

A STUDY IN THE HYDROPHYTES AND PLANTS OF LOWLYING HABITATS IN JABALPUR

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ABSTRACT

The paper describes hydrophytic and lowlying vegetation of Jabalpur. Geographical and Geological conditions of Jabalpur have been described. Various habitats have been shown in the map. A table indicating the distribution of various hydrophytes in various habitats has been given. Seasonal changes in the hydrophytic vegetation have been described. Restricted occurrence of *Alisma reniforme*, *Blyxa roxburghii* and *Butomopsis lanceolata* has been observed. *Tamarix ericoides* has been found to grow luxuriantly in the sandy beds in the river Narbada. About 88 species of hydrophytes and lowlying plants spread over 6 families of pteridophytes, 13 families of monocots and 22 families of dicots have been recorded.

India being mostly a monsoon country, there is rainfall for about four months resulting in the formation of several ponds, annual ditches and causing considerable increase in the water level of permanent lakes and rivers. All these habitats, the treasures of aquatic vegetation, become an object of attraction for a taxonomist. Taxonomic, ecological and anatomico-physiological studies of these plants have given outstanding results. In this connection mention may be made of some notable works like, Biswas and Calder (1936), Mirashi (1954, 1957, 1958), Kachroo (1956), Pattanaik H. and Patanaik N. K. (1956), Sen D. N. (1959, 1961), Chavan and Sabnis (1961), but as far as I know hydrophytes of Jabalpur have not been worked out.

Jabalpur, a district place in Madhyapradesh is situated at 23°3' N latitude and 79°57' E longitude in a rocky basin. The height of the place from the sea level is about 1300'. The city experiences a typical monsoon climate. The summers are hot, winters cool and most of the rain i.e. 56.3" falls between June and October. Temperature reaches 108° F in summer in the later part of May at least thrice and 42° F in winter at least thrice between 15th December and 22nd January. During rains there is extensive cultivation of rice which supports the growth of several marsh plants.

Jabalpur is good epitome of the Geology of India. It has more or less complete sequence of Geological formations like Archaeans, Vindhians, Gondwanas, Lametas, Deccan trap, Intertrappean and Recent. These different formations are rich in different deposits like micaceous earth, sandstone, quartzites, lime stones, bauxite, clay manganese, copper, iron etc. The soil of lowlying tracts is rich in limestone, sandstone, clay and micaceous earth at different places.

In the present paper hydrophytic vegetation of, a lake, a permanent pond known as Gangasagar, water reservoir, Narbada river at Bheraghat and Gwarighat as well as Sewage disposal areas has been described. All these habitats being situated within an area of about 12 sq. miles as indicated in the map.

1. Engineering College Lake: This is a large perennial lake near Engineering College, at the distance of about 6 miles. It is supplemented by several periodic ditches. The margins of the lake and the ditches support rich aquatic flora. The important plant that attracts the sight of botanist, by its abundance is the genus *Isoetes* with its two sps. *I. coromandelina* and *Isoetes* sp. growing together and occupying the Northern corner of this lake from July to December. Other plants collected from this lake are:

(a) Floating hydrophytes: *Azolla pinnata*, *Eichhornia crassipes*, *Enhydra fluctuans*, *Hygrorhiza aristata*, *Ipomoea aquatica*, *Jussiaea repens*, *Limnanthemum cristatum*, *L. indicum*.

(b) Suspended hydrophytes: *Ceratophyllum demersum*, *Hydrilla verticillata*, *Najas minor*, *Utricularia flexuosa*.

(c) Anchored hydrophytes: *Marsilea minuta*, *M. quadrifolia*, *Nymphaea stellata*, *Ottelia alismoides*, *Potamogeton crispus*, *P. indicus*, *P. mucronatus*, *Vallisneria spiralis*.

(d) Emergent hydrophytes: *Aeschynomene indica*, *Asteracantha longifolia*, *Cyperus difformis*, *C. exaltatus*, *C. rotundus*, *Eleocharis atropurpurea*, *Jussiaea fissendocarpa*, *J. suffruticosa*, *Limnophila heterophylla*, *L. indica*, *Polygonum serrulatum*, *Sagittaria sagittifolia*, *Scirpus articulatus*, *S. supinus*, *Typha angustata*.

(e) Wet land hydrophytes: *Alternanthera sessilis*, *A. paronychioides*, *Ammania baccifera*, *Caesulia axillaris*, *Canscora decurrens*, *Cyathocline lyrata*, *Eclipta prostrata*, *Eleocharis capitata*, *E. palustris*, *Eriocaulon quinquangulare*, *Lobelia alsinoides*, *Polygonum plebejum*, *Xanthium strumarium*.

During dry months the water level goes considerably down. Species of *Isoetes*, completely disappear by the month of January. Other plants like *Eleocharis capitata*, *E. palustris*, *Ottelia alismoides* and *Limnophila heterophylla* also disappear. *Eichhornia crassipes* undergoes drying and decaying, and at its place is seen luxuriant growth of *Utricularia flexuosa* at several places.

On the newly exposed dry banks grow the plants

like *Argemone mexicana* and *Blepharis molluginifolia*. Several wet land forms like *Alternanthera sessilis*, *Ecliptaprostrata*, *Lobelia alsinoides* and *Xanthium strumarium* continue to grow on the dry soils also.

The lake is not much subject to biotic disturbances except that of plucking the young leaves of *Ipomoea aquatica* by the people residing near this lake which utilise them as vegetable.

2. Gangasagar Pond: This is a big perennial pond near Madan mahal and at the distance of about 3 miles from the city. The pond is extensively utilised for the cultivation of *Trapa bispinosa* during rainy season, and some of the plants can be seen floating throughout the year. Margins of this pond support the growth of several hydrophytic species in their shallow waters, as well as on the wet banks. Out of 43 species of hydrophytes collected from this pond, the species which require mention are, *Pistia stratiotes*, *Spirodela polyrrhiza* and *Sagittaria sagittifolia*.

Wet land forms include, *Anagallis arvensis*, *Gnaphalium indicum*, *G. pulvinatum*, *Pycnus* sp., *Rumex dentatus*, *Salvia plebeia*, and *Sphaeranthus indicus* along with *Hygrophila polysperma*. Species of *Gnaphalium* and *Hygrophila* continue to grow even on dry soils.

The vegetation of Gangasagar is subject to biotic disturbances because of cultivation of water-chestnuts. *Spirodela polyrrhiza* has migrated to a well in the vicinity of this pond, because of human activities and it has become a problem for the people who utilise the water of this well for drinking purposes. Similarly plants like *Utricularia flexuosa* and *Pistia stratiotes* have migrated at places to deep-waters where they form pure strands.

3. Water Reservoir: Situated at about 8 miles towards north-west this reservoir is meant for water supply to the city. The reservoir proper is surrounded by masonry & is devoid of any aquatic species, but some small ditches near it and rice fields in the way support the growth of several hydrophytes. *Caesulia axillaris* and *Suaeda maritima* grow as characteristic marsh plants in the rice fields. Other notable hydrophytes of this habitat are *Centella asiatica*, *Coix-lachryma-job.* and *Jussiaea suffruticosa*.

Jussiaea suffruticosa shows bushy growth at this place with pneumatophores spreading over water surface. In all probabilities there may be two different varieties or even two species, which is under investigation.

Selaginella grows as characteristic wet land form and *Ipomoea reniformis* grows on dry exposed soils.

4. Bheraghat: This place is at about 12 miles along the banks of the river Narbada. The place is famous for its marble rocks and there is rich deposition of calcium carbonate and soapstone.

The rocks as well as soapstone deposits vary in colour from white to pale-blue and sea-green. *Tamarix ericoides* is the characteristic species which grows in the sandy beds of Narbada at this place.

Rotula aquatica is another plant that grows in abundance attached to the submerged stone at the place known as Dhooandhar.

On the way to Bheraghat there is a big pond known as Barsagar and two other ponds which are utilised for the cultivation of *Trapa bispinosa*. From these ponds about 33 species of hydrophytes have been collected. The plants which require special mention are *Alisma reniforme*, *Blyxa roxburghii* and *Ceratopteris thalictroides*. These plants are of rare and restricted occurrence at Jabalpur as they have not been collected from other habitats. *Ceratopteris thalictroides* has got quite thick basal portion resembling a woody herb.

Gnaphalium indicum, *Rumex dentatus* and *Sphaeranthus indicus* grow in abundance as wet land hydrophytes. The former immediately attracts the sight because of its cottony shining appearance. The dry ditches show the growth of *Blepharis molluginifolia*, *Chrozophora prostrata*, *Glinus lotoides* and *Heliotropium supinum*. Occurrence of *Argemone mexicana* in pure strands occupying the whole ditch in dry condition is not uncommon in this habitat.

5. Gwarighat: It is situated along the banks of Narbada at about 6 miles. This habitat is not very rich in aquatic vegetation. *Tamarix ericoides* grows in pure strands in the sandy places inside water as well as on sloping marginal banks of the river covered by wet sand.

Cochlearia flava, *Grangea maderaspatana*, *Sutera glandulosa*, *Veronica anagallis* grow along the wet banks in sandy soil.

On the way to Gwarighat can be observed several temporary ditches in which grow the plants like *Mazus rugosus* and *Nasturtium indicum* which continue to grow even after these places become dry.

Some dry ditches may be seen supporting the growth of *Chrozophora prostrata*, *C. rotteleri*, *Glinus lotoides* and *Heliotropium supinum*.

6. Temporary ditches and Sewage disposal areas: These include various nalas meant for disposal of sewage and some puddles formed during rains only. About 27 species have been collected from such areas, notable among these are, *Croton sparsiflorus*, *Equisetum* sp., *Drosera burmanni*, *Jussiaea fissendocarpa*, *J. suffruticosa*, *Lemna minor*, *Pilea microphylla*, *Polygonum serrulatum*, *Spirodela polyrrhiza* and *Zuexine sulcata*.

Alternanthera sessilis, *Asteracantha longifolia*, *Croton sparsiflorus*, are the characteristic nitrophilous species which occur in abundance and form pure strands.

TAXONOMIC DATA

	Families	Genera	Species
PTERIDOPHYTA	6	6	8
ANGIOSPERMS			
Dicotyledons	22	37	48
Monocotyledons	13	24	32

DISCUSSION

Above field studies indicate that Jabalpur supports rich aquatic & marshy vegetation. Cyperaceae among monocots and Scrophulariaceae among dicots are the dominant families.

Occurrence of *Isoetes* and its restriction to a definite corner of the lake is the noteworthy feature. Its association with *Eleocharis* may be assigned to edaphic factors. It is so much in abundance along the margin of the lake corner, that one has to walk over it to study the vegetation in deep waters.

Alisma reniforme, *Blyxa roxburghii* and *Nymphaea stellata* are of rare and restricted occurrence at this place. *Ceratopteris thalictroides* though in abundance has been collected from a single pond only.

Growth of *Tamarix* in the sandy beds of Narbada may be attributed to the adaphic factors, because the same plant has been collected by the author at different places like Mandaleshwar & Maheshwar situated on the banks of the same Narbada river.

Occurrence of *Drosera burmanni* in sewage disposal area throws some light upon the metabolism of this plant. Culture experiments by Oudman (1936 P. 547) have proved that leaves of *Drosera capensis* accumulate soluble nitrogen when supplied with glycine, urea, asparagine or insect bodies. He further says that such plants often grow in soils where supply of nitrogen is low.

On the other hand researches of Bonner (1950 P. 222) on *Chenopodium album* indicate that this plant is unable to take nitrates but is very well able to utilize nitrites. Similarly rice seedlings prefer ammonia rather than nitrates (Bonner p. 201). In *Drosera burmanni* similar case may exist. The plant has been found growing in sewage disposal area which is rich in nitrogen, still this plant takes to insect nitrogen. From this it appears that insectivorous habit cannot be attributed solely to the nitrogen deficiency of soil, but it is due to specialised mode of nitrogen assimilation of this plant, as seen in *Chenopodium album* and rice seedling i.e. nitrogen is present in soil but it cannot be utilised by this plant. Luxuriant growth of *Utricularia flexuosa* at places where *Eichhornia crassipes* undergoes decaying also supports the above conception.

The plants like *Chrozophora prostrata*, *Glinus lotoides* and *Heliotropium supinum* are characteristic species of dry exposed soil. They are well

adopted to this habitat by the possession of thick fleshy leaves and presence of hairs which save them from drought.

Pilea microphila grows wild at this place and it agrees with variety a, DC. described in Haines Flora (1922-1925). *Croton sparsiflorus* has been found to grow in abundance on the wet banks sewage disposal areas.

Two species of *Limnanthemum*, *L. cristatum* and *L. indicum* are very common here and are found closely mixed with each other forming floating carpets.

Occurrence of *Jussiaea fissendocarpa* in sewage disposal areas is also a remarkable feature of the vegetation of this place.

Majority of the forms collected come under the category of amphibious and wet land hydrophytes, indicating that it is the margin of the lake or pond which forms the proper habitat for luxuriant growth of hydrophytes. Plants like *Ipomoea aquatica*, *Panicum fluitans* and *Enhydra fluctuans* form floating mats during rainy season when water is in plenty, and afterwards when water recedes these plants establish themselves in the wet soil and continue to grow like a terrestrial plant.

A clear zonation is not visible and floating plants like *Ipomoea aquatica*, *Hydrorhiza aristata*, *Pistia stratiotes*, submerged plants like *Ceratophyllum demersum*, *Najas minor*, *Utricularia flexuosa* and anchored plants like *Marsilea minuta*, *Potamogeton crispus* grow together.

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LITERATURE CITED

- BISWAS, K. AND C. C. CALDER. Hand-book of common water and marsh plants of India and Burma, Government press, Delhi. 1936.
- BONNER. Encyclopedia of plant physiology Vol. 8 p. 201, 1946. Edited by W. Ruhland. Springer-Verlag Berlin. Gottingen. Heidelberg. 1958.
- Plant Biochemistry p. 222, 1950.
- CHAVAN, A. R. AND S. D. SARNIS. A study of the Hydrophytes of Baroda and environs. *J. Indian bot. Soc.*, 40 : 121-130, 1961.
- HAINES, H. H. The Botany of Bihar and Orissa, parts 1-6. Adlard and son and West Newmann, Ltd. London. 1922-25.
- KACHROO, P. Plant types of the ponds of lower Damodar valley. *J. Indian bot. Soc.*, 35 : 430-445, 1956.
- MIRASHI, M. V. Studies in the Hydrophytes of Nagpur. *J. Indian bot. Soc.*, 33 : 299-308, 1954.
- Studies in the Hydrophytes of Umred. *Ibid.*, 36 : 396-407, 1957.

— Studies in the Hydrophytes of Mansar. *Jour. Bom. Bio. Sc.*, 1 : 45-52, 1958.

UDMAN. Encyclopedia of plant physiology Vol. 8 p. 547, 1936. Springer-Verlag Berlin. Gottingen. Heidelberg. 1958.

PATNAIK H. AND N. K. PATNAIK. Hydrophytes of Cuttak. *J. Indian bot. Soc.*, 35 : 167-170, 1956.

SEN D. N. Studies in the Hydrophytes of Gorakhpur, Observations of *Jussiaea repens* L. *Proc. Nat. Acad. Sci.*, B 29 : 370-379, 1959.

— Studies in the Hydrophytes of Gorakhpur, Observations of *Asteracantha longifolia* Nees. *Ibid*—31 : 224-234, 1961.

TABLE

Showing the distribution of hydrophytes and lowlying plants in various habitats of Jabalpur.

Species	Family	Engineering College Lake	Ganga sagar	Water reservoir	Bheraghat	Gwarighat	Temporary ditches and sewage disposal area
1. <i>Aeschynomene indica</i> L.	Papilionaceae	+	—	—	—	—	—
2. <i>Alisma reniforme</i> Don.	Alismaceae	—	—	—	+	—	—
3. <i>Alternanthera sessilis</i> (L.) R. Br.	Amarantaceae	*	+	+	+	+	*
4. <i>A. paronychioides</i> Hort. ex. Regel	-do-	+	—	—	—	—	—
5. <i>Anmania baccifera</i> L.	Lythraceae	+	+	+	+	+	+
6. <i>Anagallis arvensis</i> L.	Primulaceae	+	+	—	—	—	—
7. <i>Asteracantha longifolia</i> Nees	Acanthaceae	*	—	*	+	—	*
8. <i>Azolla pinnata</i> R. Br.	Salvinaceae	*	*	—	—	—	—
9. <i>Bacopa monnieri</i> (L.) Pennel	Scrophulariaceae	+	+	—	+	—	+
10. <i>Blyxa roxburghii</i> Rich.	Hydrocharitaceae	—	—	—	+	—	—
11. <i>Bulmopsis lanceolata</i> Kunth	Alismaceae	—	—	—	+	—	—
12. <i>Caesulia axillaris</i> Roxb.	Compositae	+	+	+	+	+	+
13. <i>Canscora decurrens</i> Dalz.	Gentianaceae	—	+	+	+	—	+
14. <i>Centella asiatica</i> (L.) Urban.	Umbelliferae	—	+	+	—	—	—
15. <i>Ceratophyllum demersum</i> L.	Ceratophyllaceae	*	*	*	—	—	—
16. <i>Ceratopteris thalictroides</i> Brongn.	Parkeriaceae	—	—	—	*	—	—
17. <i>Coix-lachryma-jobi</i> L.	Graminae	—	—	*	—	—	—
18. <i>Croton sparsiflorus</i> Morung.	Euphorbiaceae	—	—	—	—	—	*
19. <i>Cyathocline lyrata</i> Cass.	Compositae	+	+	+	—	—	+
20. <i>Cyperus distans</i> L.f.	Cyperaceae	+	+	—	—	—	—
21. <i>C. exaltatus</i> Retz.	-do-	—	+	—	—	+	—
22. <i>C. rotundus</i> L.	-do-	+	+	—	—	—	—
23. <i>Cyperus</i> sp.	-do-	—	—	—	+	—	—
24. <i>Drosera burmanni</i> Vahl	Droseraceae	—	—	—	—	—	+
25. <i>Eclipta prostrata</i> L. Mantiss.	Compositae	+	+	+	+	+	+
26. <i>Eichhornia crassipes</i> Solms.	Pontederiaceae	*	—	—	*	—	—
27. <i>Eleocharis atropurpurea</i> Kunth	Cyperaceae	*	*	—	*	—	—
28. <i>E. capitata</i> R. Br.	-do-	*	—	—	—	—	—
29. <i>E. palustris</i> R. Br.	-do-	*	—	—	—	—	—
30. <i>Enhydra fluctuans</i> Lour.	Compositae	*	*	—	—	—	—
31. <i>Equisetum</i> sp.	Equisetaceae	—	—	—	—	—	*
32. <i>Eriocaulon quinqueangulare</i> L.	Eriocaulaceae	+	—	+	—	—	*
33. <i>Exacum pedunculatum</i> L.	Gentianaceae	+	+	+	—	—	—
34. <i>Gnaphalium indicum</i> L.	Compositae	—	—	—	—	+	—
35. <i>G. pulvinatum</i> Delile	-do-	—	+	—	+	+	—
36. <i>Grangea maderaspatana</i> Poir.	-do-	—	—	—	—	+	—
37. <i>Hoppea dichotoma</i> Willd.	Gentianaceae	*	+	—	—	—	+
38. <i>Hydrilla verticillata</i> (L. f.) Presl.	Hydrocharitaceae	*	—	—	—	—	—
39. <i>Hygrophila polysperma</i> T. Anders.	Acanthaceae	*	+	—	—	—	—
40. <i>Hygrophiza aristata</i> Nees	Graminae	*	*	—	—	—	—
41. <i>Ipomoea aquatica</i> Forsk.	Convolvulaceae	*	*	—	+	—	—
42. <i>Isoetes coromandelina</i> L.	Isoetaceae	*	—	—	—	—	—
43. <i>Isoetes</i> sp.	-do-	*	—	—	—	—	—
44. <i>Jussiaea fissendocarpa</i> Haines	Onagraceae	+	—	—	+	—	*
45. <i>J. repens</i> L.	-do-	*	*	—	*	—	—
46. <i>J. suffruticosa</i> L.	-do-	+	+	*	+	—	+
47. <i>Lemna minor</i> L.	Lemnaceae	+	—	—	—	—	*
48. <i>Limnanthemum cristatum</i> Griseb. (<i>Nymphoides cristatum</i> Roxb. & Kuntze)	Gentianaceae	*	*	—	*	—	—
49. <i>L. indicum</i> Thwaites. (<i>Nymphoides indicum</i> (Linn.) O. Kuntze)	-do-	*	*	—	*	—	—
50. <i>Limnophila indica</i> (L.) Druce.	Scrophulariaceae	+	—	+	+	—	—
51. <i>L. heterophylla</i> Wooder.	-do-	+	—	+	+	—	—
52. <i>L. racemosa</i> Benth.	-do-	+	—	—	—	—	—
53. <i>Lobelia alsinoides</i> Lamk.	Campanulaceae	+	+	—	—	—	—
54. <i>Marsilea minuta</i> L.	Marsiliaceae	+	+	+	—	—	—
55. <i>M. quadrifolia</i> L.	-do-	*	+	*	—	—	—
56. <i>Mazus rugosus</i> Lour.	Scrophulariaceae	—	—	—	—	+	+
57. <i>Najas minor</i> Allioni.	Naiadaceae	*	*	—	—	—	—
58. <i>Nasturtium indicum</i> DC.	Cruciferae	—	—	—	—	+	+

Species	Family	Engineering College Lake	Ganga sagar	Water reservoir	Bheraghat	Gwarighat	Temporary ditches and sewage disposal area
59. <i>Nymphaea stellata</i> Willd.	Nymphaeaceae	+	—	—	—	—	—
60. <i>Ottelia alismoides</i> (L.) Pers.	Hydrocharitaceae	+	—	*	+	—	—
61. <i>Panicum fluitans</i> Retz.	Graminae	*	*	—	—	—	—
62. <i>Phyla nodiflora</i> (L.) Greene.	Verbenaceae	+	+	+	+	—	+
63. <i>Pilea microphila</i> Liebm.	Urticaceae	—	—	—	—	—	+
64. <i>Pistia stratiotes</i> L.	Araceae	—	+	—	*	—	—
65. <i>Polygonum barbatum</i> L.	Polygonaceae	—	—	—	—	—	+
66. <i>P. hydropiper</i> L.	-do-	—	—	—	—	+	—
67. <i>P. plebejum</i> Br.	-do-	+	+	+	+	+	+
68. <i>P. serrulatum</i> Lagasc.	-do-	+	—	—	—	—	+
69. <i>Potamogeton crispus</i> L.	Potamogetonaceae	+	+	—	—	—	—
70. <i>P. indicus</i> Roxb.	-do-	+	+	—	—	—	—
71. <i>P. mucronatus</i> Persl.	-do-	+	—	—	—	—	—
72. <i>Pycnus</i> sp.	Cyperaceae	—	—	—	+	—	—
73. <i>Rotala rotundifolia</i> Koehne.	Lythraceae	—	—	+	—	—	—
74. <i>Rumex dentatus</i> L.	Polygonaceae	—	+	+	+	—	—
75. <i>Sagittaria sagittifolia</i> L.	Alismaceae	—	+	—	—	+	—
76. <i>Scirpus articulatus</i> L.	Cyperaceae	+	+	—	—	+	—
77. <i>S. supinus</i> L.	-do-	+	+	—	—	+	—
78. <i>Selaginella</i> sp.	Selaginellaceae	—	—	+	—	—	—
79. <i>Spirodela polyrrhiza</i> Schleid.	Lemnaceae	—	*	—	—	—	*
80. <i>Suaeda maritima</i> Dumr.	Chenopodiaceae	+	—	+	+	—	+
81. <i>Tamarix ericoides</i> Rottl.	Tamaricaceae	—	—	—	*	*	—
82. <i>Trapa bispinosa</i> Roxb.	Onagraceae	—	+	—	+	—	—
83. <i>Typha angustata</i> Bory & Chaub.	Typhaceae	*	—	—	—	—	—
84. <i>Utricularia flexuosa</i> Vahl	Lentibulariaceae	*	*	—	+	—	—
85. <i>Vallisneria spiralis</i> L.	Hydrocharitaceae	*	—	—	—	—	—
86. <i>Veronica anagallis</i> L.	Scrophulariaceae	—	—	—	—	+	+
87. <i>Xanthium strumarium</i> L.	Compositae	*	—	—	—	—	—
88. <i>Zeuxine sulcata</i> Lindl.	Orchidaceae	—	—	—	—	—	+

+ = Present

— = Absent

* = Abundant