

**Full Length Research Paper**

Enumeration of Angiospermic plants in Pokabandh areas of Bishnupur, Bankura, West Bengal, India

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Abstract

This paper deals with the systematic enumeration of Angiosperms occurring in the territory of Pokabandh (an ancient pond of about 400 years age) and its surrounding areas of Bishnupur district, Bankura, West Bengal. The territory of this wet-land, as revealed through extensive survey, comprises more than 40 species of angiosperms. This kind of cataloging and documentation of plants at the territory of the wet-land is necessary for ecological implication and economic importance of plants, though no records of plants have yet been made previously at Pokabandh.

Key words: Angiosperm, Aquatic plants, Systematic, Wet land, Flora, Species, Keys

Introduction

Bankura comprises alluvial and lateritic regions. Ecosystem depends on exploration and analysis of various services growing across the significant water lands. One of the commonest form of wetland found in most part of India are ponds which are locally called as "Bandhs" or "Sagar's". Such type of man-made wetland was purposefully constructed for serving the people in the area for storing water to meet their water need. Due to less amount of rain fall during rainy season, such wetlands used for various beneficial purposes. The Pokabandh which occupies an area of about 20 acre and located in the township of Bishnupur,, Bankura distt. The Bandh was constructed by the king Bir Singha Dev (2nd) in between 1657-1677. Bir Bandh named after him. His another name was Poka, so Bir Bandh also named as Poka Bandh. Also controversially local people say that the water body were filled up by some insects (Poka) and damaged the water. Thus the name Pokabandh was given. Though several taxonomic explorations were made by different authors like Sannayal (1994), Mallick et al. (2011), no such documentary works has been made on the vegetation of this aquatic area.

The territory of this Bandh includes more than 40 species of angiosperms and many other groups of plants (Gymnosperms, and Pteridophytes). Among these plants few plant species are used as ornamentation. Our main endeavor is to make a list of plants mainly angiosperms as many as possible. This kind of documentation is necessary for ecological implication, economic importance and also for keen observation on changes in plant diversity (Mallick and Behera, 2009) depending on environmental changes of this water locality from time to time. The aim of this present study is to develop ecological implication of the study site and to enumerate the number of angiospermic plant species.

Materials and Methods

Study area

The district of Bankura lies between 22.46' and 23.38'N latitude and between 86.36' and 87.46'E longitude in W.B, a state in the eastern region of India. It covers an area of 6871.24 sq-km and the study area Bishnupur covers 1870.05 sq-km (The main subdivision) situated between 22.54'and 23.25'N latitude and between 87.15' and 87.46'E longitude. The north and north-east, south and west borders of the district are demarcated by the districts of Burdwan, Hoogly, Mednipur and purulia respectively. The district approximately resembles an isosceles triangle with its northern apex at the junction of Burdwan and Purulia and with an irregular East West baseline attached to Mednipur and Hoogly. The main subdivision Bishnupur straddles a connecting link between the plains of W.B, Assam, Sikkim, Orissa and the plateau of Chotonagpur.

The Subdivision Bishnupur stands a connective link between the plains of West Bengal and the plateau of Chotonagpur. It may be marked out as a level country which is actually undifferentiated from the flat plain in the adjoining districts of Burdwan and Hoogly. This vast alluvial land includes extensive paddy fields and looks green during the rainy season and scorched and dry during the summer. The climate is characterized by scorching summer heat, low humidity nearly throughout the greater part of the monsoon period. The winter starts from the middle of November and lasts upto the factors that appear to be of greatest importance are rainfall, temperature, Relative humidity and Wind. The rainfall is mainly concentrated between June and September. The normal annual rainfall of the area is 1320.1mm of which maximum rainfall occurs from June to September. Temperature rises rapidly from about the

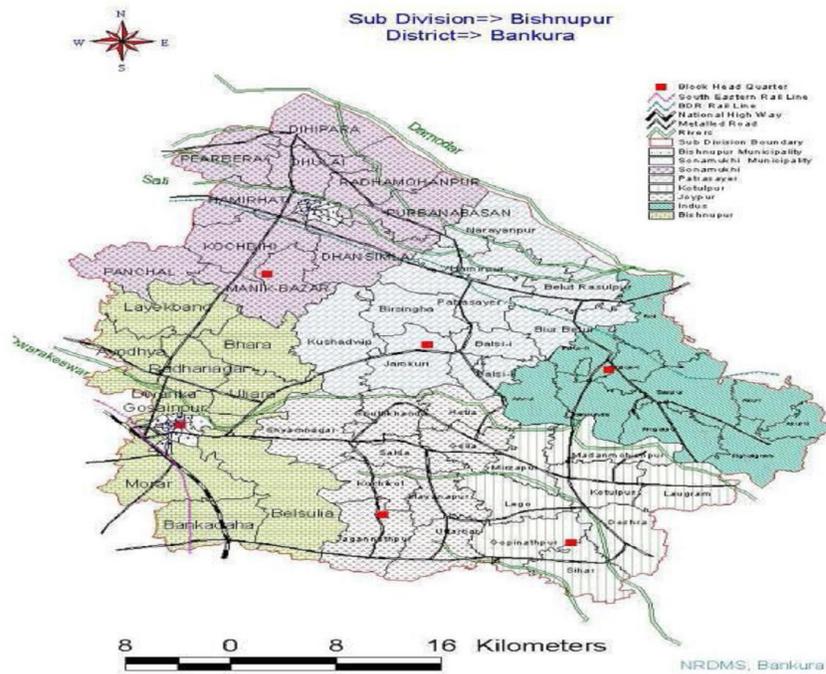


Fig. 1. Study area

Methodology

During the year 2014 (January to December), we visited and surveyed the area of Poka Bandh (an ancient pond of Bishnupur) in several times and collected data of different types of Angiosperms and identified by different keys made by different authors like Devid Prain (1903), Bennet (1987) and Sannyal (1994) which are growing on the different parts of the pond side. A List of observed plants is then made (Some unknown species were also be observed). The plants are aligned alphabetically under their respective families which in turn are arranged according to the Aurther Cronquist system of classification.

Result and Discussion

Observed angiosperms are listed according to Aurther Cronquist system of classification

Class: **Magnoliopsida** Sub-class 1: **Magnoliidae** Order: **Magnoliales** Family: **Annonaceae**

1. *Polyalthia longifolia*

Sub-class 2: **Hammaliidae** Order: **Urticales** Family: **Moraceae**

1. *Artocarpus heterophyllus*

Family: **Urticaceae** 1. *Ficus benghalensis* 2. *F. hispida*

Sub-class 3: **Caryophyllidae** Order: **Caryophyllales** Family: **Cactaceae**

1. *Opuntia dillenii*

Family: **Amaranthaceae**

1. *Aerva aspera* 2. *A. lanata* 3. *Amaranthus spinosus* 4. *A. viridis* 5. *Eclipta alba* 6. *Digera muricata*

Sub-class 4: **Dilleniidae** Order: **Malvales**

Family: **Bombacaceae** 1. *Bombax ceiba*

Family: **Malvaceae** 1. *Sida cordifolia*

Sub-class 5: **Rosidae** Order: **Fabales** Family: **Mimosaceae**

1. *Acacia nilotica* 2. *Albizia lebbek*

Family: **Caesalpinaceae**

1. Delonix regia

Family: Fabaceae

1. Cassia fistula 2. Dalbergia sisso 3. Desmodium gangeticum

Order: Myrtales Family: Myrtaceae

1. Eucalyptus maculate

Order: Euphorbiales Family: Euphorbiaceae

1. Acalypha indica 2. Croton bonplandianum 3. Euphorbia hirta

Order: Rhamnales Family: Rhamnaceae

1. Zizyphus 175aradi

Order: Sapindales Family: Anacardiaceae

1. Mangifera indica

Family: Meliaceae 1. Azadirachta indica

Order: Geraniales Family: Oxalidaceae

1. Oxalis corniculatum

Sub-class6: Asteridae Order: Gentianales Family: Apocynaceae

1. Rauwolfia 175aradisiac

Family Asclepiadaceae 1. Calotropis procera

Order: Solanales Family: Solanaceae

1. Datura metel

Order: Lamiales Family: Verbinaceae

1. Lantana camara

Order: Scrophulariales Family: Acanthaceae

1. Adhatoda visica 2. Andrographis paniculata 3. Ruellia prostrate

Order: Asterales Family: Asteraceae

1. Eclipta alba 2. Eupatorium ayapana 3. Tridax procumbens 4. Vernonia cinerea

Class: Liliopsida Sub-Class II: Arecidae Family: Arecaceae

1. Borassus flabillifer 2. Cocos nucifera 3. Phoenix sylvestris

Family: Aracaceae

1. Colocassia esculenta

Family: Poaceae 1. Bambusa vulgaris 2. Cynodon dactylon 3. Eragrostis sinoseurides

Sub-ClassIV: Commelinidae Family: Commelinaceae

1. Commelina bengalensis

Family: Musaceae 1. Musa 175aradisiacal

Sub-ClassV: Liliidae

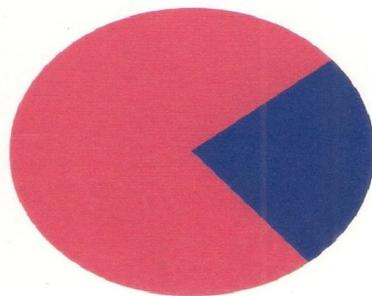
A total number of 40 species have been enumerated. Respective families and genera are encoded in Table 1. Economic values of the plants are also encoded in Table II. An overview of the floristic composition of the site is shown in Fig 2.

Table 1: Comparative account of species, genera and families

| | Total No. of families | Total No. of genera | Total No. of species |
|----------------|-----------------------|---------------------|----------------------|
| Dicotyledons | 16 | 27 | 31 |
| Monocotyledons | 6 | 9 | 9 |
| Total | 22 | 36 | 40 |

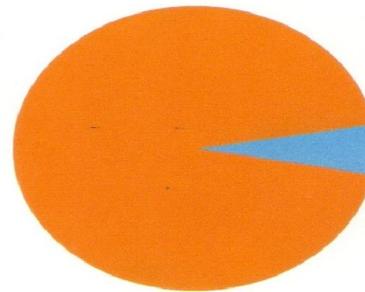
Table 2. Economical status of the enumerated plants

| Category | No. of plant species |
|---------------------------|----------------------|
| 1) Food plants | 10 |
| 2) Timber yeilding plants | 7 |
| 3) Oil yielding plants | 1 |
| 4) Medicinal plants | 18 |



■ Dicot (77.5%)
■ Monocot (22.5%)

Fig :- Pie-Diagram showing the percentage of Dicot and Monocot species



■ Terrestrial (95%)
■ Aquatic (5%)

Fig :- Pie-Diagram showing the percentage of Terrestrial and Aquatic species

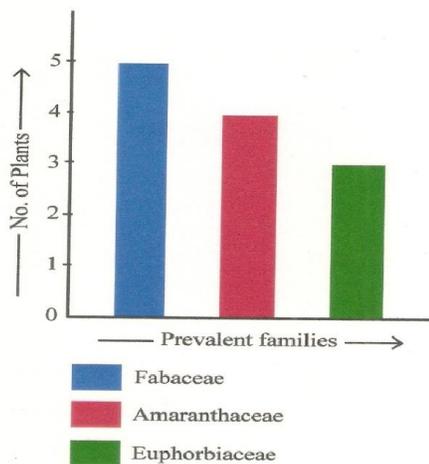


Fig :- Bar-Graph showing the number of species of prevalent families.

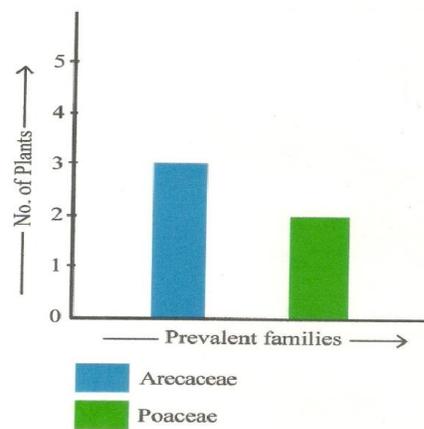


Fig. 2. An overview of the floristic composition of the area Pokabandh

There are many large wetlands in Bankura especially in Bishnupur subdivision. In addition to that small tanks, marshy lands, canals and rivers are often met with. These are abodes of various types of aquatic plants. When we study during (January-July) almost 7 months, we observed various small & large types of angiosperm also grow besides the river site. We took many of them and enlisted. We typically found 40 number's of identifying angiospermic plants including genus & species. The commonest aquatic flora is *Eichhornia crassipes*, which flourish the water surface during the whole year. Every year in rainy season municipality take necessary steps to clear it. Besides the *Eichhornia*, *Ricinus communis* is abundant in this territory area. Also *Cynodon dactylon*, *Amaranthus spinosus*, *A. viridis*, *Eclipta alba*, *Aerva aspera*, *Croton bonplandianum*, *Tridax procumbens*, *Sida cordifolia*, *Colocasia esculenta*, *Datura metel*, *Ficus bengalensis*, *Calotropis procera* etc are rich in this territory. Though graphical representation shows that the species richness along this territory. Some economic and ecologically importance plants species are also present. Thus we found a number of ecologically successional angiospermic plants species which systematically enumerate by us in first time. Lastly it is painfully said that the local people could not use properly the water, besides they polluted the water by falling various types of waste particles, garbage's, plastic bags etc. Another important thing is that the total area is not restricted somehow it captured by some unsocial people as by their needs. So, we concluded that save the ponds or Bandh's which gives us so many beneficial roles. The study reveals that about 40 angiospermic species are confined in this pond area and minimum cryptogams are found. Diversity

Conclusion

To conserve the diversity this habitat should be maintained, though various pollutants are added now due to anthropogenic activities. It is hoped that documentation of such information will pay an important role in framing the health of this aquatic area.

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