

ANGIOSPERMS DIVERSITY OF RANI TALAV WETLAND (PAVAPURI), IDAR, SABARKANTHA, GUJARAT

Ronak R. Charan¹, Kalpa Oza¹, Bharat B. Maitreya¹, Hitesh A. Solanki¹

¹Department of Botany, Bioinformatics and Climate Change Impacts Management, University School of Sciences, Gujarat University, Ahmedabad-380009, India

Abstract: The present study is an account of the investigation of the wetland Angiosperms work carried out in aquatic habitats of Rani Talav, Idar, Sabarkantha district, Gujarat, India. The study identified around 35 species belonging to 33 genus and 20 families. Out of 35 species, there were 33 herbs, 1 climber and 1 shrub. Plants were also classified into 28 upper wetland species, 3 facultative and 4 obligatory species.

Keywords: Aquatic angiosperms, wetlands, Sabarkantha, Idar, Rani Talav, Lake, Gujarat.

I. INTRODUCTION

Plants have made themselves to survive in varying environmental conditions. Water-based ecosystem is known as an aquatic ecosystem. "Aquatic" is a Latin term meaning water. Works on floristic study of composition of hydrophytes in different water reservoirs in different parts of India were carried out by several workers like Cook (1996)¹, Agharkar (1923)², Dutta *et al.* (2002)³, Ghosai *et al.* (1993)⁴, Subrahmanyam (1962)⁵ has described 117 aquatic plants. Lavania *et al.* (1993)⁶ has compiled the wetland flora of India. Biswas and Calder (1984)⁷ done first comprehensive work on the wetland flora of India. The places where the two natural components water and soil mingle to support life forms are termed as Wetland. They are play important role in human civilization, needs for life on earth such as water quality improvement, drinking water, flood storage, fish production, climate stabilizer, transport, sediment retention, recreation.

Flowering plants are termed as angiosperm, which develop seeds from ovules contained in ovaries. Aquatic angiosperms are dominant and grow in Free Floating, Floating rooted, submerged, muddy, marshy area. Emergent species dominated in number over floating and submerged species in all the water bodies. Some work on wetland and aquatic angiosperms carried out in Gujarat by Maitreya (2015)⁸, Jadeja *et al.* (2016)⁹, Patel & Patel (2014)¹⁰, Shah *et.al* (2010)¹¹, Patel & Patel (2016)¹², Parikh *et al.* (2013)¹³, M.M.Patel (2017)¹⁴, Kumar & Eledath (2015)¹⁵ all are combinly shows that 171 species and 55 families of aquatic flowering plants of Gujarat.

II. STUDY AREA

Idar is located at the Southern edge of the Aravalli mountain range. It is a classic example of a naturally protected hill fort. It was the capital of the Idar State under the rule of the Rathore Rajputs in the MahiKantha agency during British Raj. Rani Talav is a well-known lake of Idar, located at half a mile to the North-East of Idar. It consists of the area near to ninety-four acres. It has the greatest depth of seventeen feet. Its water supply is used for irrigation throughout the year. In the centre of the lake, there is a temple called The Pavapuri Jain temple located, built recently. A bridge connects the land surface and the temple. The main idol's height is 72 cm which is surrounded by 72 carved figurines. Rani Lake is popularly known as Jain-tirth Rani Lake in the local with a picturesque of a beautiful island surrounded by water in monsoon season.

III. FLORISTIC SURVEY

Floristic survey of Rani talav wetland was carried out during 2017-18. The plants specimens were collected during Floristic survey to prepare herbarium and authenticate their correct identify. The collected specimens were identified taxonomically with the help of available monographs and floras^{16,17,18}. Collected specimens were cross checked for correct identification at the Herbarium centre of Gujarat University, Ahmedabad, Gujarat, India.

TABLE I: LIST OF PLANTS FOUND IN THE HABITAT OF RANI TALAV (PAVAPURI) IDAR, SABARKANTHA, GUJARAT.

Sr No.	Botanical Name	Local Name	Family	Habit
1	<i>Alternantherasessilis</i> (L.) Dc.		Amaranthaceae	Herb
2	<i>Ammanibaccifera</i> L.	Jal Agio, Lal Agio	Lythraceae	Herb
3	<i>Ammaniasenegalensis</i> Lam.		Lythraceae	Herb
4	<i>Anagallisarvensis</i> L. var. <i>coerulea</i> (Schreb.) Gren. & Godr.	Kali fuladi, Chanakchibhadi	Primulaceae	Herb
5	<i>Bacopamonnieri</i> (L.) Pennell	Brahmi,jalnaveri	Scrophulariaceae	Herb
6	<i>Chenopodiummurale</i> L.	Bilaro, Balaro	Chenopodiaceae	Herb
7	<i>Convolvulus microphyllus</i> (Roth) Sieb. ex Spr.	Shankhavli, Mankhni, Birval	Convolvulaceae	Climber
8	<i>Cyperusarticulatus</i> L.		Scperaceae	Sedge
9	<i>AcalyphaCiliata</i> Forsk		Euphorbiaceae	Herb
10	<i>Evolvulusalsinoides</i> (L.) L.	Kali Shankhavali, Zinifudardi	Convolvulaceae	Herb
11	<i>Fimbristylisaestivalis</i> (Retz.) Vahl.		Cyperaceae	Sedge
12	<i>Gnaphaliumindicum</i> L.	Phulvo	Asteraceae (Compositae)	Herb
13	<i>Grangeamaderaspatna</i> (L.)Poir.	zinki mundi	Asteraceae(compositae)	Herb
14	<i>HydrillaVerticillata</i> (L.F) Royel		Hydrocharitaceae	Aquatic Herb
15	<i>Hyptissuaveolens</i> (L.) Poit.	Gandhedu	Lamiaceae	Herb
16	<i>Ipomoea aquatica</i> Forsk.	Nali Ni Bhaji, Nada Ni Vel	Convolvulaceae	Herb
17	<i>Launaeaprocumbens</i> (Roxb) Ramayya&Rajgopal	Motibhonpatri	Asteraceae(compositae)	Herb
18	<i>Linderniacrustacea</i> (L.) F. Muell.		Scrophulariaceae	Herb
19	<i>Melilotusindica</i> Ali.	Piliadbangadab	Papilionaceae	Herb
20	<i>Merremiaganetica</i> (L.) Cufod.	Undardi, Undarkani	Convolvulaceae	Herb
21	<i>Moschosmapolystachyum</i> (L.) Bth.	Dungrautulsi	Lamiaceae	Herb
22	<i>Nymphoides cristatum</i> (Roxb.) O. Ktze.	Poyana, Kumudini	Gentianaceae	Aquatic Herb
23	<i>Phyla nodiflora</i> (L.) Greene	Ratvelio, Ratulio	Verbenaceae	Herb
24	<i>Physalis minima</i> L.	Popti, Parpopti	Solanaceae	Herb
25	<i>Polygala erioptera</i> DC.	Patsan, Bhonysan	Polygalaceae	Herb
26	<i>Polygonumplebeium</i> R.Br.var.pl ebeium		Polygonaceae	Herb
27	<i>Potamogetoncrispus</i> L.		Potamogetonaceae	Aquatic Herb
28	<i>Rauwolfiatetraphylla</i> L.	Sarggandha	Apocynaceae	Shrub
29	<i>Rumexdentatus</i> L.		Polygonaceae	Herb
30	<i>Scirpusjacobi</i> F.		Cyperaceae	Sedge
31	<i>Scirpuslateriflorus</i> Gmel.		Cyperaceae	Sedge

32	<i>Spergula vernalis</i> Willd.		Caryophyllaceae	Herb
33	<i>Trapa Natans</i> L.	shingoda	Lathraceae	Aquatic Herb
34	<i>Vallisneria spiralis</i> L.	Jalsarpolio	Hydrocharitaceae	Aquatic Herb
35	<i>Vernonia cinerea</i> (L.) Less	sahedevi, sadedi	Asteraceae (compositae)	Herb

TABLE II: LIST OF FAMILY AND GENERA FOUND IN THE HABITAT OF RANI TALAV (PAVAPURI) IDAR, SABARKANTHA, GUJARAT

Number of Families and Genera			
Sr No.	Family	Genera	Species
1	Amaranthaceae	1	1
2	Lythraceae	2	3
3	Primulaceae	1	1
4	Scrophulariaceae	2	2
5	Chenopodiaceae	1	1
6	Convolvulaceae	4	4
7	Cyperaceae	3	4
8	Euphorbiaceae	1	1
9	Asteraceae (Compositae)	4	4
10	Hydrocharitaceae	2	2
11	Lamiaceae	2	2
12	Papilionaceae	1	1
13	Gentianaceae	1	1
14	Verbenaceae	1	1
15	Solanaceae	1	1
16	Polygalaceae	1	1
17	Polygonaceae	2	2
18	Potamogetonaceae	1	1
19	Apocynaceae	1	1
20	Caryophyllaceae	1	1

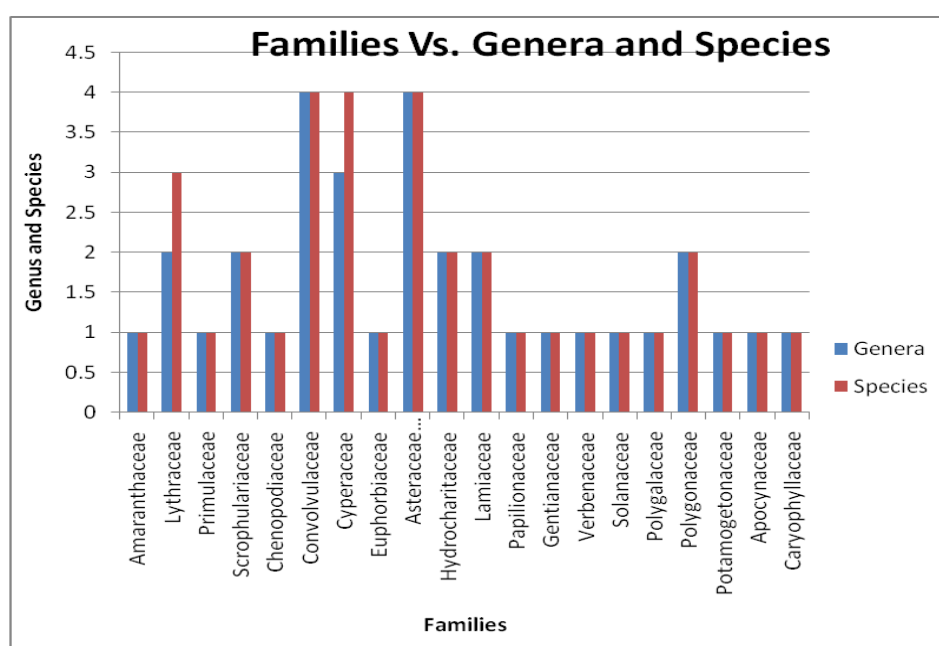


Fig 1: Graphical representation of the plant families vs. genus and species.

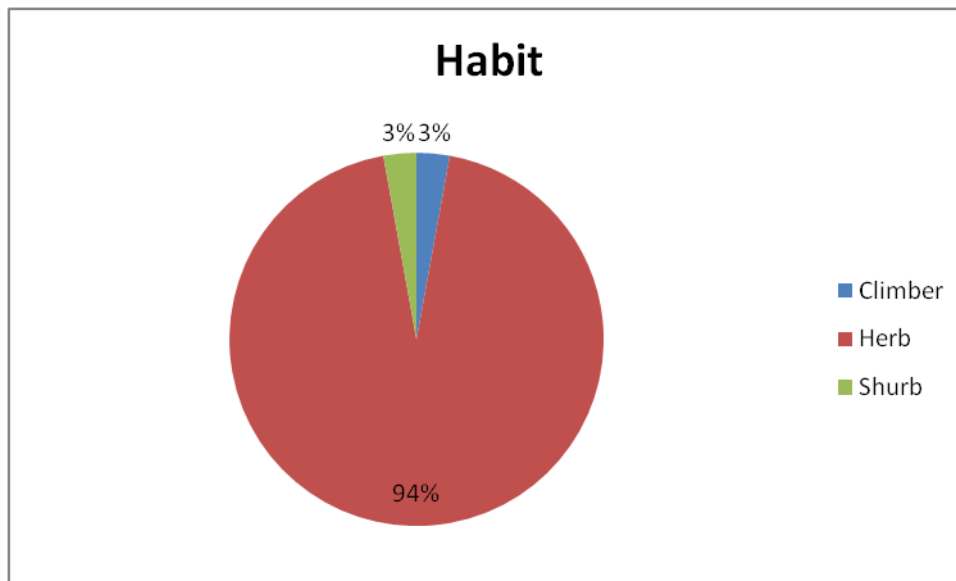


Fig 2: Graphical representation of plant habit.

4. DISCUSSION

Post Monsoon Season: *Ammaniabaccifera* L., *Fimbristylisaestivalis* (Retz.) Vahl. , *Gnaphaliumindicum*L., *Grangeamaderaspatna*(L.)Poir. *Polygonumplebeium*R.Br.var.*plebeium*,*Rumexdentatus* L.

Shrub Layer: *Rauvolfiatetraphylla* L.

Climber Layer: *Convolvulus microphyllus* (Roth) Sieb. ex Spr.

Herb Layer: *Alternantherasessilis*(L.) Dc., *Ammaniabaccifera* L.,*Ammaniasenegalensis* Lam. ,*Anagallisarvensis* L. var. *coerulea* (Schreb.) Gren. &Godr. , *Bacopamonnieri*(L.) Pennell, *Chenopodiummurale* L.,*Cyperusarticulatus* L. ,*Euphorbia* , *Evolvulusalsinoides* (L.) L., *Fimbristylisaestivalis* (Retz.) Vahl. , *Gnaphaliumindicum*L. ,*Grangeamaderaspatna*(L.)Poir. , *HydrillaVerticillata* (L.F) Royel, *Hyptissuaveolens*(L.) poit. , *AcalyphaCiliata*Forsk ,*Ipomoea aquatica*Forsk. , *Launaeaprocumbens*(Roxb)*ramayya&rajgopal* , *Linderniacrustacea* (L.) F. Muell. , *Melilotusindica* Ali. , *Merremiagangetica* (L.) Cufod. , *Moschosmapolystachyum*(L.) Bth. ,*Nymphoidescristatum* (Roxb.) O. Ktze ,*Phylanodiflora* (L.) Greene ,*Physalis minima* L. , *Polygala erioptera* DC. , *Polygonumplebeium*R.Br.var.*plebeium* ,*Potamogetoncrispus* L. , *Rumexdentatus* L , *Scirpusjacobi* Fischer , *Scirpuslateriflorus*Gmel. , *Spergulavernalis*Willd. , *TrapaNatans*L. ,*Vallisneriaspiralis* L. , *Vernoniacinerea*(L.) Less .

5. CONCLUSION

The study identified 35 plant species belonging to 33 genus and 20 families. Out of 35 species, there are 33 herbs, 1 climber and 1 shrub. Plants were also classified into 28 upper wetland species, 3 facultative species and 4 obligatory wetland species. This study will be beneficial for ecologists and researchers for wetland field analysis and reporting. Herbarium collection will be provided as reference material upon request.

REFERENCES

- [1] Cook CDK. Aquatic and Wetland Plants of India. Oxford Uni. Press, 1996.
- [2] Agharkar SP. The position of our knowledge of the aquatic flora of India, Indian Bot Soc 1923; 3:252-260.
- [3] Dutta SA, Desai N, Almeida SM, Das AP. Aquatic Macrophytes of Apalchand Reserve in Jalpaiguri District of West Bengal., In Perspective of Plant Biodiversity, (Ed, Das, A.P.) Dehradun, 2002.
- [4] Ghosai SK, Santra SC, Mukherjee PK. Phenological Studies in Aquatic Macrophytes Plants of Lower Gangetic Delta., West Bengal, India., Feddes Repertorium 1993; 104:93-111.
- [5] Subrahmanyam K. Aquatic Angiosperm., Botanical Monograph 3. CSIR Publ., New Delhi, 1962.

- [6] Lavania GS, Paliwal SC, Gopal B. Aquatic Vegetation of Indian Subcontinent: In E. Gopal (Ed.) Ecology and Management of Aquatic Vegetation Of Indian Subcontinent. Dordrecht: Kluwer Academy Publishers, 1993.
- [7] Biswas K, Calder CC. Handbook of common water and marsh plants of India, XVI + 216, B. S. Mahendrapal Singh (Dehradun), 1984.
- [8] Maitreya BB, 2015, Hydrophytes of Pond Near Chiyada Village, Bavla , Gujarat – India, *International Journal of Allied Practice*, Research and Review, **2**(5), p.n.29-34
- [9] Jaadeja BA, Odedra NK and Vadhiya HA (2006) Aquatic, semi-aquatic and marshland plants of Porbandar district, Gujarat, *International Journal of Plant Sciences*, **1** (2) : 205-208
- [10] Patel KR and Patel NK ,2014, Study of aquatic angiospermic plants of Anand city, Gujarat, India, *Life Sciences Leaflets*, **2277**(4297): 0976–1098.
- [11] Shah JP, Dabgar YB and Jain BK, 2010, A contribution to the flora of selected wetlands in Kachchh district of Gujarat, *Asian Journal of Environmental Science*,**5**(2),p.n. 126-130
- [12] Patel NB and Patel KB 2016, Floristic account of Aquatic and Wetland Angiosperms of Sabarkatha, District Gujarat, *International Journal of Botany Studies*, **1**(4): 29-31
- [13] Parikh p., Unadkat k. and Nagar p. ,2013, Study of Aquatic weeds in Two Ponds of Vadodara, Gujarat, *International Journal of Allied Practice*, Research and Review,**2**(1), p.n. 1-7
- [14] Patel MM , 2016,Some aquatic and wetland medicinal plants in Aravalli district of Gujarat, *Journal of Medicinal Plants Studies*, **6**(1), P.n. 143-145
- [15] Kumara A. and Eledathb M., 2015, Baseline Status for flora and fauna with aquatic Biodiversity in Dahej area, district Bharuch, Gujarat, *Octa Journal of Environmental Research*, **3**(1), P.n. 80-93
- [16] Shah GL. Flora of Gujarat State. Part I and II, Sardar Patel University, Vallabh Vidyanagar, 1978.
- [17] Cooke T. The Flora of the Presidency of Bombay. London (B.S.I. Reprint, Calcutta, 1958), 1901-1908, I-III.
- [18] Cook T. The Flora of the Presidency of Bombay, Botanical Survey of India, Calcutta, 1967, I-III.