
**A CASE STUDY OF MAJOR MACROPHYTIC SPECIES OF FULHATTA POND AT
KALYANPUR BLOCK OF SAMASTIPUR, BIHAR**

Sushil Kumar* Raj Kumar Singh Ajay Kumar*****

*Research Scholar, R.B.S. College Andour, Samastipur

**Retd. HOD Department of Botany, R.B.S.College Andour, Samastipur

***University Dept. of Botany, L.N.Mithila University, Darbhanga

ABSTRACT

Samastipur is a district of Bihar which is spread over an area of 2904 km². It is bounded on the north by the Bagmati River which separates it from Darbhanga district. On the west it is bordered by Vaishali and some part of Muzaffarpur district, on the south by the Ganges, which on its east it has Begusarai and some part of Khagaria district. Samastipur is lucky to be traversed by rivers like Burhi gandak, Baya, Kosi, Kamala, Kareh and Jhamwari and Balan which are both the off shoots of Budhi Gandak the Ganges also skirts the district on the south. The fulhatta pond is present under high environment stress due to cultured and chemical pollution. We listed the macrophytes on seasonal basis for a period of two year i.e. 2015-2017. Altogether 44 Macrophytic species were recorded from the pond during the study period which was categorized into Marginal (14 species), Submerged (8 species), Floating (6 species) and Emergent (16 species). Out of 44 macrophytic species 24 species belonged to dicotyledons, 14 species to Monocotyledons and 3 species each to algae and pteridophytes from the analysis of the distribution pattern of the macrophytes. The present paper highlights the diversity of major macrophytes of Fulhatta pond at Kalyanpur block of Samastipur.

KEYWORDS: River, Samastipur, Diversity, Macrophytes, Bihar.

INTRODUCTION

Macrophytes constitute a very prominent component of an aquatic ecosystem (*Sharma et.al. 2007*). They inflict tremendous influence and drive an ecosystem in a particular direction, ultimately providing a definite shape. They oxygenate the water and are important for different activities of aquatic animals. They also dynamically guide the cycling of minerals and other organic constituents, there by influencing over all biomass production of water bodies and can serve as indicator for monitoring the degree of damage in the ecosystem. Aquatic macrophytes respond to the changes in water quality and have been used as Bio-indicator of pollution (*Tripathi and Shukla, 1991*). The aquatic plants are frequently used to reduce different kinds of pollutants from polluted water (*Tripathi, 1992*). Floristic list of a particular area gives a reliable background information about the species diversity in a community as each plant species has its own specific ecological amplitude and the some indicates the ecological nature of the habitat.

In present study, an attempt has been made to investigate the qualitative aspects of the macrophytes of fulhatta pond. Moreover, the present study is the first attempt to document the macrophytic diversity of Kalyanpur.

RESEARCH SITE & METHOD

A survey to collect the details of macrophytes in Samastipur district was undertaken during the study period from 2015-2017. We recorded different groups of macrophytic plants such as Marginal, Submerged, floating and emergent. The country boat was used which collecting plants from deepen water. Herbarium of each plant species was prepared using standard herbarium paper and techniques and the some have been deposited in the departmental herbarium plant were identified with the help of available literature of Subramanyam (1962), Cook (1996) and Choudhary (2002). The identification were also confirmed by comparing the herbarium of university department of Botany, L.N.Mithila University, Darbhanga, Bihar.

RESULT AND DISCUSSION

In the present study, altogether 44 macrophytic species were recorded and species were grouped under different categories, i.e. Marginal (14 species), Submerged (8 species), Floating (6 species) and Emergent (16 species). 44 forms recorded in the present study were distributed over 33 genera and 20 family. Dicots were dominant (24 species) and covered 54.55 percent of the total number of Macrophytic species. Monocots (31.81 percent) were next to Dicots including 09 genera and 14 species. Algae and Pteridophytes were poor in distribution and were represented by 3 species in each and covered 6.818% separately. Scientific name, Local name, Habitat status and seasonal presence or Absence are given in Table 1.

Table 1: List of Macrophytic species recorded from Fulhata Pond, Samastipur (2015-2017)

| Species/Scientific Name | Local Name | Habitat | Seasons | | |
|---|---------------|-----------|---------|--------|---------|
| | | | Winter | Summer | Monsoon |
| ANGIOSPERMS | | | | | |
| DICOTYLEDONS | | | | | |
| AMARANTHACEAE | | | | | |
| <i>Alternanthera sessilis</i> Linn. | Sarhanchi | Emergent | - | + | + |
| <i>Alternanthera philoxeroides</i> St. Hill | Sarhanchi | Emergent | + | + | + |
| <i>Amaranthus spinosus</i> Linn. | Kataiya sag | Marginal | - | + | + |
| <i>Digera muricata</i> Linn. | Jamaia sag | Marginal | - | - | + |
| ACANTHACEAE | | | | | |
| <i>Hygrophila auriculata</i> (Schumach.) Heine | Gokhul kanta | Emergent | + | + | + |
| ASTERACEAE | | | | | |
| <i>Eclipta alba</i> Hassk. | Bhengria | Emergent | + | + | + |
| CONVOLVULACEAE | | | | | |
| <i>Ipomoea aquatic</i> Forsk. | Kalmi sag | Emergent | + | + | + |
| <i>Merremia gangatica</i> Linn. | Musa kani | Marginal | + | + | + |
| EUPHORBIACEAE | | | | | |
| <i>Croton bonpladianum</i> Baill. | Mirchaini | Marginal | + | + | + |
| <i>Euphorbia hirta</i> Linn. | Dhudhi | Marginal | + | + | + |
| <i>Acalypha indica</i> Linn. | Kuppi | Marginal | + | + | + |
| LAMIACEAE | | | | | |
| <i>Ocimum americanum</i> Linn. | Bantulsi | Marginal | + | + | + |
| <i>Leucas cephalotes</i> (Roth). Spreng. | Dhrub | Marginal | + | + | + |
| <i>Leucas aspera</i> (willd.) Spreng. | Guma | Marginal | + | + | + |
| NELUMBONACEAE | | | | | |
| <i>Nelumbo nucifera</i> Gaertn. Fruct. | Kamal | Floating | + | + | + |
| NYMPHAEACEAE | | | | | |
| <i>Nymphaea stellate</i> Willd. | Bhent | Floating | + | + | + |
| <i>Euryale ferox</i> Salisb. | Makhana | Floating | - | + | + |
| LENTIBULARIACEAE | | | | | |
| <i>Utricularia stellaris</i> Linn. | Bladder wort | Submerged | + | - | - |
| PEDALIACEAE | | | | | |
| <i>Sesamum indicum</i> Linn. | Til | Marginal | - | + | + |
| POLYGONACEAE | | | | | |
| <i>Polygonum glabrum</i> Willd. | | Emergent | + | + | + |
| <i>Polygonum barbatum</i> Linn. | | Emergent | + | + | + |
| <i>Polygonum hydropiper</i> Linn. | Panimirchai | Emergent | + | + | + |
| <i>Polygonum plebeium</i> R. Br | Raniphul | Emergent | + | + | - |
| <i>Rumex dentatus</i> Linn. | Jangali palak | Emergent | + | + | - |
| MONOCOTYLEDONS | | | | | |
| ARACEAE | | | | | |
| <i>Colocasia esculenta</i> Linn. | | Marginal | + | + | + |

CERATOPHYLLACEAE

| | | | | | |
|---|--|-----------|---|---|---|
| <i>Ceratophyllum demersum</i> Linn. | | Submerged | + | + | + |
| <i>Ceratophyllum muricatum</i> Chamisso | | Submerged | + | + | + |

CYPERACEAE

| | | | | | |
|-------------------------------|-------|----------|---|---|---|
| <i>Cyperus rotundus</i> Linn. | Mutha | Emergent | + | + | - |
| <i>Cyperus iria</i> Linn. | Mutha | Emergent | | | |

HYDROCHARITACEAE

| | | | | | |
|------------------------------------|-----------|-----------|---|---|---|
| <i>Hydrilla verticillata</i> Linn. | Jhanji | Submerged | + | + | + |
| <i>Vallisneria spiralis</i> Linn. | Eel grass | Submerged | + | + | + |

PONTERIACEAE

| | | | | | |
|---------------------------------------|-----------|----------|---|---|---|
| <i>Eichhornia crassipes</i> (Martius) | Jalkumbhi | Floating | + | + | + |
|---------------------------------------|-----------|----------|---|---|---|

POACEAE

| | | | | | |
|-----------------------------------|------------|----------|---|---|---|
| <i>Cynodon dactylon</i> Linn. | Dub grass | Marginal | + | + | + |
| <i>Panicum miliaceum</i> | Sama grass | Emergent | + | - | + |
| <i>Panicum frumentacea</i> | | Emergent | + | - | + |
| <i>Panicum paludosum</i> Roxburgh | | Emergent | + | - | + |
| <i>Saccharum spontaneum</i> Linn. | Kash | Marginal | + | - | + |
| <i>Saccharum munja</i> Roxb. | Munja | Marginal | + | + | + |

THALLOPHYTA (ALGAE)**CHAROPHYCEAE**

| | | | | | |
|-------------------------------|--|-----------|---|---|---|
| <i>Chara zeylanica</i> Willd. | | Submerged | + | + | - |
| <i>Chara schwanitzii</i> | | Submerged | + | - | + |
| <i>Nitella hyalina</i> Agardh | | Submerged | + | - | + |

PTERIDOPHYTA**SALVINACEAE**

| | | | | | |
|--------------------------------|--|----------|---|---|---|
| <i>Azolla pinnata</i> R. brown | | Floating | + | + | + |
| <i>Salvinia natans</i> Linn. | | Floating | + | + | + |

MARSILEACEAE

| | | | | | |
|-----------------------------------|--|----------|---|---|---|
| <i>Marsilea quadrifolia</i> Linn. | | Emergent | + | + | + |
|-----------------------------------|--|----------|---|---|---|

From the present study it was evident that fulhata pond was clearly dominated by dicotyledons. Monocotyledonous species followed the dicots, but algae and pteridophytes contributed only 6.818% each. Macrophytic species were more pronounced and diverse in winter and monsoon season compared to summer season. Prolific growth of macrophytes in the pond substantiates the fact that eutrophication has set in the fulhata pond.

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