



Vandana Publications

IJRASB

Volume-3, Issue-6, November 2016

International Journal for Research in Applied Sciences and Biotechnology

Page Number: 1-6

Name Changes and Diversity of Aquatic and Wetland Plants of India

Chetan Dhamande¹, Mohit Kumar²^{1,2}Department of Botany, Banaras Hindu University, Varanasi, India

ABSTRACT

The present work enumerates monocotyledonous plant diversity associated with 38 wetlands of Puruliya which is one of the hottest districts of West Bengal State. In total 52 species representing 36 genera of 14 monocot families could be identified from such habitats which are enumerated along with their respective occurrence in 31 out of 38 wetlands spread in 19 out of 20 Blocks of the district. Thus there were seven wetlands providing no accommodation to the monocot plants. The most comfortable wetland for them is the Sahebbundh (Nibaransayar) in Puruliya which was found to sustain no less than 17 species. Other favourable wetlands for monocots are Adra Sahebbundh, Kalidaha (Jore), Rampur Barabundh and Ketankiyari (Jore). A thorough systematic assessment of the ecological value and economic potential of the monocotyledonous plant diversity is emphasized.

Keywords— Monocotyledonous plants, diversity, Puruliya, wetlands, ecological value

I. INTRODUCTION

Wetlands constitute a subject of global importance; this has been particularly so ever since 1971 when the first international convention on wetlands was held in Ramsar, Iraq. Wetlands cover about six percent of total earth surface and are well known for high diversity in class, composition and four broad categories of functions viz. physical, hydrological, chemical, biological and socioeconomic. Wetlands have been realized to be a very precious natural resource and a national wealth which must be sustained for both ecological welfare and economic prosperity. For this there is a need to inventorize wetlands with geographical locations, at least on regional basis, and to characterize their biotic and abiotic structures and functions. In view of this and extreme scarcity of water in Puruliya, one of the hottest districts of West Bengal State, a research programme was launched on its wetlands in 2006 by the present authors with the objective of preparing a wetland-database capable of proving very useful in restoration and optimization of their ecological functions and economic values, as and when

necessary. The present work is a part of such an ongoing research programme and is in conformity with an earlier work (Mukherjee and Mandal, 1987).

STUDY SITE

Puruliya district, located between 23° 42' North and 22° 43'South latitudes and 86° 54'East and 85° 49'West longitudes with an area of 6259.00 sq Km and 20 Blocks(Anon., 1985), was selected as the study site where wetlands play a significant role in the life of the local people. The principal rivers in this lateritic district are the non-perennial Dwarakeswar, Shilabati and Kangsabati.

II. MATERIALS AND METHODS

Block wise field surveys in different parts of the district were undertaken since 2006 for locating and studying wetlands. Location of each wetland in terms of Mouza, Block, Latitude and Longitude were ascertained and recorded. Specimens of monocotyledonous species occurring in different wetlands were collected from time to time, worked out taxonomically for identification and processed for herbarium preservation in form of voucher specimens. For correct identification and nomenclature, pertinent literature had to be consulted (Prain, 1903; Subramanyam, 1962; Bennet, 1987; Cook, 1996). The concerned wetlands (Table I) and monocot species (Table II) were enumerated in alphabetic order separately giving all necessary particulars.

III. RESULTS AND DISCUSSION

Out of 20 Blocks in the district, 19 blocks were covered in the present work where from in all 38 wetlands could be identified from rural and urban areas in different parts of the district which ranged in area from 4 to 100 acres (Table I). Interestingly monocotyledonous plants could not be found in 7 wetlands viz., Benabundh (Manbazar), Deshbundh (Kharbar), Gayerbundh (Tiyashi), Ghosalpukur (Puncha), Khagerbundh (Puncha), Lihirbundh (Jhalda), and Ruknibundh (Guniyara). In the remaining wetlands monocotyledonous plants are represented by 52 species of 36

genera belonging to 14 families (Table II). Species like are highly abundant while Eichhornea, Hydrilla verticillata, Vallisneria spiralis, Typha domingensis

Table I: An inventory of wetlands occurring in different parts of Puruliya District, West Bengal

Sl.No	Name of the wetland	Mouza	Block	Latitude	Longitude
1.	Adra Sahebbundh	Manpura	Kashipur	23° 48'N	86°70'E
2.	Angarkhuri	Chharra	Puruliya II	23° 21'N	86° 47'E
3.	Babirbundh (Sabir bundh)	Babiddi	Kashipur	23°37'N	86°75'E
4.	Barikbundh	Raghunathpur	Raghunathpur I	23° 55'N	86° 67'E
5.	Benabundh	Manbazar	Manbazar I	23° 27'N	86° 37'E
6.	Benagora	Sankra	Para	23° 50'N	86 °49'E
7.	Buro Sayar	Mangalda	Raghunathpur II	23° 56'N	86° 68'E
8.	Deshbundh	Kharbar	Santuri	23° 51'N	86° 85'E
9.	Dewanbundh	Kalidaha	Kashipur	23° 37'N	86° 75'E
10.	Dhanarbundh	Akunja	Raghunathpur	23° 55'N	86° 67'E
11.	Ganakbundh	Damda	Puruliya I	23 ° 34'N	86° 36'E
12.	Gayerbundh	Tiyashi	Santuri	23 ° 51'N	86 °85'E
13.	Gaylabundh	Lalpur	Hura	23° 30'N	86° 65'E
14.	Ghosal Pukur	Puncha	Puncha	23 °15'N	86 °65'E
15.	Gobinda Sayar	Patharmura	Manbazar I	23 ° 27'N	86° 37'E
16.	Gorsaibundh / Namobundh	Barabazar	Barabazar	23° 30'N	86° 36'E
17.	Guniyara Bara bundh	Guniyara	Neturiya	23° 58'N	86° 71'E
18.	Hanumata dam	Mudidi, Dumari, Khairadi	Balarampur	23° 12'N	86° 26'E
19.	Joypur Ranibundh	Joypur	Joypur	23° 36'N	86° 32'E
20.	Kalidaha (jore)	Kalidaha	Kashipur	23 °37'N	86° 75'E
21.	Kamalabundh	Baghmundi	Baghmundi	23 °19'N	86° 06'E
22.	Ketankiyari (Jore)	Ketankiyari	Kashipur	23 °38'N	86° 76'E
23.	Khagerbundh	Puncha	Puncha	23 °15'N	86° 65'E
24.	Kumaridam	Baraurma, Dubrajpur, Panjanbera	Balarampur	23 °16'N	86° 29'E
25.	Lihirbundh	Jhalda	Jhalda I	23° 37'N	85° 97'E
26.	Mahatobundh	Kantadi, Pithati	Arsha	23° 32'N	86° 36'E
27.	Maidhara	Patharmura	Manbazar I	23 °27'N	86° 37'E
28.	Nutanbundh	Puruliya	Puruliya I	23 °34'N	86° 36'E
29.	Pokabundh	Banduan	Banduan	22° 88'N	86° 50'E
30.	Purano Sayar	Chharra	Puruliya II	23° 21'N	86° 47'E
31.	Rajabundh	Puruliya	Puruliya I	23° 32'N	86° 37'E
32.	Rampur Barabundh	Rampur	Kashipur	23° 38'N	86° 76'E
33.	Ranibundh	Baghmundi	Baghmundi	23° 19'N	86° 06'E
34.	Ruknibundh	Guniyara	Neturiya	23° 58'N	86° 71'E
35.	Sahebbundh / Nibaran Sayar	Puruliya	Purulia I	23 ° 20'N	86° 21'E
36.	Sankra Barabundh	Sankra	Para	23° 50'N	86° 49'E
37.	Sayarbundh	Khariduarra	Manbazar 11	23° 24'N	86° 39'E
38.	Sindripathar	Karangberiya	Kashipur	23° 38'N	86° 76'E

Table II: The enumeration of monocotyledonous species associated with the wetlands in Puruliya District.

SL. No.	Name of the Plant	Family	Serial number. of Wetland where occurring	Field No.	Prevalence (%) of the species in wetlands studied	Remarks
1.	<i>Aponogeton appendiculatus</i> H. Bruggen	Aponogetonaceae	1	MM – 324 MM – 333	2.63	Rare
2.	<i>Aponogeton natans</i> (L.) Engler et. Krause	Aponogetonaceae	1	MM – 334	2.63	Rare
3.	<i>Aponogeton Undulatus</i> Roxb	Aponogetonaceae	22	MM – 240	2.63	Rare
4.	<i>Blyxa japonica</i> (Miq) Max. ex Ascher. et Gurke var. <i>japonica</i>	Hydrocharitaceae	3, 20, 32,	MM – 257 MM – 330 MM – 332 MM – 456	7.89	Common
5.	<i>Brachiaria eruciformis</i> (J.E. Smith) Griseb	Poaceae	1	MM – 345 MM – 347	2.63	Rare
6.	<i>Colocasia esculenta</i> (L.) Schott	Araceae	29,35	MM – 438 MM - 515	5.26	Common
7.	<i>Commelina benghalensis</i> L.	Commelinaceae	4, , 32, 35, 38	MM – 490 MM – 493 MM – 492 MM - 529	10.52	Very Common
8.	<i>Commelina paludosa</i> Bl.	Commelinaceae	7, 31, 35	MM – 358 MM – 360 MM - 391	7.89	Common
9.	<i>Cynodon dactylon</i> (L.) Pers	Poaceae	2, 21,33,35	MM – 287 MM – 514 MM-577 MM-578	10.52	Very Common
10.	<i>Cyperus difformis</i> L.	Cyperaceae	24	MM – 417	2.63	Rare

11.	<i>Cyperus halpan</i> L.	Cyperaceae	9	MM – 486	2.63	Rare
12.	<i>Cyperus iria</i> L.	Cyperaceae	9	MM – 484	2.63	Rare
13.	<i>Cyperus platystylis</i> R. Br.	Cyperaceae	19	MM – 370	2.63	Rare
14.	<i>Echinochloa</i> <i>crusgalli</i> (L.) Beauv.	Poaceae	35	MM – 286 MM – 293	2.63	Rare
15.	<i>Eichhornia</i> <i>crassipes</i> (Mart.) Solms	Pontederiaceae	3, 29, 31, 35,	MM - 305 MM – 307 MM – 539 MM – 540	10.52	Very Common
16.	<i>Eleocharis</i> <i>atropurpurea</i> (Retz.) Presl.	Cyperaceae	3, 32	MM – 308 MM -524	5.26	Common
17.	<i>Eleocharis</i> <i>retroflexa</i> (Poir.) Urb.	Cyperaceae	3	MM-309	2.63	Rare
18.	<i>Eriocaulon</i> <i>quincongulare</i> L.	Eriocaulaceae	9,20,	MM – 462 MM – 463	7.89	Common
19.	<i>Fimbristylis</i> <i>miliacea</i> (L.) Vahl	Cyperaceae	1, 15, 19,	MM – 348 MM – 368 MM – 441	7.89	Common

20.	<i>Fimbristylis</i> <i>polytrichoides</i> (Re tz.) Vahl	Cyperaceae	22	MM 241	2.63	Rare
21.	<i>Fuirena ciliaris</i> (L.)Roxb.	Cyperaceae	32	MM – 270	2.63	Rare
22.	<i>Hygroryza</i> <i>aristata</i> (Retz.) Nees ex Wright	Poaceae	1	MM – 346	2.63	Rare
23.	<i>Hydrilla</i> <i>verticillata</i> (L.f.) Royle	Hydrocha ritaceae	2, 3, 9, 10, 11, 13, 16, 17, 20, 22, 26, 27, 35, 32	MM – 265 MM – 238 MM – 413 MM – 425	36.84	Very Common

				MM – 407 MM – 443 MM – 517 MM – 520 MM – 513 MM – 530 MM – 532 MM – 534 MM – 535 MM – 538		
24.	<i>Juncus prismatocarpus</i> R. Br.	Juncaceae	22	MM - 246	2.63	Rare
25.	<i>Kyllinga brevifolia</i> Rottboll.	Cyperaceae	20, 35	MM – 254 MM - 436	5.26	Common
26.	<i>Leersia hexandra</i> Sw.	Poaceae	1, 10, 35	MM – 350 MM – 355 MM – 400 MM – 510	7.89	Common
27	<i>Monochoria hastata</i> (L.) Solms	Pontederiaceae	28, 35	MM-564, MM-565	5.26	Common
28	<i>Monochoria vaginalis</i> (Burm. f.)C. Presl.	Pontederiaceae	3, 22,28	MM-566 MM-569, MM-570	7.89	Common
29	<i>Murdannia nudiflora</i> (L.) Brenan	Commelinaceae	1, 32, 35	MM-352, MM-522, MM-527	7.89	Common

crassipes, *Commelina benghalensis*, *Murdannia spirata* and *Potamogeton nodosus* are relatively less common ranging in prevalence from 36.84 to 10.52% in the wetlands studied. *Ottelia alismoides*, *Aponogeton appendiculatus*, *A.natans*, *A.undulatus*, *Eleocharis retroflexa*, *Vetiveria zizanioides*, *Hygroryza aristata*, *Juncus prismatocarpus*, *Fuirena ciliaris*, *Brachiaria eruciformis* etc are rare.

In descending order of numerical strength of monocot species, the wetlands can be arranged as: Purulia Sahebbundh(17 species), Adra Sahebbundh(14 species), Kalidaha Jore(11 species),Rampur Barabundh(11 species) and Ketankiyari Jore(8 species). Purulia Sahebbundh (Nibaransayar) alone covers 32.69% and Ketankiyari (Jore) 15.38% of the total species identified. In descending

order of the values of prevalence (%), seven dominant families appear to be Hydrocharitaceae (55.26%), Poaceae (28.67%), Cyperaceae(23.95%), Commelinaceae (26.31%), Potamogetonaceae (18.42%), Pontederiaceae(18.42%) and Typhaceae (15.78%). The diversity thus recorded for monocots seems to be quite low as is evidenced from the species quota for each wetland which is 1.37. A thorough quantitative assessment of the monocotyledonous plant diversity is necessary for working out the ecological value and economic potential and fulfilling the objective of sustaining the diversity at an optimum state.

REFERENCES

- [1]Anonymous;1985.West Bengal District Gazetteer, Puruliya, Govt. of India.
- [2]Bennet S.S.R.; 1987. Name Changes in Flowering Plants of India and Adjacent Region. Triseas Publ., Dehradun, India.
- [3]Cook C.D.K.;1996. Aquatic and Wetland Plants of ndia, Oxford Publ., London, U.K.
- [4]Mandal S.K. and Mukherjee A.; 2007. Wetlands and their macrophytes in Puruliya District, West Bengal, Environment &Ecology, **25(3)**:564-570.
- [5]Prain D.;1903. Bengal Plants, Govt. of India, Central Publication Branch, Calcutta. Subramanyam K.; 1962. Aquatic Angiosperms. CSIR, New Delhi, India