

A contribution to the flora of selected wetlands in Kachchh district of Gujarat

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SUMMARY

Kachchh district covers an area of 45625 sq.km. and falls in the arid tract. In spite of being arid, the district covers maximum area under wetlands. The present study discussed only baseline status of the vegetation in 11 selected wetlands. Total 56 plant species belonging to 46 genera and 28 families have been reported from the wetlands. Out of 56 plant species, 7 species belonged to algae while remaining 49 to angiosperms.

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Key words :

Wetlands,
Kachchh,
Aquatic species

Vegetation is the outcome of the habitat, environmental condition and existing biotic influences. Species diversity varies greatly through space and time in a given habitat and ecosystem (Robin and David, 2001). Aquatic vegetation is an important component for the healthy functioning of wetland ecosystem and for biological productivity. It also supports diverse organisms and thereby, provides livelihood options for dependent communities.

MATERIALS AND METHODS

Vegetation studies specific to wetlands of Gujarat are limited. Looking to the lack of information on wetland vegetation for Kachchh region, an attempt was made to understand the baseline status of vegetation in and around the 11 selected wetlands. In the present study, status of aquatic vegetation was discussed covering basic information on life form status and list of species recorded.

Since the project area falls under arid region, availability of both aquatic and terrestrial (land area bordering the wetland) vegetation was very sparse. The study was conducted between the year of 2007 and 2008.

Study area:

Kachchh, extending to a total area of 45,652 sq.km, falls in the arid tracts and

experiences tropical monsoon climate with average annual rainfall of 350 mm. Distribution of this meagre rainfall is erratic and variable. Average number of rainy days of the district is 13. Temperature ranges from 45^o C in the summer to 4.6^o C in winter. Kachchh is drought prone district as drought occurs every second or third year. In spite of being arid, Kachchh district covers maximum area under wetlands. Based on the distribution, the wetlands of Kachchh can be divided in to three major types; the central inland wetlands (man made), coastal wetlands in the southern and western regions and saline wetlands (Ranns-Banni) in the northern limit. Eleven sampling sites were selected from the Kachchh District (Table 1 and Fig. 1)

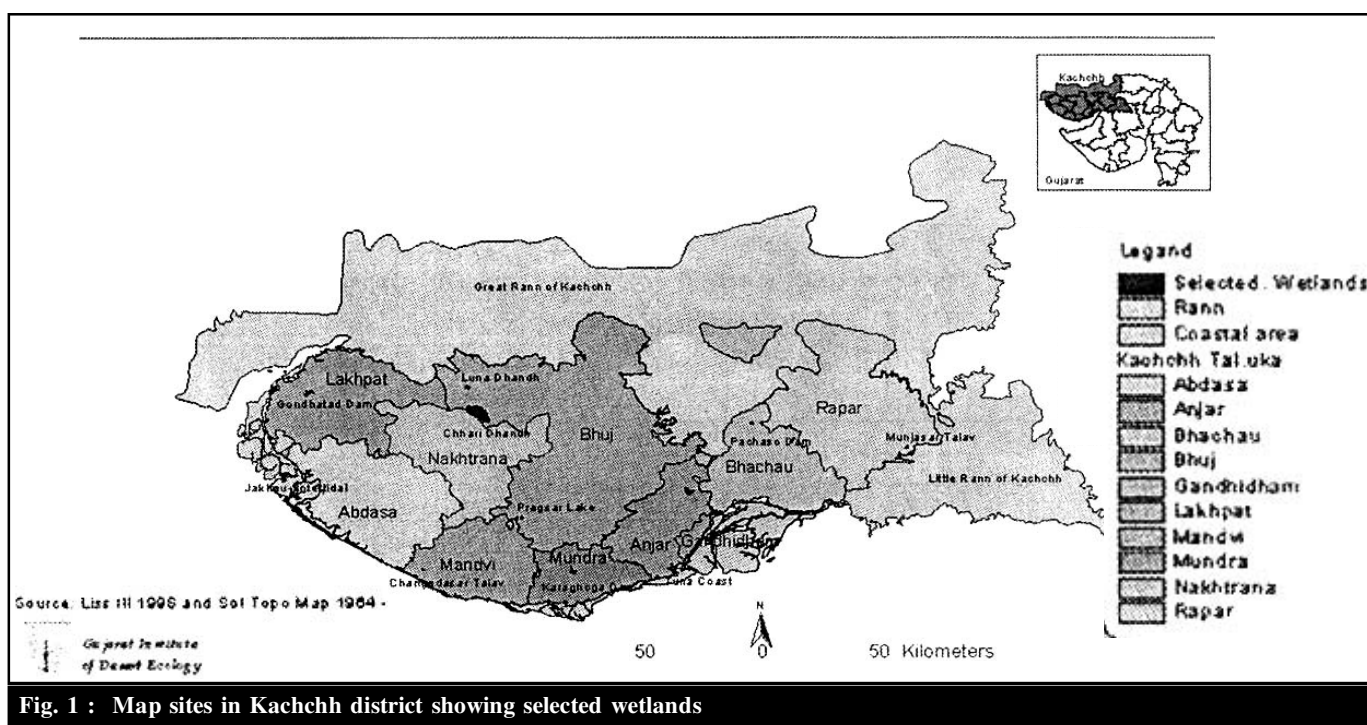
RESULTS AND DISCUSSION

Aquatic vegetation has been grouped into three types which include purely aquatic macrophytes and algal group and other plants growing in water inundation area or shore line semi-aquatic type. Overall taxonomical status of aquatic vegetation showed that a total of 56 species belonging to 46 genera and 28 families. Among these species, submerged vegetation showed low species richness of only 8 species under 8 genera and 7 families. In the case of semi-aquatic vegetation, species richness was

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Table 1: Details of wetlands for intensive study

Sr. No.	Wetland name	Village	Taluka	Wetland habitat	Area (ha)
1.	Tapar Dam (TD)	Tapar	Anjar	Dam	463.50
2.	Pachaso Dam (PD)	Chobari	Bhachau	Dam	71.00
3.	Pragsar Lake (PL)	Wandhay- Samatra	Bhuj	Lake	79.68
4.	Chhari Dhandh (CD)	Chari-fulay	Bhuj	Banni	3670.53
5.	Luna Dhandh (LD)	Luna	Bhuj	Banni	184.87
6.	Godhatad Dam (GD)	Godhantad – Naredi	Lakhpat	Dam	217.51
7.	Changadasr Talav (CT)	Changdai	Mandvi	Talav	14.07
8.	Karoghoga Dam (KD)	Karoghoga	Mundra	Dam	50.08
9.	Munjasar Talav (MT)	Palansva	Rapar	Talav	76.11
10.	Tuna Coast (TC)	Tuna	Gandhidham	Coastal	Open coast
11.	Jakhau – Salt pan and Mangrove area (JC)	Jakhu	Abdasa	Coastal	Open coast

**Fig. 1 : Map sites in Kachchh district showing selected wetlands**

comparatively high with 41 species under 33 genera and 18 families. Algal species were represented by only 7 species under 6 genera and two families.

Wetland specific species richness recorded was maximum with 25 species in Godhatad Dam (GD), 24 species in Luna Dhandh (LD) followed by 20 species in Pragsar Lake (PL), 19 species in Tapar Dam (TD), 16 species in Changadasar Talav (CT) and 15 in Pragsar Lake (PL). Jakhau and Tuna being the coastal wetland reported less species numbers of 10 and 9 species, respectively (Table 2) only.

Distribution of aquatic species showed that among 9 species reported, *Valisneria spiralis* was the only

species recorded from four wetlands. *Eleocharis dulcis*, *Marsilea quadrifolia* and *Typha angustata* were the three species found in three wetlands. Though, *Najas graminea* was reported abundantly with high number of plants in the sample plots, it was reported only from the Godhatad Dam.

Though 41 semi-aquatic species were reported, only four species *Cynodon dactylon*, *Cyperus* sp, *Cressa cretica* and *Cyperus rotundus* showed wider distribution by occurring in 7-8 wetlands; species that showed moderate level of distribution included *Grangea maderspatana*, *Cyperus exaltatus* and *Polygonum plebeium* and they were recorded in 5-6 wetlands. Overall,

Table 2: List of aquatic plants reported from selected wetlands

Sr. No.	Family and species name	Habitat	CT	CD	GD	JC	KD	LD	MT	PD	PL	TD	TC
Algae													
Cyanophyceae													
1.	<i>Oscillatoria</i> sp.	Aquatic	√	√	√	√	√	√	√	√	√	√	√
2.	<i>Spirulina</i> sp.	Aquatic	√		√	?	√		√		√	√	√
3.	<i>Anabaena</i> sp.	Aquatic	√	√	√	√	√	√	√	√	√	√	√
4.	<i>Microcystis</i> sp.	Aquatic	√		√	√	√	√	√		√	√	√
Chlorophyceae													
5.	<i>Chara rythrogyna</i>	Aquatic			√		√			√			
6.	<i>Chara globulins</i>	Aquatic			√		√			√			
7.	<i>Spirogyra gratima</i>	Aquatic		√	√			√	√	√	√	√	
Aquatic plants													
Cyperaceae													
8.	<i>Eleocharis dulcis</i>	Submerged		√	√					√			
Hydrocharitaceae													
9.	<i>Hydrilla verticillata</i>	Submerged						√		√			
10.	<i>Valisneria spiralis</i>	Submerged	√		√			√			√		
Marsileaceae													
11.	<i>Marsilea quadrifolia</i>	Submerged	√		√			√					
Najadaceae													
12.	<i>Najas graminea</i>	Submerged		√									
Nymphaceae													
13.	<i>Nymphaea stellata</i>	Submerged	√					√					
Potamogetonaceae													
14.	<i>Potamojeton nodosus</i>	Submerged	√		√								
Ruppiaceae													
15.	<i>Ruppia maritima</i> L.	Submerged											
Semi-aquatic plants – emergent and shore													
Aizoaceae													
16.	<i>Sesuvium sesuvioides</i>	Moist ground											√
17.	<i>Zaleya govindia</i>	Moist ground				√							√
Amaranthaceae													
18.	<i>Alternanthera sessilis</i>	Moist ground						√			√		
Asteraceae													
19.	<i>Eclipta prostrata</i>	Moist ground			√		√		√	√	√		
20.	<i>Grangea maderspatana</i>	Moist ground			√			√	√	√	√		
21.	<i>Launaea procumbens</i>	Moist ground					√		√			√	
Avicenniaceae													
22.	<i>Avicinia marina</i>	Submerged				√							√
Boraginaceae													
23.	<i>Heliotropium ovalifolium</i>	Drying pond	√					√					
24.	<i>Heliotropium marifolium</i>	Sea coast			√								
25.	<i>Heliotropium supinum</i>	Moist ground			√								

Table 1 Contd.....

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26.	<i>Coldenia procumbens</i>	Moist ground			√	√				√
Chenopodaceae										
27.	<i>Suaeda nudiflora</i>	Sea coast			√					
28.	<i>Suaeda fruticosa</i>	Sea coast			√					√
29.	<i>Suaeda maritima</i>	Sea coast			√					
30.	<i>Salsola baryosma</i>	Sea coast			√					√
31.	<i>Salicornia brachiata</i>	Sea coast								√
Convolvulaceae										
32.	<i>Cressa cretica</i>	Sea coast	√	√		√	√	√	√	√
33.	<i>Ipomoea sepiaria</i>	Moist ground					√			
Cyperaceae										
34.	<i>Cyperus</i> Sp.	Sedge	√	√	√	√	√	√	√	√
35.	<i>Cyprus triceps</i>	Sedge	√				√			
36.	<i>Cyperus rotundus</i>	Sedge	√	√		√	√	√	√	√
37.	<i>Cyperus exaltatus</i>	Sedge		√	√	√		√	√	√
38.	<i>Cyperus difformis</i>	Sedge				√		√	√	√
39.	<i>Scirpus lateriflorus</i>	Sedge				√		√		√
Elatinaceae										
40.	<i>Bergia ammannioides</i>	Moist ground	√					√	√	√
Euphorbiaceae										
41.	<i>Chrozophora prostrata</i>	Moist ground								√
42.	<i>Kirganelia reticulata</i>	Moist ground		√						√
Lamiaceae										
43.	<i>Phyla nodiflora</i>	Moist ground		√	√	√			√	√
Lythraceae										
44.	<i>Ammannia baccifera</i>	Damp places		√		√			√	
45.	<i>Rotala</i> sp.	Moist ground		√					√	
Molluginaceae										
46.	<i>Mollugo pentaphylla</i>	Moist ground	√	√						
47.	<i>Glinus lotiedus</i>	Moist ground				√	√	√		
Papaverceae										
48.	<i>Argemone maxicana</i>	Waste place		√						
Papilionaceae										
49.	<i>Trigonella occulta</i>	Damp places							√	
Poaceae										
50.	<i>Crypsis schoenoides</i>	Moist ground							√	
51.	<i>Aeluropus lagopoides</i>	Moist ground						√		
52.	<i>Cynodon dactylon</i>	Moist ground	√	√	√	√	√	√	√	√
53.	<i>Phragmites karka</i>	River bank		√					√	
Polygonaceae										
54.	<i>Polygonum plebeium</i>	Moist ground	√		√	√	√			√
Rubiaceae										
55.	<i>Dentella repens</i>	Moist ground		√		√				
Tamaricaceae										
56.	<i>Tamarix aphylla</i>	River bed		√	√	√			√	

57% of the species (24 species) showed restricted distribution and reported from 1-2 wetlands (Table 2) only.

Species like *Valisneria spiralis*, *Najas graminea*, *Eclipta prostrate*, *Grangea maderspatana*, *Cressa cretica*, *Cyperus* sp., *Cyperus rotundus*, *Cyperus exaltatus* and *Cynodon dactylon* fell under abundant category and registered an overall abundant species of total list. Only five species formed moderate status (*Marsilea quadrifolia*, *Bergia ammannioides*, *Phyllanthus nodiflora*, *Glinus lotiedus* and *Polygonum plebeium*) and constituted 10 per cent of the entire list (Table 2).

Conclusion:

In Kachchh region, occurrence of frequent drought, high surface water evaporation rate, draining of water for irrigation significantly influence the hydrological regime of the wetlands in term of water spread, depth and overall hydro-period. Prevailing high fluctuation in hydrological regime seems to have limited growth of algal and aquatic vegetation.

The present study discussed only the baseline status of the vegetation of selected wetlands. It is highly imperative to take up intensive long term monitoring study on vegetation status with the correlation of various indicators which could further enable proper management and conservation of these arid wetlands.

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