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An Inventory of Aquatic and Wetland Plants of Pocharam lake, Medak District, Telangana, India

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ABSTRACT

The aim this study was to document the aquatic and wetland plants of Pocharam lake in Medak district of Telangana State. Floristic survey was carried out during 2011-2014. The study reveals the occurrence of 110 species of hydrophytes belonging to 80 genera and 37 families of Angiosperms. Of the 110 species here in registered, 14 species viz., Acmella paniculata (Wall. ex DC.) R. K. Jansen, Alternanthera philoxeroides (Mart.) Griseb., Cleome chelidonii L.f., Cyperus alopecuroides Rottb., Cyperus bulbosus Vahl, Glossostigma diandrum (L.) Kuntze, Limnophyton obtusifolium (L.) Miq., Scleria rugosa R. Br., Smithia conferta Sm., Utricularia caerulea L., Utricularia bifida L., Utricularia polygaloides Edgew., Utricularia scandens Benj. and Vigna aconitifolia (Jacq.) Marechal are reported here as a new additions to the flora of Medak district. Among five the morpho-ecologic groups registered, the emergent anchored presented 54 species, followed by wetland 39 species, submerged anchored/submerged with seven species and floating and floating leaved anchored each with five species. In the present communication, all the species are enumerated along with the photos followed by morpho-ecological groups.

Key words: Aquatic plants, Wetland flora, Pocharam lake, Medak, Telangana

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INTRODUCTION

Wetlands are one of the crucial natural resources. Those are areas of land that are either temporarily or permanently covered by water. This means that a wetland is neither truly aquatic nor terrestrial; it is possible that wetlands can be both at the same time depending on seasonal variability. Thus, wetlands exhibit enormous diversity according to their genesis, geographical location, water regime and chemistry, dominant plants and soil or sediment characteristics. Wetlands are ranked third among the most productive ecosystems on earth. They are valuable sources, sinks and transformers of a multitude of chemical, biological and genetic material and are considered the 'Kidneys of the Earth' for the cleaning function they perform through biogeochemical cycles [1]. They are directly and indirectly support millions of people in providing services such as food, fiber and raw materials, storm and flood control, clean water supply, scenic beauty and educational and recreational benefits.

The total area of wetlands in India is 15.26 Mha, which is around 4.63 % of the geographical area of the country. In the state of Telangana, total wetland area is estimated to be 11484000 ha, which is 4.33% of state geographical area. Medak district comprises of 1756 wetlands, out of which, 1092 are large and medium besides 664 small wetlands (<2.25 ha). These wetlands occupy 47639 ha, which accounts for 4.91 per cent of the geographical area of the district. Pocharam lake occupy 4,088 ha, which accounts for 0.085% of the total wetland land area of the district [2].

MATERIALS AND METHODS

Study area

This work is a part of the study namely "Flora of Pocharam Wildlife Sanctuary" which was carried out in the period of 2011 to 2014. Pocharam lake (18° 08´ N latitude and 77°57´ E longitude) named after Pocharam village of Medak district was created by construction of a dam across Allair river (a tributary of Manjeera river) between 1916 to 1922. The water spread area of the lake is about 16.835 km^2, with depth of about 6-7 m depending on the season and fluctuations in rain fall. The climate is characterized by a hot summer and generally dry weather with some pleasing showers, except during the Southwest monsoon season. The average annual rainfall is 896.7 mm, and it increases from the South towards northern parts of the district. The mean daily maximum temperature is about 40^oC and the mean daily minimum temperature is about 26°C. During the cold season, the night temperature may sometimes go down to 6°C.

Floristic survey

Plant collections were made in the lake at regular intervals during the study period. Field trips of 10 to 15 days duration were planned taking into consideration the flowering and fruiting seasons of the plants inhabiting the area. Specimens were initially identified with the help of regional and local district floras such as *Flora of the Presidency of Madras* [4] and Flora of Medak district [5]. Recent monographs, revisionary works and relevant research floras were consulted for determining correct identity of plants and updating nomenclature. The identified specimens were further confirmed by comparing them with the authentic specimens available at Deccan Regional Centre (BSID), Hyderabad. All the specimens were deposited in the Herbarium Hyderabadense (HY), Department of Botany, Osmania University, Hyderabad. The taxonomical and ecological information such as floating, submerged/ submerged anchored, floating leaved anchored, emergent anchored and wetland is followed [3]. In the enumeration, families have been arranged alphabetically and followed by morpho-ecological groups.

RESULTS AND DISCUSSION

The present taxonomic investigation revealed 110 species of hydrophytes belonging to 80 genera and 37 families of Angiosperms (Table 1). Dicotyledons comprise 62 species belonging to 43 genera and 26 families. Monocotyledons comprise 48 species belonging to 37 genera and 11 families. The dominant families of the lake are Poaceae with 14 genera and 16 species, followed by Cyperaceae with seven genera and 15 species, Leguminosae with seven genera and eight species and Asteraceae and Hydrocharitaceae with four genera and four species each. The dominant genera of the lake are *Cyperus* (Cyperaceae), with seven species registered, followed by *Utricularia* (Lentibulariaceae) and *Corchorus* (Malvaceae), with five species each registered. Other 17 families are represented by a single species: Acanthaceae, Alismataceae, Amaranthaceae, Amaryllidaceae, Apiaceae, Apocynaceae, Aponogetonaceae, Ceratophyllaceae, Cleomaceae, Elatinaceae, Menyanthaceae, Nymphaeaceae, Phrymaceae Polygonaceae, Pontederiaceae, Potamogetonaceae and Typhaceae. 52 genera of 37 families are represented by single species.

Of the 110 species here in registered, 14 species *viz*., *Acmella paniculata* (Wall. ex DC.) R.K.Jansen, *Alternanthera philoxeroides* (Mart.) Griseb., *Cleome chelidonii* L.f., *Cyperus alopecuroides* Rottb., *Cyperus bulbosus* Vahl, *Glossostigma diandrum* (L.) Kuntze, *Limnophyton obtusifolium* (L.) Miq., *Scleria rugosa* R.Br., *Smithia conferta* Sm., *Utricularia caerulea* L., *Utricularia bifida* L., *Utricularia polygaloides* Edgew., *Utricularia scandens* Benj. and *Vigna aconitifolia* (Jacq.) Marechal are reported here as a new additions to the flora of Medak district.

Among five the morpho-ecologic groups registered, the emergent anchored presented 54 species, followed by wetland 39 species, submerged anchored/submerged with seven species and floating and floating leaved anchored each with five species.

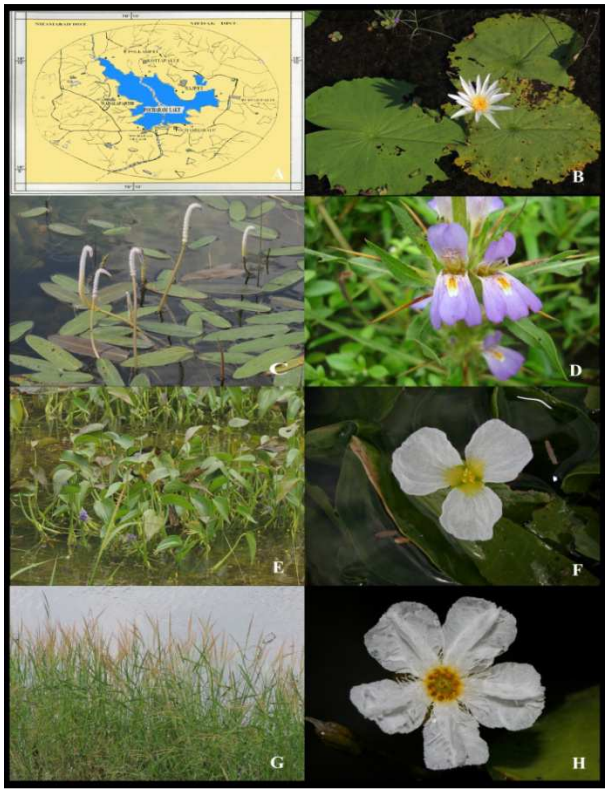

Figure 1. A. Map of Pocharam lake B. *Nymphaea pubescens* Willd. C. *Aponogeton natans* (L.) Engl. & K. Krause D. *Hygrophila auriculata* (Schumach.) Heine E. *Monochoria vaginalis* (Burm.f.) C.Presl F. *Ottelia alismoides* (L.) Pers. G. *Oryza rufipogon* Griff. H. *Nymphoides cristata* (Roxb.) Kuntze

Table 1. List of hydrophytes from Pocharam lake, Medak district, Telangana, India

S. No.	Family	Botanical Name	Morpho-Ecologic Group
1	Acanthaceae	*Hygrophila auriculata* (Schumach.) Heine	Emergent anchored
2	Alismataceae	*Limnophyton obtusifolium* (L.) Miq.	Emergent anchored
3	Amaranthaceae	*Alternanthera sessilis* (L.) R. Br. ex DC.	Wetland
4	Amaranthaceae	*Alternanthera philoxeroides* (Mart.) Griseb.	Emergent anchored
5	Amaryllidaceae	*Crinum defixum* Ker-Gawl	Emergent anchored
6	Apiaceae	*Centella asiatica* (L.) Urb.	Wetland
7	Apocynaceae	*Oxystelma esculentum* (Lf.) Sm.	Wetland
8	Aponogetonaceae	*Aponogeton natans* (L.) Engl. & K. Krause	Floating leaved anchored
9	Araceae	*Lemna aequinoctialis* Welw.	Floating
10	Araceae	*Spirodela polyrrhiza* (L.) Schleid.	Floating
11	Araceae	*Wolffia globosa* (Roxb.) Hartog & Plas	Floating
12	Asteraceae	*Acmella paniculata* (Wall. ex DC.) R.K.Jansen	Wetland
13	Asteraceae	*Caesulia axillaris* Roxb.	Emergent anchored
14	Asteraceae	*Eclipta prostrata* (L.) L.	Emergent anchored
15	Asteraceae	*Sphaeranthus indicus* L.	Emergent anchored
16	Boraginaceae	*Coldenia procumbens* L.	Wetland
17	Boraginaceae	*Heliotropium indicum* L.	Emergent anchored
18	Boraginaceae	*Heliotropium ovalifolium* Forssk.	Wetland
19	Ceratophyllaceae	*Ceratophyllum demersum* L.	Floating
20	Cleomaceae	*Cleome chelidonii* L.f.	Wetland
21	Commelinaceae	*Commelina benghalensis* L.	Emergent anchored
22	Commelinaceae	*Cyanotis axillaris* (L.) D.Don ex Sweet	Emergent anchored
23	Commelinaceae	*Murdannia nudiflora* (L.) Brenan	Emergent anchored
24	Commelinaceae	*Murdannia semiteres* (Dalzell) Santapau	Emergent anchored
25	Convolvulaceae	*Ipomoea aquatica* Forssk.	Floating leaved anchored
26	Convolvulaceae	*Ipomoea fistulosa* Mart. ex Choisy	Emergent anchored
27	Cyperaceae	*Cyperus alopecuroides* Rottb.	Emergent anchored
28	Cyperaceae	*Cyperus bulbosus* Vahl	Wetland
29	Cyperaceae	*Cyperus compressus* L.	Emergent anchored
30	Cyperaceae	Cyperus *difformis* L.	Emergent anchored
31	Cyperaceae	*Cyperus iria* L.	Emergent anchored
32	Cyperaceae	*Cyperus rotundus* L.	Emergent anchored
33	Cyperaceae	*Cyperus haspan* L.	Emergent anchored
34	Cyperaceae	*Fimbristylis dichotoma* (L.) Vahl	Emergent anchored
35	Cyperaceae	*Fimbristylis ovata* (Burm.f.) J. Kern	Wetland
36	Cyperaceae	*Fuirena ciliaris* (L.) Roxb.	Emergent anchored
37	Cyperaceae	*Kyllinga brevifolia* Rottb.	Wetland
38	Cyperaceae	*Lipocarpha gracilis* (Rich. ex Pers.) Nees	Emergent anchored

39	Cyperaceae	*Rhynchospora wightiana* (Nees) Steud.	Wetland
40	Cyperaceae	*Scleria rugosa* R. Br.	Emergent anchored
41	Cyperaceae	*Scleria lithosperma* (L.) Sw	Emergent anchored
42	Droseraceae	*Drosera burmanni* Vahl	Wetland
43	Droseraceae	*Drosera indica* L.	Wetland
44	Elatinaceae	*Bergia ammannioides* Roxb. ex Roth	Emergent anchored
45	Gentianaceae	*Canscora diffusa* (Vahl) R.Br. ex Roem. & Schult.	Wetland
46	Gentianaceae	*Hoppea dichotoma* Willd.	Wetland
47	Hydrocharitaceae	*Hydrilla vericillata* (L.f.) Royle	Submerged anchored
48	Hydrocharitaceae	*Nechamandra alternifolia* (Roxb. ex Wight) Thwaites	Submerged anchored
49	Hydrocharitaceae	*Ottelia alismoides* (L.) Pers.	Submerged anchored
50	Hydrocharitaceae	*Vallisneria natans* (Lour.) H. Hara	Submerged anchored
51	Leguminosae	*Acacia nilotica* (L.) Delile	Emergent anchored
52	Leguminosae	*Aeschynomene indica* L.	Emergent anchored
53	Leguminosae	*Desmodium triflorum* (L.) DC.	Wetland
54	Leguminosae	*Prosopis juliflora* (Sw.) DC.	Emergent anchored
55	Leguminosae	*Sesbania bispinosa* (Jacq.) W.Wight	Emergent anchored
56	Leguminosae	*Smithia conferta* Sm.	Wetland
57	Leguminosae	*Vigna aconitifolia* (Jacq.) Marechal	Wetland
58	Leguminosae	*Vigna trilobata* (L.) Verdc.	Wetland
59	Lentibulariaceae	*Utricularia caerulea* L.	Submerged
60	Lentibulariaceae	*Utricularia bifida* L.	Wetland
61	Lentibulariaceae	*Utricularia polygaloides* Edgew.	Wetland
62	Lentibulariaceae	*Utricularia scandens* Benj.	Wetland
63	Lentibulariaceae	*Utricularia stellaris* L.f.	Submerged
64	Linderniaceae	*Lindernia ciliata* (Colsm.) Pennell	Emergent anchored
65	Linderniaceae	*Lindernia parviflora* (Roxb.) Haines	Emergent anchored
66	Lythraceae	*Ammannia baccifera* L.	Emergent anchored
67	Lythraceae	*Rotala densiflora* (Roth) Koehne	Emergent anchored
68	Lythraceae	*Rotala serpyllifolia* (Roth) Bremek.	Emergent anchored
69	Malvaceae	*Corchorus aestuans* L.	Wetland
70	Malvaceae	*Corchorus olitorius* L.	Wetland
71	Malvaceae	*Corchorus tridens* L.	Wetland
72	Malvaceae	*Corchorus trilocularis* L.	Wetland
73	Malvaceae	*Corchorus urticifolius* Wight & Arn.	Wetland
74	Malvaceae	*Melochia corchorifolia* L.	Emergent anchored
75	Menyanthaceae	*Nymphoides cristata* (Roxb.) Kuntze	Floating leaved anchored
76	Molluginaceae	*Glinus lotoides* L.	Wetland
77	Molluginaceae	*Glinus oppositifolius* (L.) DC.	Wetland
78	Nymphaeaceae	*Nymphaea pubescens* Willd.	Floating leaved anchored
79	Onagraceae	*Ludwigia adscendens* (L.) H. Hara	Emergent anchored
80	Onagraceae	*Ludwigia octovalvis* (Jacq.) P.H. Raven	Emergent anchored
81	Onagraceae	*Ludwigia perennis* L.	Emergent anchored
82	Orobanchaceae	*Sopubia delphinifolia* G. Don.	Emergent anchored
83	Orobanchaceae	*Striga angustifolia* (D.Don) C.J. Saldanha	Wetland
84	Orobanchaceae	*Striga densiflora* (Benth.) Benth.	Wetland
85	Oxalidaceae	*Biophytum sensitivum* (L.) DC.	Wetland
86	Oxalidaceae	*Oxalis corniculata* L.	Wetland
87	Phrymaceae	*Glossostigma diandrum* (L.) Kuntze	Submerged
88	Plantaginaceae	*Bacopa monnieri* (L.) Wettst.	Emergent anchored
89	Plantaginaceae	*Limnophila indica* (L.) Druce	Emergent anchored
90	Plantaginaceae	*Scoparia dulcis* L.	Emergent anchored
91	Poaceae	*Brachiaria ramosa* (L.) Stapf	Wetland
92	Poaceae	*Dinebra retroflexa* (Vahl) Panz.	Wetland
93	Poaceae	*Echinochloa colona* (L.) Link	Emergent anchored
94	Poaceae	*Echinochloa crus-galli* (L.) P.Beauv.	Emergent anchored
95	Poaceae	*Eragrostis unioloides* (Retz.) Nees ex Steud.	Wetland
96	Poaceae	*Eriochloa procera* (Retz.) C.E. Hubb.	Emergent anchored
97	Poaceae	*Imperata cylindrica* (L.) Raeusch.	Wetland
98	Poaceae	*Ischaemum rugosum* Salisb.	Wetland
99	Poaceae	*Leersia hexandra* Sw.	Emergent anchored
100	Poaceae	*Oplismenus burmannii* (Retz.) P. Beauv.	Emergent anchored
101	Poaceae	*Oplismenus compositus* (L.) P.Beauv.	Emergent anchored
102	Poaceae	*Oryza rufipogon* Griff.	Emergent anchored
103	Poaceae	*Paspalidium flavidum* (Retz) A. Camus	Emergent anchored
104	Poaceae	*Paspalum scrobiculatum* L.	Emergent anchored
105	Poaceae	*Saccharum spontaneum* L.	Emergent anchored
106	Poaceae	*Sacciolepis indica* (L.) Chase	Emergent anchored
107	Polygonaceae	*Polygonum plebeium* R. Br.	Wetland
108	Pontederiaceae	*Monochoria vaginalis* (Burm.f.) C.Presl	Floating
109	Potamogetonaceae	*Potamogeton nodosus* Poir.	Floating leaved anchored
110	Typhaceae	*Typha domingensis* Pers.	Emergent anchored

CONCLUSION

The Pocharam lake is the lifeline for the wildlife of the entire Pocharam Wildlife Sanctuary; it also supports the local communities inhabiting the neighboring villages by providing irrigation for their farmlands and also livelihood means by way of fish and crab yield. It also attracts a lot of migratory birds especially in the winter. The aquatic biodiversity has been studied to a very small degree; except for study on aquatic hemiptera and ichthyofauna [6] &

[7], there is no detailed documentation on any other groups. A study of avifauna is critical from the conservation angle. The lake has a good potential to be developed into a bird sanctuary independently or by integrating it within the boundaries of the existing Pocharam Wildlife Sanctuary. Its inclusion in the sanctuary is more relevant as it would supplement the water needs of the wildlife during summer [8]. This wetland is surrounded by agricultural lands in all directions. The farmers who are mostly small and marginal own very small extents of land and are always hopeful of acquisition of more land to be added to their meager holdings. As a result, there is a great threat to the wetland by way of encroachment all along the lake boundary. The farmers are also applying a wide variety of fertilizers, pesticides and insecticides for their paddy and sugarcane fields. These agrochemicals pollute or contaminate the water and it leads to threat to aquatic fauna. Leasing out of the lake area for harvesting fish and crab in specific peak seasons needs to be regulated for long term sustainability. Therefore, necessary steps should be taken to protect and restore wetland and to monitor water and environmental chastity.

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REFERENCES

[1] K.A. Sujana, C. Sivaperuman, Preliminary studies on flora of Kole Wetlands, Thrissur, Kerala, *Indian Forester*, **2008**, 134(8), 1079-1086.
[2] Anonymous, *National Wetland Atlas*, SAC/EPSA/ABHG/NWIA/ATLAS/34/2011, Space Applications Centre (ISRO), Ahmedabad, India, **2011,** 310 p.
[3] R.F. Daubenmire, *Plants and Environment: A Text book of Plant Autecology*, New York, Jonn Wiley and Sons, **1947**.
[4] J. S. Gamble, *Flora of Presidency of Madras*, Adlard & Son, London, **1915-1936** (repr. ed., **2011**), vols. I-III.
[5] T. Pullaiah, C. Prabhakar, B. Ravi Prasad Rao, *Flora of Medak District*, Andhra Pradesh, India, Daya publishing house, New Delhi, **1998**.
[6] J. Deepa, C.A.N. Rao, *Zoos' Print Journal*, **2007**, 22 (12), 2937-2939.
[7] C.A.N. Rao, J. Deepa, M. Hakeel, *Journal of Threatened Taxa*, **2011**, 3(2), 1564-1566.
[8] J. Swamy, Floristic Studies on Pocharam Wildlife Sanctuary, Telangana State, PhD Thesis, Osmania University (Hyderabad, Telangana, India, **2015**).