

# Asian Resonance

## Useful Plants of Wetlands in Puruliya District, West Bengal

### Abstract

From the wetlands of Puruliya district as many as 30 species of angiosperms belonging to 21 families and one species of pteridophyte were observed which are locally used for various purposes. Of these plants 11 species have excellent medicinal properties.

**Keywords:** Study habits, CBSE Students, UP Board Students.

### Introduction

Wetlands are considered a very important natural resource and constitute a life support system providing a wide range of services critical to human development and well-being. They help to recharge aquifers, support local food production, and function as habitat for indigenous and migratory birds, effective in flood and erosion control besides being a major eco-tourism site. Wetlands are the abodes of many useful plants which are often the source of livelihood of the local inhabitants.

Under the circumstances, the present work was performed through a series of field visits since 2009 to prepare an inventory of useful plants in the wetlands of Puruliya District. These wetlands have enormous plant diversity which as useful resources can promote economic growth in the district. This work is in conformity with earlier work of the present author (Mandal *et al.*, 2003, Mandal and Mukherjee, 2003, 2007, 2008, 2010 and 2012) in the same district.

### Materials and Methods

The present study was conducted in Puruliya District, situated between 23° 42' North and 22° 43' South latitudes and 86° 54' East and 85° 49' West longitudes. It extends over an area of 6259.00 Sq Km. (Anon., 1985).

For the present study 38 Wetlands in 19 Blocks were surveyed in a series of field visits since January 2009. The morphological features of different plant species were worked out following standard taxonomic methods for proper identification and determination of systematic position with the help of pertinent literature (Bennet, 1987; Guha Bakshi, 1984; Prain, 1963; Cook, 1996). Uses of the wetland macrophytes were recorded only from primary sources i.e. on the basis of interrogation with knowledgeable users, herbalists, businessmen, experts in rural technology (**Table 1**) and author's own experience gained during field work. The concerned species were enumerated alphabetically with their serial number of wetlands, local names, family names and uses (**Table 2**).

### Results and Discussion

The present work could document the use of only 31 species from the users of wetlands. Since the information is recorded from primary sources and based on own observation and experience gained during field studies it is likely to have novelty and potential to enrich our knowledge about the use of wetland plants resources.

As many as 11 species were found to have medicinal uses against diseases of different types. Leaves of 10 species are cooked as green vegetable. Stem, pedicels and flowers of *Nymphaea pubescens* are cooked as vegetable. Seeds of *Nelumbo nucifera* and *Nymphaea pubescens* are edible. Edible fruits are obtainable from *Trapa natans*. Fruits of *Solanum nigrum* are cooked as vegetable. Three species of *Najas* and *Vallisneria spiralis* hand over leaves useful as poultry feed. Medicinal use of rice leaves seems to be novel. *Oryza sativa* and four other species are used in worships and festivals. This kind of use has

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# Asian Resonance

conservational implications. So long the religious activities continue one need not worry about conservation of these species which are otherwise very useful. Two species have been recorded to have use in fencing and as fuels. Prophylactic use of two species against leprosy is noteworthy. Use of *Bacopa monnieri* in conjunctivitis is novel information. Use of three species in gynecological disorders is also noteworthy. That the fruits of one wetland associated species are used to trap rats and leaves of another species is used as plates have also been observed and recorded.

Of the various types of uses, those of medicinal plants and edible wild plants seem to be the most important. The edible wild plants have prospect in addressing the issues of food security in future.

From the information documented regarding use of macrophytes it seems that these plants are intimately associated with the poor people of the wetland locality and their knowledge needs to be further enriched through awareness programmes on wetlands, their ecological and economic values especially of the plant and animal resources.

Prior to this, it is felt that there should be an immediate evaluation of the total economic potential of each and every wetland of the district in an interdisciplinary framework so that programmes of conservation and management can be undertaken in the near future for optimum sustainable utilization collaterally with economic benevolence of the local people.

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**Table 1: List of persons from whom information regarding wetlands and their uses were recorded:**

Sl. No.	Name of the Wetland	Place	Name of the person from whom information was procured	Address of the concerned person
1	Adra Sahebbundh	Adra	S, Sengupta	D.C. Water supply Office, Adra, Puruliya
2	Angarkhuri	Chharra	Jabbar Bauri	Labourer, Chharra, Puruliya
3	Babirbundh/ Sabirbundh	Babiddi	Sibu Dutta, Gopal Chandra Hazra	Moneylender, Babiddi, Puruliya; Worshiper & Exteacher, Gourangadi Junior High School, Gourangadi, Puruliya
4	Barikbundh	Raghunathpur	Bimal Mandal	Raghunathpur, Puruliya
5	Benabundh	Manbazar	Srikanta Paoria	Manbazar, Puruliya.
6	Benagora	Sankra	Samir Maji	Student, Sankra, Para, Puruliya
7	Burosayar	Mangalda	Rabilal Murmu	Aamaidi, Guniyara, Puruliya

# Asian Resonance

8	Deshbundh	Kharbar	Shyamal Mandal	Tiyashi, Santuri, Puruliya
9	Dewanbundh	Kalidaha	Sudhir Bauri	Jagannathdi, Gourangadi, Puruliya
10	Dhanarbundh	Akunga, Raghunathpur	Bimal Mandal; Rabilal Murmu	Raghunathpur, Puruliya; Aamaidi, Guniyara, Puruliya, Asst. Teacher, Maldanga R. M. institution Burdwan
11	Ganakbundh	Damda	Baru Bauri	Damda, Puruliya; Railway Staff, Engineering Department, S. E. Railway, Puruliya
12	Gayerbundh	Tiyashi	Shyamal Mandal	Tiyashi, Santuri, Puruliya
13	Gaylabundh	Lalpur	Dipankar Kundu	Trader, Lalpurmarket, Hura, Puruliya
14	Ghoshalpukur	Puncha	Shakti Pada Modak	Trader, puncha market, Puncha, Puruliya
15	Gobindasayar	Patharmura	Debasis Narayandeb	Patharmura, Puruliya
16	Gorsaibundh/ Namobundh	Gorsai	Ram Jiban Mahanti	Gorsai, Barabazar, Puruliya
17	Guniyara Bara bundh	Guniyara	Rabilal Murmu	Aamaidi, Guniyara, Puruliya
18	Hanumata Dam	Mudidi, Dumari, Khairadi	Sadhu Charan Mandal	Ex-panchayet Pradhan, Balarampur, Puruliya
19	Joypur Ranibundh	Joypur	Bhagbat Kumar; Surya Kumar	Barabenda, Joypur, Puruliya; Barabenda, Joypur, Puruliya
20	Kalidaha Jore	Kalidaha	Sagar Das; Sudhir Bauri	Herbalist, Rampur, Puruliya; Jagannathdi, Gourangadi, Puruliya
21	Kamalabundh	Baghmundi	Bhabani Singhadeb; Jagannath Singha Deb	Baghmundi, Puruliya, Baghmundi, Puruliya
22	Ketankiyari Jore	Ketankiyari	Sudhir Bauri	Jagannathdi, Gourangadi Puruliya
23	Khagerbundh	Puncha	Shakti Pada Modak	Trader, Puncha market, Puncha, Puruliya
24	Kumaridam	Baraurma, Dubraj pur, Panjanbera	Malay Choudhury	Puruliya Jellar Nadnadi
25	Lihirbundh	Jhalda	Sarat Chatterjee	Ex-sanity Inspector, Municipality Office, Jhalda, Puruliya
26	Mahatobundh	Pithati, Kantadi	Chandra Mohan Mahato; Ajit Mahato	Korang, Arsha, Puruliya; Korang, Arsha, Puruliya
27	Maidhara	Patharmura	Debasis Narayan Deb	Patharmura, Puruliya
28	Nutanbundh	Puruliya	Bishwanath Chatteraj	Head Clerk, Puruliya Municipality Office, Puruliya
29	Pokabundh	Banduan	Rabindranath Kar	Sabhadhipati, Puruliya Zilla Parissad, Puruliya
30	Purano Sayar	Chharra	Jabbar Bauri	Labourer, chharra, Puruliya
31	Rajabundh	Puruliya	Bishwanath Chatteraj	Head Clerk, Puruliya Municipality Office, Puruliya;
32	Rampur Barabundh	Rampur	Ambuj Mandal	Farmer, Rampur, Puruliya
33	Ranibundh	Baghmundi	Bhabani Singhadeb; Jagannath Singhadeb	Baghmundi, Puruliya; Baghmundi, Puruliya
34	Ruknibundh	Guniyara	Rabilal Murmu	Aamaidi, Guniyara, Puruliya
35	Sahebbundh/ Nibaransayar	Puruliya	Bishwanath Chatteraj	Head Clerk, Puruliya Municipality Office, Puruliya.
36	Sankra Barabundh	Sankra	Samir Maji	Student, Sankra, Para, Puruliya

# Asian Resonance

37	Sayerbundh	Khariduara	Bhaskar Chandra Mahato	Khariduara, Manbazar-II, Puruliya
38	Sindripathar	Karangberiya	Sagar Das	Herbalist, Rampur, Puruliya

**Table 2: Utilitarian perspectives of macrophytes as recorded from primary sources.**

Sl. No.	Name of the plant	Sl. no of wetlands	Local name	Family	Use
1	<i>Aeschynomene indica</i> L.	7, 9	Sola	Fabaceae	Stem are used in decoration.
2	<i>Bacopa monnieri</i> (L.) Pennell	1, 19, 22	Brambhi	Scrophulariaceae	Crushing of leaves are used in conjunctivitis.
3	<i>Boerhavia diffusa</i> L.	1	Khapra-sak	Nyctaginaceae	Leaves are used in vegetables
4	<i>Centella asiatica</i> (L.) Urb.	1	Thankuni	Apiaceae	Crushing of leaves are used in dysentery
5	<i>Colocasia esculenta</i> (L.) Schott	29, 35	Kachu	Araceae	Young leaves are used as vegetables.
6	<i>Commelina benghalensis</i> L.	4, 32, 35, 38	Kansira, Kanasak	Commelinaceae	Young shoot and leaves are used as vegetables.
7	<i>Croton bonplandianum</i> Baill.	2, 25	Jhamti, Bhabari	Euphorbiaceae	Latex is used as external injury.
8	<i>Cynodon dactylon</i> (L.) Pers.	2, 21, 33, 35	Dub-ghas	Poaceae	Leaves are used in external injury and worship and prayer.
9	<i>Eclipta prostrata</i> (L.) L.	3, 17, 19	Kesuti, Lao-keshra	Asteraceae	Crushing of leaves is used in anthrax of chicken.
10	<i>Hydrilla verticillata</i> (L.f.) Royle	2, 3, 9, 10, 11, 13, 16, 17, 20, 22, 26, 27, 32, 35	Chingri-dal	Hydrocharitaceae	Shoots are used in worship and prayer during Sasthi Puja.
11	<i>Hygrophila schulli</i> (Buch. Ham.) M.R. & S.M. Alm.	7, 10, 32	Kulekhara, Kuyla-khara	Acanthaceae	Leaves are used as vegetable and taken as soup to reduce high blood pressure.
12	<i>Ipomoea aquatica</i> Forssk.	1, 17, 22, 24, 35	Kalmilata, Kalmisak	Convolvulaceae	Leaves are used in vegetables.
13	<i>Ipomoea carnea</i> ssp. <i>fistulosa</i> (Mart ex Choisy) Austin	2, 4, 16, 17, 18, 25, 29, 30, 31	Berakalmi	Convolvulaceae	Stem are used as stick and fuel, formation of boundary.
14	<i>Ludwigia adscendens</i> (L.) H. Hara	1, 34, 35	Keshradam	Onagraceae	Decoction of the plant orally taken in general weakness usually by pregnant women
15	<i>Ludwigia perennis</i> L.	15, 16, 19	Banlanga	Onagraceae	Decoction of the plant orally taken in general weakness usually by pregnant women.
16	<i>Mikania micrantha</i> Kunth.	20	Rabanlata	Asteraceae	Leaves are used as external injury.
17.	<i>Najas graminea</i> Del	1, 35	Chingri-dal	Najadaceae	Leaves are used as food of chicken.
18.	<i>Najas malesiana</i> de Wilde	20	Chingri-dal	Najadaceae	Leaves are used as food of chicken
19	<i>Najas minor</i> All.	19, 35	Chingri-dal	Najadaceae	Leaves are used as food of chicken
20	<i>Nelumbo nucifera</i> Gaertn	4, 17, 19, 28, 35, 36	Padma	Nelumbonaceae	Root and seeds are eaten.
21	<i>Nymphaea pubescens</i> Willd.	3, 4, 7, 8, 11, 13, 15, 16, 17,	Saluk	Nymphaeaceae	Seeds are eaten.

# Asian Resonance

		18, 20, 24,26, 27, 30, 31,34, 35, 38			
22	<i>Nymphoides hydrophylla</i> (Lour.) Kuntz	4,7,8,9,10,15, 17,22,26,27, 34,36,37,38	Panhar	Menyanthaceae	Paste rhizome is given with white sandal wood dust in leucorrhoea.
23	<i>Oryza sativa</i> L.	19	Dhan	Poaceae	2-4 gm roots are chewed with a betel leaf in dysentery. Straw and rice are used in Saharai festival.
24	<i>Potamogeton crispus</i> L.	20, 22, 32	Kalaypata	Potamogetonaceae	Leaves are used as vegetables.
25	<i>Potamogeton nodosus</i> Poir.	1, 2, 11, 16	Kalaypata	Potamogetonaceae	Leaves are used as vegetables.
26	<i>Solanum nigrum</i> L .	35	Ghurki	Solanaceae	Fruits are used as vegetables in cold and cough,fruits are used to hunt rat in cage.
27	<i>Typha domingensis</i> Persoon	4, 18, 20,22, 24, 38	Kam, Hoogla	Typhaceae	Leaves are used in preparation of mat, fuel.
28	<i>Trapa natans</i> L.var <i>bispinosa</i> (Roxb.) Makino	4, 19, 34, 35	Paiphal	Trapaceae	Fruits are eaten.
29	<i>Vallisneria spiralis</i> L.	4, 6, 7, 15,20, 32, 35, 36, 37	Dal	Hydrocharitaceae	Leaves are used as the food of chicken.
30	<i>Vetiveria zizanioides</i> (L.) Nass	1	Benaghas, Kash	Poaceae	Roots are used in worship and prayer.
31	<i>Marsilea minuta</i> L.	1, 24, 26	Susunisak	Marsileaceae	Young twigs are used as vegetable.

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# Asian Resonance

# Asian Resonance

Education is an individualizing and socializing process that furthers personal advancement as well as social living"-Crow&Corw<sup>1</sup> Education is the fundamental means of human adjustment and development by the birth of man, his innate powers, knowledge and skills are enhanced by education. When the man grows up gradually he is taught sitting, standing, moving, eating and social conduct, after it he is sent to school and there his education is organized in a very proper manner. Besides the school, he is also taught in his family and community that go on even after he leaves the school.

If we see it in extensive from, the process of education in the society continues forever. Views of Philosophers, sociologist, political scientists are different regarding education. But all seem to agree on the point that the education is a purposeful, social, continuous, dynamic and development process. The emphasis is laid on the fact that educational process should be conducted according to his interest, aptitude and ability.

Many Scholars in their restless efforts in studies have concluded that the educational process depends on student's physical health, mental health, growth, development and maturity, desire to learn, his previous experiences and knowledge, moral qualities, character, vigor and fatigue and his studiousness.

Thus, it is the noble duty of the society itself to help the student to develop and modify his inherent qualities to the extent where he can learn to his best and perform in a desired manner.<sup>2</sup>

The main pole of learning process is student. The good study habit of student helps him a lot in learning, by good study habits students do all work in time, so that their learning goes on smoothly.

## Objectives

The objectives of the present study were as

1. To compare the study habits of male and female senior secondary students of C.B.S.E.
2. To compare the study habits of male and female senior secondary students of U.P. Board.
3. To compare the study habits of senior secondary of C.B.S.E and U.P. Board.
4. To compare the study habits of male senior secondary students of C.B.S.E and U.P. Board.
5. To compare the study habits of female senior secondary students of C.B.S.E and U.P. Board.

## Hypotheses

According to the objectives, following null hypothesis have been constructed.

1. No significant difference exists between the study habits of male and female senior secondary students of UP Board.
2. There is no significant difference between the study habit of male and female senior secondary students of UP Board.
3. No significant difference exists between the study habit of senior secondary students of CBSE and UP Board.
4. There exists no significant difference between the study habit of male senior secondary students of CBSE and UP Board.
5. There is no significant difference between the study habit of female senior secondary students of CBSE and UP Board.

## Method

Present study is based on normative survey method of descriptive research.

## Sample

For the present study, a sample of 120 senior secondary students (60 CBSE and 60 UP Boards) studying in XI and XII standards of CBSE and UP Board co-ed schools have been selected through stratified random sampling technique.

**Table -1**

**Showing Significance of Difference Between Means of Study Habit of Male & Female Senior Secondary Students of Cbse**

Variable	Sex	N	Mean	S.D	Df	T-Value	Result
Study Habits C.B.S.E	Male	30	178.2	18.3	58	1.75	Insignificant at both level
	Female	30	186.6	18.9			

It is revealed from Table-1 that t-value comes out to be 1.75, which is not significant. Hence, by accepting null hypothesis, it is concluded that there is no significant difference between the study habits of senior secondary students of CBSE and UP Board. It may, therefore, be interpreted that male and female senior secondary students of CBSE have similar study habit.

**Table – 2**

**Showing Significance of Difference Between Means of Study Habit of Male and Female Senior Secondary Students of Up Board**

Variable	Sex	N	Mean	S.D	Df	T-Value	Result
Study Habits U.P. Board	Boys	30	180.3	14.6	58	.24	Insignificant at both level

# Asian Resonance

	Girls	30	181.2	14.2			
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Above table indicates that t-value has been found 0.24, which is not significant at 0.05 level and 0.01 level of significance.

Thus, this null hypothesis is accepted. It may be stated that there is no significant difference between the study habits of senior secondary male and female students of UP Board. Both male and female of U.P. Board have almost similar study habit.

**Table - 3**

**Showing Significance of Difference Between Means of Study Habit of Senior Secondary Students of Cbse and Up Board**

Variable	Sex	N	Mean	S.D	Df	T-Value	Result
Study Habits	C.B.S.E	60	178.55	18.6	118	2.05	Level Of Significance 0.05
	UP	60	171.75	17.8			

Table-3 shows that t-value comes out to be 2.05, which is significant at 0.05 levels. Hence, by rejecting null hypothesis, it may be interpreted there is a significant difference between the study habits of senior secondary students of CBSE and UP Board.

Also, it is shown from their mean values that the mean value of senior secondary students of CBSE (M= 178.55) is higher than that of senior secondary students of UP Board (M= 171.75) Therefore, it may be interpreted that study habits of senior secondary students of CBSE are better than that of senior secondary students of UP Board.

**Table - 4**

**Showing Significance Of Difference Between Means Of Study Habit Of Male Senior Secondary Students Of Cbse And Up Board**

Variable	Board	N	Mean	S.D	Df	T-Value	Result
Study Habits	C.B.S.E	30	178.2	18.3	58	0.03	Insignificant at both levels
	UP BOARD	30	180.3	14.6			

Table-4 depicts that t-value comes out to 0.03, which is not significant at 0.05 level and 0.01 of significance. Thus, by accepting the null hypothesis, it is interpreted that there is no significant difference between the study habits of male senior secondary students of CBSE and UP Board.

Hence, it may be concluded that the study habit of male senior secondary students of CBSE and UP Board are similar.

**Table - 5**

**Showing Significance of Difference Between Means of Study Habit of Female Senior Secondary Students of Cbse and Up Board**

Variable	Board	N	Mean	S.D	Df	T-Value	Result
Study Habits	C.B.S.E	30	186.6	18.9	58	0.81	Insignificant At Both Levels
	Up Board	30	181.2	14.2			

Table-5 Reveals That T-Value Comes Out To 0.81, Which Is Insignificant At Both Levels Of Significance. Hence, by accepting the null hypothesis, it is interpreted that there is no significant difference between the study habits of senior secondary girls of CBSE and UP Board. Therefore, it may be concluded that the female senior secondary students of CBSE and UP Board have similar study habit.

**Conclusion**

1. CBSE male and female students have almost similar study habit.
2. Male and Female senior secondary students of UP Board have similar study habit.
3. Senior Secondary CBSE students have better study habit than UP Board students.
4. Male senior secondary students of CBSE and UP Board have almost similar study habit.
5. No significance differences between the study habit of female senior secondary students of CBSE and UP Board.

**Implication of the study**

Study habit of senior secondary students of UP Board and CBSE can be improved. Also improve their study habits some interesting facts based on the principle of learning by doing may be included in the curriculum. Teachers may also improve the library related projects in their subjects which should be based on critical thinking. Parents may also change the schedule of their wards improve their study habits.

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# Asian Resonance

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