gujrat is located in the arid ecoclimatic zone of the country. It has highest number of wetlands in India, covering 3.5 million hectares or 17.8% of the state's total land area (SAC, 2021). Among which 4 wetlands are designated as Ramsar sites, and the state also have 8 wetlands of national importance. Besides these there are many small wetlands or waterbodies in Gujrat that are not documented yet. Ahmedabad City is situated in the central part of Gujrat. The city has 122 small and big lakes (Kuchara et al.,2023), Kankariya Lake,

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Vastrapur Lake, and Chandola Lake are some major urban wetlands present in Ahmedabad. Nal Sarovar and Khijadiya wetland are also located near the Ahmedabad city.

MATERIAL AND METHODS

Study area: The Chandkheda is located in west Zone of Ahmedabad near Gandhinagar, Gujarat. There are 2 major wetlands in Chandkheda, namely Visatmata talav and Vada talav were analyzed. These are natural lacustrine wetlands. The Vada talav wetland is situated at eastern part of Chandkheda at 23°07'15" N latitude and 72°35'22" E longitudes. This wetland comprises an area of 13,044.52 m², surrounded by agricultural fields. The Visatmata talav is situated at western part of the Chandkheda at 23°07'02" N latitude and 72°34'45" E longitudes. This wetland has an area of 3,597.18 m² and it is surrounded by residential buildings. The region lies in the arid climatic zone and the climate of the area has three main seasons winter, summer, and monsoon. The temperature is extremely harsh in summer and milder in winter.

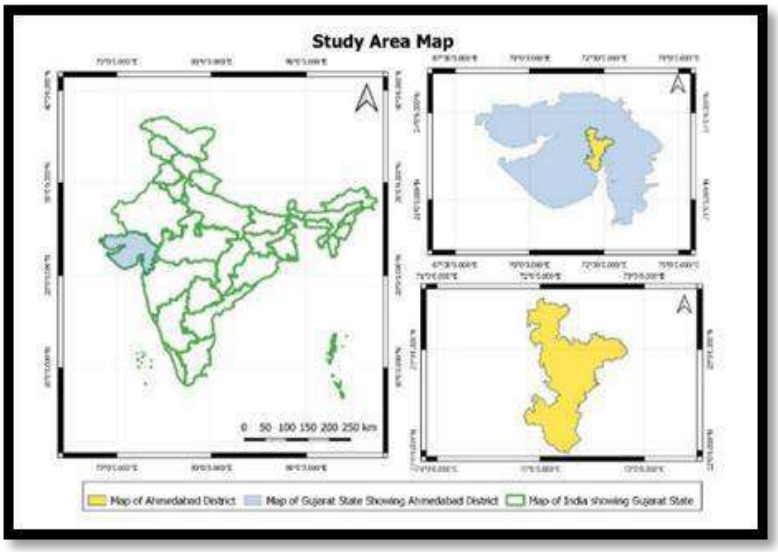

Figure 1. Map of study area

Figure 2. Location of study area (Image source: Google earth)

The water (Surface water) and soil samples (at the depth of 15 cm) were collected from both wetlands and physio- chemical parameters are analyzed by using APHA's (American Public Health Association-24th edition) methodology to determine the current condition of both wetlands. Climatic data of the area

is also collected from digital sources. The climate of the area has a maximum temperature of 42C and minimum 17C temperature. The average rainfall is 782 mm and relative humidity 60% of the region is respectively.

Field survey: Floral diversity of wetlands in Chandkheda is investigated in the month of October 2024, following the methods outlined by Misra (1968) and Mueller-Dombois and Ellenberg (1974). Quadrats of 20×20 m size are used for sampling by using random sampling method. Name and number of plants are recorded in datasheets. The photographic evidence was collected from both wetlands. Plant species are identified by using Flora of Gujrat state (Shah 1978) and literature of Department of Botany, Gujrat University with the help of Dr. Bharat Maitreya. Data obtained from the field survey are compiled in excel sheet and qualitative and quantitative analysis of both wetlands are done. For the qualitative analysis plants are classified from class to species level according to Bentham and Hooker classification systems. For quantitative analysis Phyto- sociological characteristics like Density (D), Abundance (A), Frequency (F), Relative density (RD), Relative abundance (RA), Relative frequency (RF) were calculated by following Shukla and Chandel (1994). Additionally, several standard equations from Michael 1990 (Shannon-Wiener diversity index), Simpson 1949 (Simpson's index), Pielou 1966 (Evenness index), and Fisher's Alpha diversity index (Willis, 2019) were used to quantify biodiversity of both wetlands.

RESULTS AND DISCUSSION

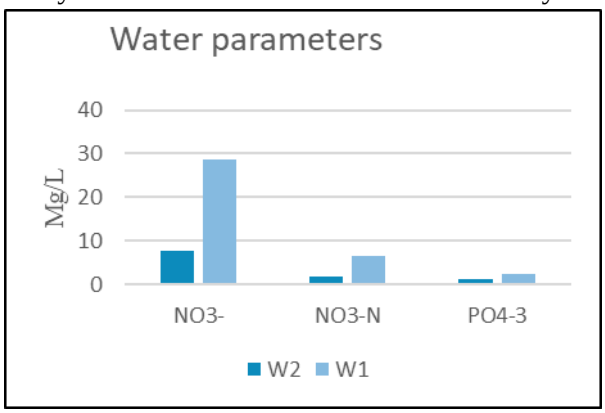

Fig. 3 (a). Physiochemical properties of water

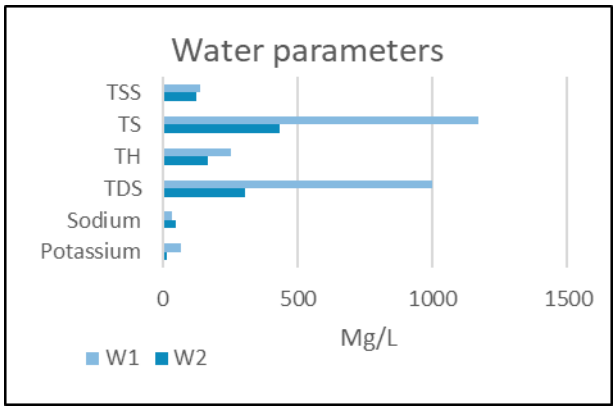

Fig. 3 (b). Physiochemical properties of water

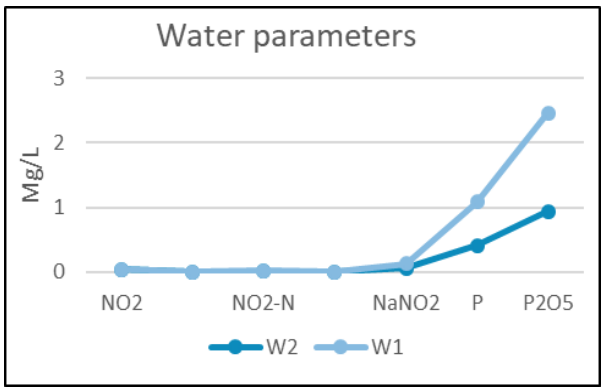

Fig. 3 (c). Physiochemical properties of water

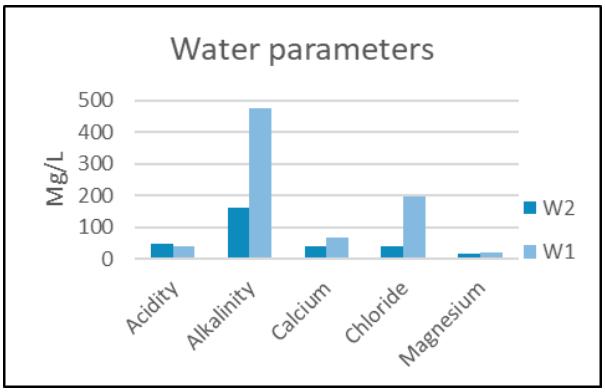

Fig .3 (d). Physiochemical properties of water

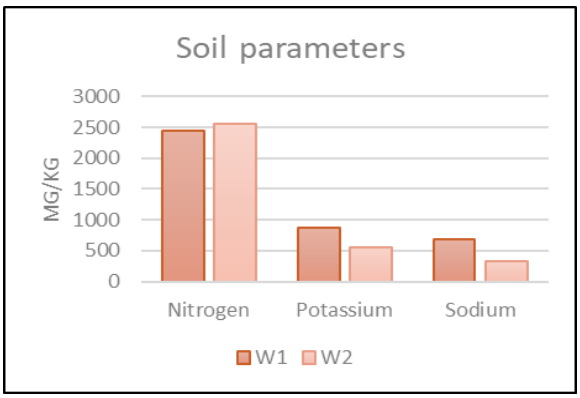

Fig. 4 (a). Physiochemical properties of soil

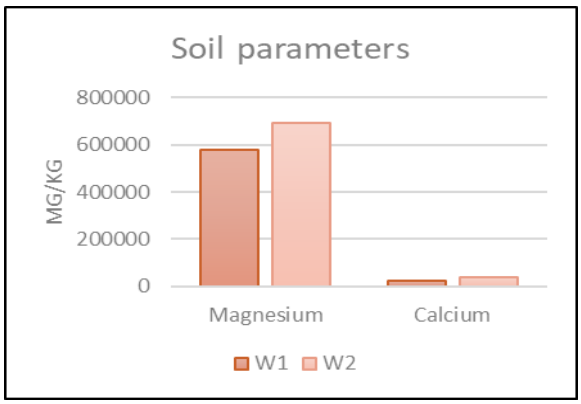

Fig. 4 (b) Physiochemical properties of soil

The results of the physiochemical analysis of water and soil of wetlands in Chandkheda are illustrated in figure 3 and 4. The values of water pH is 7.9 and 7.4 for the Vadatalav wetland and Visatmata wetland respectively, which is ideal range for all plants. The turbidity of water in Vada talav wetland is 33.2 NTU and 38 NTU in Visatmata wetland. The water of Vadatalav wetland has Chemical Oxygen Demand of 26.7 mg/L and 213.3mg/L for Visatmata wetland. The EC value of water is 1.576 mS/cm and 0.445 mS/cm for Vadatalav wetland and Visatmata wetland respectively. The total hardness of the water is 252 mg/L for Vadatalav wetland and 166 mg/L for Visatmata Wetland. The soil of Vada talav is clay in texture and has a pH of 5.9 and conductivity of 0.77 mS/cm which is suitable for the plant species. The Visatmata wetland has clay- loamy texture of soil. The soil has 5.9 and 0.20 mS/cm pH and conductivity respectively which is normal for the plants. The soil of both wetlands is high in organic carbon, 1.66 % for Vadatalav wetland and 0.83 % for Visatmata wetland. The wetlands have high concentrations of Magnesium and Calcium in soil.

Figure 5. Habit wise distribution of recorded plant species from Vadatalav wetland and Visatmata wetland in Chandkheda

The Qualitative analysis reveals that wetland vegetation of Vada talav and Visatmata talav in Chandkheda was found predominantly covered by herbaceous species including grasses. A total of 101 plant species were found from both wetlands. Among recorded plant species Vadatalav comprises 91 species and Visatmata wetland has 50 angiospermic plants. Habit wise distribution of recorded plant species within Vada talav wetland and Visatmata wetland are illustrated figure 6.

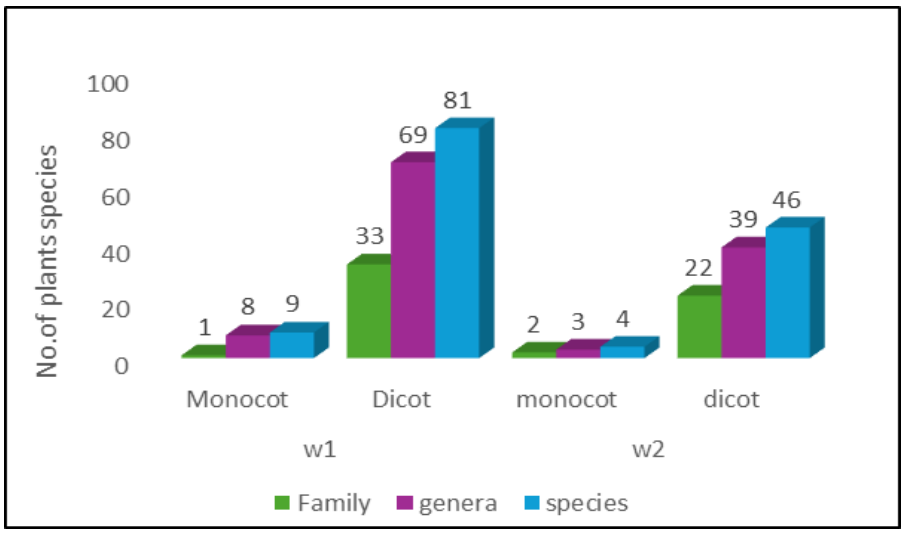

Figure 6. Species, genera and family wise distribution of Monocots and Dicots within Vadatalav wetland and Visatmata wetland

Figure 3 shows the distribution of families, genera and species in the Dicot and Monocot classes within Vada talav wetland and Visatmata wetland. The vegetation of Vada talav wetland is dominated by herbaceous species. A total of 91 angiosperm plants belonging to 77 genera and 34 families were recorded. The plant diversity includes 81 Dicots and 9 Monocots. The ratio of Monocot to Dicot was 1:33 families, 1:8.6 general and 1:9 species. Among 81 Dicots the Bicarpellate series of Gamopetalae sub class has the highest number of species. The Glumaceae series is dominant in Monocots. The ratio of Monocot to Dicot was 1:33 families, 1:8.6 general and 1:9 species. Among 81 Dicots bicarpellate series of Gamopetalae sub class has the highest number of species. A total of 50 angiosperm plant species belonging to 41 genera and 24 families were recorded from the Visatmata wetland. Angiosperm plant diversity includes u46 Dicot and 4 Monocot species. The ratio of Monocot to Dicot was 1:11 families, 1:12.6 genera and 1:11.5 species. The ratio of family to genera to species was 1.83:2.1:1.91. Among 46 Dicot plants Gamopetalae sub class has the highest number of species and Monocots were represented by only one series Glumaceae at Visatmata wetland. The present study recorded, the Ipomea and Solanum genera shows the highest number of three species, followed by Sida, Phyllanthus, Launaea and Eragrostis genera with two species for each genera in Vada talav wetland. The genera Solanum had the highest number of three species, followed by Euphorbia, Alternanthera, Amaranthus, Bergia, and Zizyphus genera represented with two species for each genera in the Visatmata wetland. The Quantitative analysis of wetlands is found that maximum Density is found in Glinus lotoides (9.5 ind./m2) in Vada talav wetland and Cynodon dactylon (12.8 ind./m2) in Visatmata wetland. The Glinus lotoides (90%) and Grangea maderaspatana show the highest frequency in Vada talav wetland and Cynodon dactylon (100%) most frequent species in Visatmata wetland. Cynodon dactylon is the most abundant species in both wetlands. The Glinus lotoides (104) has the highest IVI value in Vada talav wetland and Cynodon dactylon(135) has the highest IVI value in Visatmata wetland. According to Magurran (1988), diversity indices are the numerical depiction of region's diversity. The Simpson's diversity index ranges from 1 to 0. One index value indicates the most diverse ecosystem, and zero index value indicates least diverse ecosystem (Robertson, 2009). In the present study Simpson's diversity index is estimated as 0.9171 for Vadatalav wetland and 0.9714 for Visatmata wetland. To determine which community is more diversified the Shannon-Wiener diversity index is used. The low H' index value indicates diverse ecosystem with few species while a high H' index value determines that the region is diversified with large number of species (Robertson, 2009). The Shannon-Wiener index is 3.09 and 4.021 for Vada talav wetland and Visatmata wetland respectively. Thus, both wetlands of Chandkheda have floral population with high to moderate species diversity. Evenness is termed used to describe the distribution

of individuals within a species. Pielou's evenness index is 0.4397 for Vada talav wetland and 0.6193 for Visatmata wetland. The Fisher's alpha diversity index is 13.83 and 24.05 for Vada talav wetland and Visatmata wetland respectively.

Table 1: Biodiversity indices of wetlands in Chandkheda

Sr. No.	Diversity indices	W1	W2
1	Simpson's index	0.9171	0.9714
2	Shannon-Wiener index	3.09	4.021
3	Evenness index	0.4397	0.6193
4	Fisher's alpha diversity index	13.83	24.05

Table 2: Phytosociological attributes of plant species recorded from Vada talav wetland and Visatmata wetland in Chandkheda.

S. N	Botanical Name	W1									W2								
		D	F	A	RD	RF	RA	IVI	A/F	P	D	F	A	RD	RF	RA	IVI	A/F	P
1	*Abutilon indicum (L.) Sweet*	0.2	10	2	1.6	2.15	1.44	5.23	0.2	ü	0.25	12.5	2	2	2.69	1.44	6.18	0.16	P
2	*Acalypha indica L.*	0.5	20	2.5	4.1	4.3	1.8	10.2	0.13	P	0.5	12.5	4	4.1	2.69	2.89	9.67	0.32	P
3	*Achyranthes aspera L.*	0.9	50	1.8	7.4	10.76	1.3	19.43	0.04	P	0.63	25	2.5	5.1	5.38	1.8	12.3	0.1	P
4	*Aeschynomene aspera L.*	0.5	20	2.5	4.1	4.3	1.8	10.2	0.13	P	6.25	87.5	7.1	51.1	18.83	5.15	75.1	0.08	P
5	*Alternanthera ficoidea (L.) P.Beauv.*	2.9	90	3.22	23.7	19.37	2.32	45.43	0.04	P	2.75	87.5	3.1	22.5	18.83	2.27	43.6	0.04	P
6	*Alternanthera sessilis (L.) DC.*	0.7	40	1.75	5.7	8.61	1.26	15.6	0.04	P	0.63	25	2.5	5.1	5.38	1.8	12.3	0.1	P
7	*Amaranthus spinosus L.*	4	80	5	32.7	17.22	3.61	53.56	0.06	P	0.25	25	1	2	5.38	0.72	8.15	0.04	P
8	*Amaranthus viridis L.*	1.1	60	1.83	9	12.91	1.32	23.24	0.03	P	-	-	-	-	-	-	-	-	
9	*Apluda mutica L.*	0.7	30	2.33	5.7	6.46	1.68	13.87	0.08	P	-	-	-	-	-	-	-	-	
10	*Argemone mexicana L.*	1	50	2	8.2	10.76	1.44	20.39	0.04	P	-	-	-	-	-	-	-	-	
11	*Arundinella pumila (Hochst. ex A.Rich.) Steud.*	0.3	10	3	2.5	2.15	2.16	6.77	0.3	P	-	-	-	-	-	-	-	-	
12	*Azadirachta indica A.Juss.*	1.7	70	2.43	13.9	15.07	1.75	30.73	0.03	P	-	-	-	-	-	-	-	-	
13	*Bergia capensis L.*	-	-	-	-	-	-	-	-		0.88	25	3.5	7.2	5.38	2.53	15.1	0.14	P
14	*Bergia suffruticosa (Delile) Fenzl*	0.4	30	1.33	3.3	6.46	0.96	10.69	0.04	P	0.25	25	1	2	5.38	0.72	8.15	0.04	P
15	*Blepharis maderaspatensis (L.) B.Heyne ex Roth*	0.7	40	1.75	5.7	8.61	1.26	15.6	0.04	P	-	-	-	-	-	-	-	-	
16	*Boerhavia diffusa L.*	0.8	50	1.6	6.5	10.76	1.15	18.46	0.03	P	-	-	-	-	-	-	-	-	

17	*Cadaba fruticosa (L.) Druce*	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	
18	*Caesalpinia crista L.*	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	
19	*Calotropis gigantea (L.) W.T.Aiton*	0.2	20	1	1.6	4.3	0.72	6.66	0.05	P	-	-	-	-	-	-	-	-	
20	*Calotropis procera (Aiton) W.T.Aiton*	1.6	80	2	13.1	17.22	1.44	31.75	0.03	P	0.25	25	1	2	5.38	0.72	8.15	0.04	P
21	*Canavalia cathartica Thouars*	0.4	30	1.33	3.3	6.46	0.96	10.69	0.04	P	-	-	-	-	-	-	-	-	P
22	*Capparis decidua (Forssk.) Edgew.*	0.4	40	1	3.3	8.61	0.72	12.6	0.03	P	-	-	-	-	-	-	-	-	P
23	*Cardiospermum halicacabum L.*	0.3	20	1.5	2.5	4.3	1.08	7.84	0.08	P	-	-	-	-	-	-	-	-	P
24	*Celosia argentea L.*	0.4	30	1.33	3.3	6.46	0.96	10.69	0.04	P	-	-	-	-	-	-	-	-	P
25	*Chenopodium album L.*	0.7	30	2.33	5.7	6.46	1.68	13.87	0.08	P	-	-	-	-	-	-	-	-	P
26	*Chloris barbata Sw.*	1.2	50	2.4	9.8	10.76	1.73	22.31	0.05	P	-	-	-	-	-	-	-	-	P
27	*Clitoria ternatea L.*	0.2	20	1	1.6	4.3	0.72	6.66	0.05	P	-	-	-	-	-	-	-	-	
28	*Cocculus hirsutus (L.) W.Theob.*	2.8	80	3.5	22.9	17.22	2.53	42.66	0.04	P	0.38	12.5	3	3.1	2.69	2.16	7.92	0.24	P
29	*Coldenia procumbens L.*	1.1	30	3.67	9	6.46	2.65	18.1	0.12	P	1	50	2	8.2	10.76	1.44	20.4	0.04	P
31	*Convolvulus prostratus Forssk.*	0.4	20	2	3.3	4.3	1.44	9.02	0.1	P	-	-	-	-	-	-	-	-	
32	*Corchorus aestuans L.*	0.4	30	1.33	3.3	6.46	0.96	10.69	0.04	P	1.88	62.5	3	15.3	13.45	2.16	31	0.05	P
33	*Crotalaria hebecarpa (DC.) Rudd*	0.7	30	2.33	5.7	6.46	1.68	13.87	0.08	P	-	-	-	-	-	-	-	-	
34	*Croton bonplandianus Baill.*	0.5	30	1.67	4.1	6.46	1.2	11.75	0.06	P	-	-	-	-	-	-	-	-	
35	*Cuscuta reflexa Roxb.*	2.5	70	3.57	20.5	15.07	2.58	38.1	0.05	P	-	-	-	-	-	-	-	-	
36	*Cyanthillium cinereum (L.) H.Rob.*	0.8	40	2	6.5	8.61	1.44	16.6	0.05	P	0.38	25	1.5	3.1	5.38	1.08	9.53	0.06	P
37	*Cynodon dactylon (L.) Pers.*	6.3	80	7.88	51.6	17.22	5.68	74.46	0.1	P	12.75	100	13	104.3	21.52	9.2	135	0.13	P
38	*Cyperus brevifolius (Rottb.) Hassk*	-	-	-	-	-	-	-	-		1.38	25	5.5	11.3	5.38	3.97	20.6	0.22	P
39	*Cyperus difformis L.*	-	-	-	-	-	-	-	-		1.75	37.5	4.7	14.3	8.07	3.37	25.8	0.12	P
40	*Dactyloctenium aegyptium (L.) Willd.*	0.9	60	1.5	7.4	12.91	1.08	21.36	0.03	P	0.38	37.5	1	3.1	8.07	0.72	11.9	0.03	P

41	*Datura metel L.*	1.5	60	2.5	12.3	12.91	1.8	26.99	0.04	P	0.63	37.5	1.7	5.1	8.07	1.2	14.4	0.04	P
42	*Dicliptera paniculata (Forssk.) I.Darbysh.*	1.2	60	2	9.8	12.91	1.44	24.18	0.03	P	-	-	-	-	-	-	-	-	
43	*Digera muricata subsp. muricata*	0.7	50	1.4	5.7	10.76	1.01	17.5	0.03	P	-	-	-	-	-	-	-	-	
44	*Echinochloa colona (L.) Link*	0.9	30	3	7.4	6.46	2.16	15.99	0.1	P	-	-	-	-	-	-	-	-	
45	*Echinops echinatus Roxb.*	0.3	20	1.5	2.5	4.3	1.08	7.84	0.08	P	-	-	-	-	-	-	-	-	
46	*Eclipta prostrata (L.) L.*	0.6	30	2	4.9	6.46	1.44	12.81	0.07	P	0.38	25	1.5	3.1	5.38	1.08	9.53	0.06	P
47	*Eleusine indica (L.) Gaertn.*	1.7	50	3.4	13.9	10.76	2.45	27.13	0.07	P	0.75	25	3	6.1	5.38	2.16	13.7	0.12	P
48	*Eragrostis cilianensis (All.) Vignolo ex Janch.*	0.9	30	3	7.4	6.46	2.16	15.99	0.1	P	-	-	-	-	-	-	-	-	
49	*Eragrostis ciliaris (L.) R.Br.*	1	40	2.5	8.2	8.61	1.8	18.6	0.06	P	-	-	-	-	-	-	-	-	
50	*Euphorbia caducifolia Haines*	0.5	10	5	4.1	2.15	3.61	9.85	0.5	P	-	-	-	-	-	-	-	-	
51	*Euphorbia hirta L*	0.7	40	1.75	5.7	8.61	1.26	15.6	0.04	P	0.38	12.5	3	3.1	2.69	2.16	7.92	0.24	P
52	*Euphorbia thymifolia L.*	-	-	-	-	-	-	-	-		1.13	25	4.5	9.2	5.38	3.25	17.8	0.18	P
53	*Ficus benghalensis L.*	0.5	30	1.67	4.1	6.46	1.2	11.75	0.06	P	-	-	-	-	-	-	-	-	
54	*Glinus lotoides L.*	9.5	90	10.56	77.7	19.37	7.62	104.7	0.12	P	8	75	11	65.5	16.14	7.7	89.3	0.14	P
55	*Grangea maderaspatana (L.) Poir.*	4.3	90	4.78	35.2	19.37	3.45	58.01	0.05	P	-	-	-	-	-	-	-	-	
56	*Gymnosporia senegalensis (Lam.) Loes.*	0.6	30	2	4.9	6.46	1.44	12.81	0.07	P	-	-	-	-	-	-	-	-	
57	*Heliotropium supinum L.*	4.2	70	6	34.4	15.07	4.33	53.76	0.09	P	-	-	-	-	-	-	-	-	
58	*Indigofera tsiangiana Metcalf*	0.6	30	2	4.9	6.46	1.44	12.81	0.07	P	0.5	25	2	4.1	5.38	1.44	10.9	0.08	P
59	*Ipomoea littoralis Blume*	0.6	10	6	4.9	2.15	4.33	11.39	0.6	P	1.5	37.5	4	12.3	8.07	2.89	23.2	0.11	P
60	*Ipomoea sagittifolia Burm.f.*	0.3	10	3	2.5	2.15	2.16	6.77	0.3	P	-	-	-	-	-	-	-	-	
61	*Ipomoea triloba L.*	0.4	20	2	3.3	4.3	1.44	9.02	0.1	P	-	-	-	-	-	-	-	-	
62	*Lantana camara L.*	0.3	20	1.5	2.5	4.3	1.08	7.84	0.08	P	-	-	-	-	-	-	-	-	
63	*Launaea procumbens (R*	0.8	40	2	6.5	8.61	1.44	16.6	0.05	P	-	-	-	-	-	-	-	-	

	oxb.) Ramayya & Rajagopal																		
64	*Launaea sarmentosa (Willd.) Kuntze*	0.7	40	1.75	5.7	8.61	1.26	15.6	0.04	P	-	-	-	-	-	-	-	-	
65	*Melia azedarach L.*	-	-	-	-	-	-	-	-		0.25	12.5	2	2	2.69	1.44	6.18	0.16	P
66	*Mesosphaerum suaveolens (L.) Kuntze*	1.2	40	3	9.8	8.61	2.16	20.59	0.08	P	1.75	75	2.3	14.3	16.14	1.68	32.2	0.03	P
67	*Momordica charantia L.*	0.3	20	1.5	2.5	4.3	1.08	7.84	0.08	P	0.63	25	2.5	5.1	5.38	1.8	12.3	0.1	P
68	*Mucuna pruriens (L.) DC.*	0.7	40	1.75	5.7	8.61	1.26	15.6	0.04	P	-	-	-	-	-	-	-	-	
69	*Mutarda arvensis (L.) D.A.German*	-	-	-	-	-	-	-	-		0.25	12.5	2	2	2.69	1.44	6.18	0.16	P
70	*Neltuma juliflora (Sw.) Raf.*	0.4	40	1	3.3	8.61	0.72	12.6	0.03	P	0.13	12.5	1	1	2.69	0.72	4.43	0.08	P
71	*Ocimum americanum L.*	1	50	2	8.2	10.76	1.44	20.39	0.04	P	0.25	12.5	2	2	2.69	1.44	6.18	0.16	P
72	*Ocimum tenuiflorum L.*	-	-	-	-	-	-	-	-		0.13	12.5	1	1	2.69	0.72	4.43	0.08	P
73	*Oldenlandia corymbosa L.*	-	-	-	-	-	-	-	-		0.38	25	1.5	3.1	5.38	1.08	9.53	0.06	P
74	*Oligochaeta divaricata (DC.) K.Koch*	2.7	60	4.5	22.1	12.91	3.25	38.26	0.08	P	-	-	-	-	-	-	-	-	P
75	*Ouret lanata (L.) Kuntze*	0.3	20	1.5	2.5	4.3	1.08	7.84	0.08	P	4.38	75	5.8	35.8	16.14	4.21	56.2	0.08	P
76	*Parthenium hysterophorus L*	1.1	60	1.83	9	12.91	1.32	23.24	0.03	P	0.5	37.5	1.3	4.1	8.07	0.96	13.1	0.04	P
77	*Pergularia daemia (Forssk.) Chiov.*	2.1	50	4.2	17.2	10.76	3.03	30.98	0.08	P	0.13	12.5	1	1	2.69	0.72	4.43	0.08	P
78	*Phyllanthus niruri L.*	1.4	80	1.75	11.5	17.22	1.26	29.94	0.02	P	2.75	87.5	3.1	22.5	18.83	2.27	43.6	0.04	P
79	*Phyllanthus reticulatus Poir.*	3.6	70	5.14	29.5	15.07	3.71	48.24	0.07	P	-	-	-	-	-	-	-	-	
80	*Physalis angulata L.*	0.8	40	2	6.5	8.61	1.44	16.6	0.05	P	0.88	50	1.8	7.2	10.76	1.26	19.2	0.04	P
81	*Prosopis cineraria (L.) Druce*	0.3	30	1	2.5	6.46	0.72	9.63	0.03	P	-	-	-	-	-	-	-	-	P
82	*Pupalia lappacea (L.) Juss.*	0.5	30	1.67	4.1	6.46	1.2	11.75	0.06	P	-	-	-	-	-	-	-	-	P
83	*Ricinus communis L.*	0.5	10	5	4.1	2.15	3.61	9.85	0.5	P	-	-	-	-	-	-	-	-	P
84	*Rumex pulcher L.*	0.6	30	2	4.9	6.46	1.44	12.81	0.07	P	0.5	37.5	1.3	4.1	8.07	0.96	13.1	0.04	P
85	*Salvadora persica L.*	0.3	20	1.5	2.5	4.3	1.08	7.84	0.08	P	-	-	-	-	-	-	-	-	
86	*Senegalia torta (Roxb.)*	0.2	20	1	1.6	4.3	0.72	6.66	0.05	P	-	-	-	-	-	-	-	-	

	Maslin, Seigler & Ebinger																		
87	*Senna tora (L.) Roxb.*	0.4	20	2	3.3	4.3	1.44	9.02	0.1	P	0.5	12.5	4	4.1	2.69	2.89	9.67	0.32	P
88	*Sida acuta Burm.f.*	0.4	20	2	3.3	4.3	1.44	9.02	0.1	P	-	-	-	-	-	-	-	-	
89	*Sida cordifolia L.*	1.3	30	4.33	10.6	6.46	3.13	20.22	0.14	P	-	-	-	-	-	-	-	-	
90	*Solanum lycopersicum L.*	0.3	20	1.5	2.5	4.3	1.08	7.84	0.08	P	0.75	50	1.5	6.1	10.76	1.08	18	0.03	P
91	*Solanum nigrum L.*	0.4	30	1.33	3.3	6.46	0.96	10.69	0.04	P	0.5	25	2	4.1	5.38	1.44	10.9	0.08	P
92	*Solanum sisymbriifolium Lam*	2.2	80	2.75	18	17.22	1.98	37.21	0.03	P	0.25	12.5	2	2	2.69	1.44	6.18	0.16	P
93	*Sphaeranthus indicus L.*	0.4	20	2	3.3	4.3	1.44	9.02	0.1	P	0.63	37.5	1.7	5.1	8.07	1.2	14.4	0.04	P
94	*Tephrosia purpurea (L.) Pers.*	0.5	30	1.67	4.1	6.46	1.2	11.75	0.06	P	-	-	-	-	-	-	-	-	
95	*Trianthema portulacastrum L.*	0.2	10	2	1.6	2.15	1.44	5.23	0.2	P	-	-	-	-	-	-	-	-	
96	*Tridax procumbens L.*	0.3	20	1.5	2.5	4.3	1.08	7.84	0.08	P	-	-	-	-	-	-	-	-	
97	*Trifolium repens L.*	-	-	-	-	-	-	-	-		0.13	12.5	1	1	2.69	0.72	4.43	0.08	P
98	*Vachellia nilotica (L.) P.J.H.Hurter & Mabb.*	1.2	80	1.5	9.8	17.22	1.08	28.12	0.02	P	0.38	37.5	1	3.1	8.07	0.72	11.9	0.03	P
99	*Xanthium strumarium L.*	2.7	80	3.38	22.1	17.22	2.44	41.75	0.04	P	0.38	25	1.5	3.1	5.38	1.08	9.53	0.06	P
100	*Ziziphus mauritiana Lam*	0.5	30	1.67	4.1	6.46	1.2	11.75	0.06	P	0.25	25	1	2	5.38	0.72	8.15	0.04	P
101	*Ziziphus nummularia (Burm.f.) Wight & Arn.*	0.2	20	1	1.6	4.3	0.72	6.66	0.05	P	0.13	12.5	1	1	2.69	0.72	4.43	0.08	P

CONCLUSION

The first step towards accomplishing biodiversity conservation at wetland scale is floral documentation and physiochemical analysis. The focus of this study is on the wetland vegetation of the two selected wetlands in Chandkheda.The physiochemical analysis reveals that the water of both wetlands has high amount of TSS and moderate alkalinity. The soil of wetlands has a higher amount of Available Nitrogen and Magnesium. The pH and conductivity of water and soil is ideal for the plants.The Eco- physiological state of water and soil within both wetlands is satisfactory for the growth of plants.The results of the present study documented a total of 101 plant species from the both wetlands of Chandkheda. The Vada talav has 91 angiosperm plants species belonging to 77 genera and 34 families from 10 studied quadrates while the Visatmata wetland comprises 59 plant species from 41 genera and 24 families from 8 studied quadrates. The herbaceous vegetation is found predominantly in the Wetlands of Chandkheda. Glinus lotoides and Cynodon dactylon are abundant plants in Vada talav wetland. The Visatmata wetland has abundant vegetation of Cynodon dactylon and Alternanthera ficoidea. Phyllanthus, Euphorbia, Solanum, Vachellia, Eleusine, Eragrostis, Mesosphaerum and Calotropis are some common genus found in the Wetlands of Chandkheda. Wherein floral diversity, Density, Frequency, Abundance, Important Value Index, Abundance to Frequency ratio

has been determined. The value of various biodiversity indices determines that both wetlands of Chandkheda have moderate to high diversity with adequate bionomical condition. The documentation obtained from the present work can be used for the future conservation and management of these urban wetlands of Chandkheda

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HOW TO CITE: Vanshika Thakor, Ganapat Bavaliya*, Bharat Maitreya, Analysis of Phytodiversity and Phytosociology of Wetlands in Chandkheda, Ahmedabad, Gujrat, Int. J. Sci. R. Tech., 2025, 2 (4), 27-37. https://doi.org/10.5281/zenodo.15133196