



WETLAND PHYTODIVERSITY OF BARAI LAKE BRAMHAPURI, DIST- CHANDRAPUR, MAHARASHTRA STATE (INDIA)

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Abstract

The present study emphasized on the preliminary assessment of biodiversity with reference to plants from Barai lake wetland of Bramhapuri tehsil, Chandrapur district, Maharashtra, India. During study, total 31 species of plants were recorded. These species belongs to 30 genera and 20 families. During investigation, it was also revealed that family Asteraceae was most dominant with 6 genera followed by Amaranthaceae, Fabaceae and Cyperaceae. Awareness of the unique nature of biodiversity, the factors causative to decline in habitat quality and species populations has been growing in the recent decade. Since wetlands are a common property resource, it demands an urgent need of conservation.

Keywords: Barai Lake Wetland, biodiversity, Conservation.

Introduction

Biodiversity is essential for stabilization of ecosystems, protection of overall environmental quality for understanding basic worth of all species on the earth (Ehrlich and Wilson, 1991). India is one of the mega biodiversity countries in the world and occupies the ninth position in terms of freshwater mega biodiversity (Mittermeier *et al.*, 1997).

As we know that most of our planet is covered by water, where millions of living species are inhibited. Today, in India we are losing our biodiversity at a greater rate; the reasons are overpopulation, deforestation and pollution. About 55 per cent of Indian fresh water species are threatened. India is facing and alarming danger to the loss of aquatic biodiversity.

In India, water reservoirs and associated wetlands support a large diversity of biota representing almost all taxonomic groups. Algae in open waters represent the floristic diversity and macrophytes dominate the wetlands. From an ecological point of view, the diversity of species present in the wetlands is an indication of the relative importance of the aquatic biodiversity issue as a whole. The total numbers of aquatic plant species exceed 1200 and a partial list of animal for aquatic and wetland system is given by Gopal (1995). Wetlands are also important as resting sites for migratory birds. Aquatic vegetation is a valuable source of food.

Wetlands provide many services and commodities to humanity. Regional wetlands are integral parts of larger landscapes, their functions and values to the people in these landscapes; depend on both their extent and their location. Each wetland thus is ecologically

unique. Wetlands perform numerous valuable functions such as recycle nutrients, purify water, recharge ground water and also serve in providing drinking water, fish, fodder, fuel, wildlife habitat, control rate of runoff in urban area. The interaction of man with wetlands during the last few decades has been of concern largely due to the rapid population growth - accompanied by intensified industrial, commercial and residential development further leading to pollution of wetlands by domestic, industrial sewage, and agricultural run-offs as fertilizers, insecticides and feedlot wastes. The fact that wetland values are overlooked has resulted in threat to the source of these benefits. Wetlands are dominated by vascular plants that have adapted for saturated soil. Wetlands are the most productive natural ecosystems because of the proximity of the soil and water. Hence they support large number of plants and animal species.

STUDY AREA- BARAI LAKE WETLAND

Bramhapuri is a tehsil in the district of Chandrapur, Maharashtra, India. Situated at 20°36'N 79°52'E / 20.600°N 79.867°E. Bramhapuri city is on the bank of Wainganga River. The high rainfall and temperature has resulted in unique type of vegetation in the tehsil. Forest type is south Indian moist deciduous forest. The natural vegetation of the forest includes most of the plant species of economical importance. It has timber yielding, gum and resin plants, food and fodder plants and plants having medicinal values. There are 5 major perennial lakes in and around the Bramhapuri town. All are with their associated wetlands which are rich in the floral diversity. The study area selected for this investigation is Barai lake wetland. Barai lake situated in the

center of Bramhapuri town. Since most of the plant species of this wetland are absconded or on the verge of extinction, the study was undertaken.

Material and Method


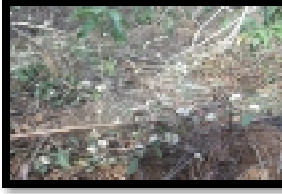



The detailed investigation on wetland plants of the Barai lake of Bramhapuri town, Dist. Chandrapur, was carried out for the period of July 2014 to June 2015. Throughout the investigation, regular observations were made in different season of the year to collect the plants

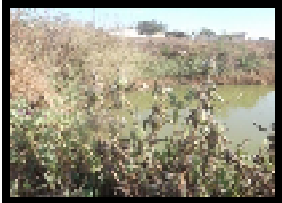
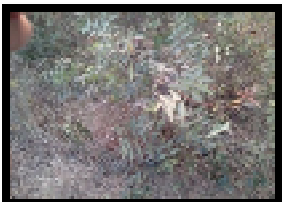
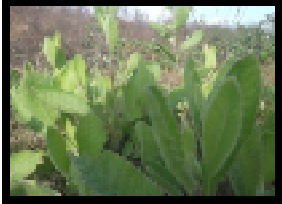
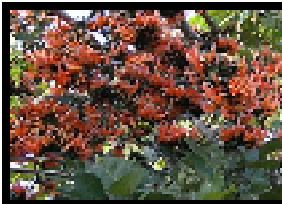
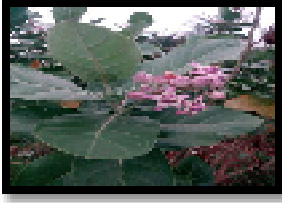

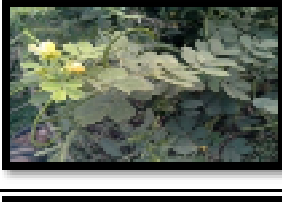
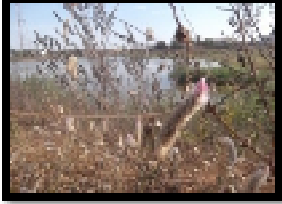
data of the area. Observed plants were photographed. Plant specimens were identified using different available floras.



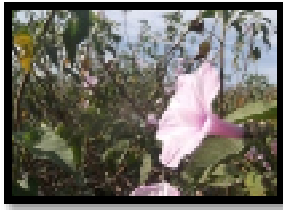
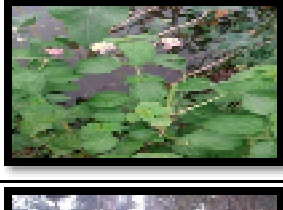

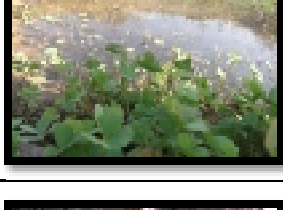
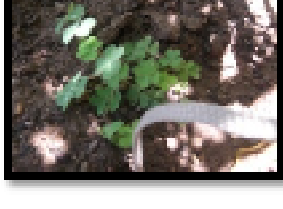
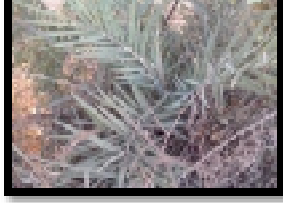
Observation and Result




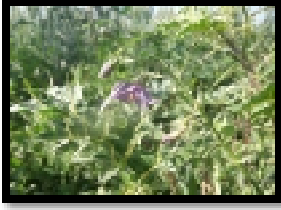
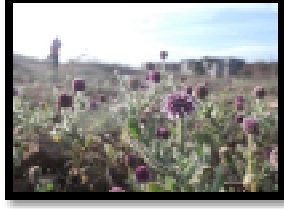

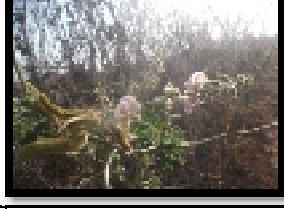

During the present investigation, following plant species were recorded in above mentioned study area; The recorded plants have been enlisted in Table 1. Plants are arranged according to the alphabetical order of their genus. Nomenclatural citations are followed by local names (Marathi) and family.

Table 1. Wetland plants of Barai lake of Bramhapuri town, Dist. Chandrapur (MS, India)

SR. NO.	NAME	DESCRIPTION	PHOTOGRAPH
1	<i>Aervalanata(L.) Juss. ex Sch.</i> Common Name:- Pandharafeda Family- Amaranthaceae	Small erect, 30-45 cm tall. Leaves elliptic, obvate or orbicular, obtuse or acute. Flowers very small, in dense axillary spikes. Flowering and Fruiting time : Almost throughout the year.	
2	<i>Ageratum conyzoides</i> L. Common Name: - Osadi Family- Asteraceae	Erect, hairy herbs, 30-60 cm tall. Leaves opposite, ovate, crenate, with ciliate margins, acute. Flowers are tubular, white or purplish; head borne in terminal corymbs. Flowering and Fruiting time : June- December	
3	<i>Alternanthera sessilis</i> (L.) R.Br. Ex DC. Common Name: Galighosh Family- Amaranthaceae	Prostrate, sometimes erect, suberect, spreading glabrous herb. Leaves lanceolate, oblong, acute. Flowers white, in axillary heads. Seed suborbicular. Flowering and Fruiting Time : July- February	
4	<i>Ammania baccifera</i> L. Common Name:- Dhanbhaji Family- Myrtaceae	Flowers red in dense axillary clusters. Capsules red, imperfectly circumscissile, not enclosed by the calyx. Seeds hemispheric. Flowering and Fruiting time : July- January	
5	<i>Argemone mexicana</i> L. Common Name: Pivladhotra Family- Papaveraceae	Erect prickly annual, 30-90 cm tall, latex yellow. Leaves oblanceolate, variously lobed, spiny on the margin and surfaces. Flowers yellow solitary, terminal surrounded by small leafy bracts. Capsule oblong or elliptic. Seeds many, brown. Flowering and Fruiting Time : Throughout the year.	

6	<i>Asteracantha longifolia</i> (L.) Nees Common Name:- Family- Acanthaceae	It is a robust, erect, annual herb. The stems are sub-quadrangular with thickened nodes; The leaves are oblanceolate, with a yellow spine in its axil. The flowers pale, purple blue, densely clustered in axial. The fruits are oblong, glabrous capsules, 4-8 seeded. Flowering and Fruiting Time : March- June	
7	<i>Azadirachta indica</i> Juss Common Name:- Kaduninb Family- Meliaceae	Tall trees, bard black. Leaves unipinnatecrowdes near ends of the branches. Flowers frangent white. Drupes elliptic, oblong, yellow, glabrous, one seeded. Flowering and Fruiting time : February - June, March - August	
8	<i>Blumea lacera</i> (Burm. F.) DC. Common Name:- Chatakchandani Family- Asteraceae	Aromatic herbs, 60 cm tall; stem stout, striate, hairy. Leaves alternate, obovate-oblong, entire covered with numerous gland and hair. Heads many, yellow, in short axillary cymes or terminal spiciform panicles. Achenes oblong, sub tetragonous, slightly ribbed, brown, sparsely hairy. Flowering and Fruiting time : January-April	
9	<i>Butea monosperma</i> (Lamk.) Taub. Common Name:-Palas Family-Fabaceae	Small trees, trunk crooked. Leaves trifoliate, leaflets broadly ovate. Pods thickened at the sutures, velvety hairy. Flowers large in groups of 2-3, orange, in large racemes. Flowering and Fruiting Time: February- April	
10	<i>Calostropis procera</i> (L.) R.Br. Common Name:- Rui Family- Asclepiadaceae	Erect shrub, 2mt. tall, young branches covered with white cottony tomentum. Leaves are large and thick. Flowers white with purple blotches. Follicles are subglobose, ellipsoid, green. Flowering and Fruiting Time: December- March.	
11	<i>Capparis zeylanica</i> L. Common Name:- Waghati Family- Capparaceae	Large, scandent, thorny shrubs. Spines in pairs at nodes, holed. Leaves ovate-elliptic, acute or mucronate. Flowers white, in supra- axillary cymes. Flowering and Fruiting time : October- March.	
12	<i>Cassia tora</i> L. Common Name:- Tarota Family- Fabaceae	Erect foetid herbs. Leaflets 3 pairs, obovate, oblong, glands between the leaflets. Flowers yellow, 1-2 in axillary pairs. Pods elongate, curved, sub tetragonal. Very common weed throughout the district. Flowering and Fruiting time : July- November.	
13	<i>Celosia argentic</i> L. Common Name:- Kukada Family- Amaranthaceae	Erect, annual herbs, 60-120 cm tall. Leavs linear or linear-lanceolate. Flowers pinkish or silvery white in long stalked spikes. Capsules tapering at the apex into style. Seeds black, shining, usually 4-8, compressed. Flowering and Fruiting Time : September-March.	

14	<i>Coix lacryma</i> L. Common Name:- Kasai Family- Cyperaceae	Robust annual herbs. Culms 30-120 cm high, tufted; nodes glabrous. Inflorescence terminal and axillary peduncle, false spikes. Lower floret male. Upper floret male or barren. Lower glume 4-8 x 2-4 mm, ovate-elliptic, 2-keeled, winged on keels. Flowering and Fruiting time :October-December	
15	<i>Cyperus</i> sp. Common Name:- Family- Cyperaceae	The species vary greatly in size, with small species only 5 cm tall, while others can reach 5 m in height. The seed is a small nutlet. Flowering and Fruiting time: August- November	
16	<i>Ipomoea fistulosa</i> Mart. Ex Choisy Common Name:- Beshram Family- Convolvulaceae	Large, straggling shrub with milky juice, stem fistular. Leaves broadly ovate. Cordate, acuminate. Flowers large pale pink. Capsules ovoid. Flowering and Fruiting Time : Almost throughout the year.	
17	<i>Lantana camara</i> L. Common Name: Ghaneri Family- Verbenaceae	Strong smelling shrubby plant with recurved prickles. stem quadrangular. Leaves rough, ovate, crenate, acute. Flowers reddish or orange yellow in corymbose spike. Flowering and Fruiting Time : Almost throughout the year.	
18	<i>Ludwigia perennis</i> (Don.) Exell Common Name:- Dongari Koranti Family- Onagraceae	Erect herbs, 45 cm tall. Flowers small, Yellow. Leaves lanceolate or linear oblanceolate, base tapering. Capsules oblong, marrowed below, many seeded, opening by terminal. Common in wat places, along streams in forest. Flowering and Fruiting time :-throughout the year.	
19	<i>Marselia</i> sp. Common Name:- kanda Family- Marsileaceae	Aquatic fern bearing 4 parted leaf resembling '4-leaf clover'. Leaves floating in deep water or erect in shallow water or on land. Leaflets obdeltoid to 3/4" long; glaucous, petioles to 8" long. It can be grow in semi-shade (light woodland) or no shade. A juice made from the leaves is diuretic and febrifuge.	
20	<i>Oxalis corniculata</i> L. Common Name:- Amrul Family- Oxalidaceae	Diffuse creeping herbs, stems rooting at the nodes. Leaves palmately 3-foliate; leaflets notched at top, broader than long, cuneate at base. Flowers yellow, 1-many in long axillary umbels. Capsules linear-oblong, beaked, 5-angled. Seeds numerous, reddish brown, ovate, transverse. Flowering and Fruiting Time : April- December	
21	<i>Phoenix sylvestris</i> (L.) Roxb. Common Name: Family- Arecaceae	Tall palm, trunk rough from persistence bases of petioles. Leaves pinnate, greyish green, leaflets fascicled, rigid ensiform. Fruits oblong, ellipsoid, orange yellow to reddish brown. Seeds pale brown. Flowering and Fruiting Time : January- May.	

22	<p><i>Polygonum glabrum</i> Willd. Common Name:- Bhoikhumbi Family-Polygonaceae</p>	<p>Erect or procumbent herb. Leaves lanceolate, finely acuminate, closely gland dotted, base tapering. Flowers pink, in terminal racemes. Flowering and Fruiting time : throughout the year</p>	
23	<p><i>Ricinus communis</i> L. Common Name: Erandi Family- Euphorbiaceae</p>	<p>Tall evergreen shrub or undershrub with hollow stem. Leaves large palmately 5-11 lobed, peltate, orbicular. Flowers greenish white or reddish, monoecious in terminal panicles. Capsule globose covered with brown soft hairs. Seed oblong grey mottled with brown shining. Flowering and Fruiting Time : December- May</p>	
24	<p><i>Sagittaria sagittifolia</i> L. Common Name:- KaduKand Family-Alismataceae</p>	<p>lobes of leaves ending in very acute needle-like tip. Flowers white, usually unisexual, the upper male, lower female or bisexual. Female flowers nearly sessile with staminodes. Flowering and Fruiting time : July- August</p>	
25	<p><i>Solanum xanthocarpum</i> Schrad. &Wendl. Common Name:- Laghukavali Family- Solanaceae</p>	<p>It is a very prickly perennial herb somewhat with woody base. Stem branched much and younger ones clothed with dense. Leaves ovate or elliptic, sinuate or subpinnatifid, obtuse or subacute.</p>	
26	<p><i>Sphaeranthus indicus</i> L. Common Name:- Gorakh mundi Family- Asteraceae</p>	<p>Much branched, strong smelling, prostrate herbs; branches winged and densely hairy. Leaves sessile, obovate-oblong toothed, thick, and hairy. Heads purplish, small, on solitary, winged peduncle. Involucral bracts small. Root, stem, leaves, flower and seeds are used in medicine. Flowering and Fruiting time : November-January</p>	
27	<p><i>Spilant hes paniculata</i> Wall. ex DC. Common Name: Akkalkadha Family-Asteraceae</p>	<p>Annual herb with erect or ascending stems. Leaves ovate or lanceolate, serrate. Heads yellow, radiate, on a long peduncle. Bracts ovate, sometimes elliptic, acute, glabrous. Achenes laterally compressed, sparsely hairy, ciliate on margins. Pappus 6 or 2-3 bristles. Flowering and Fruiting Time : September- December.</p>	
28	<p><i>Tephrosia purpurea</i> (L.) Pers. Common Name:- Sharpunkha Family- Fabaceae</p>	<p>Diffuse herbs, leaflets 7-11, oblanceolate. Corolla of open flowers whitish turning pink on withering. Pods straight, downy. Flowering and Fruiting time : August- January</p>	
29	<p><i>Tridax procumbens</i> L. Common name: Kambar modi Family- Asteraceae</p>	<p>Straggling procumbent herb. Stem often reddish, hairy. Leaves opposite, short, petioled, ovate, elliptic, acute, margin hairy. Heads yellow on long pubescent peduncle, heterogamous. Achenes turbinate, silky villous. Flowering and Fruiting Time : Throughout the year</p>	



30	<p><i>Typha sp. L.</i> Common Name :- Pankanis Family- Typhaceae</p>	<p>Robust, erect plant, about 2m tall, usually growing in water or moist places, Leaves spongy, long, often exceeding the flowering stem. Flowers small, monoecious, densely crowded in cylindrical spike. Male and female spikes are separated by a considerable distance. Fruits small drupaceous. Seeds pendulous. Flowering and Fruiting Time : AUGUST-DECEMBER</p>	
31	<p><i>Xanthium strumarium L.</i> Common name:- Ardharis Family- Asteraceae</p>	<p>Stout herb, 90-120 cm tall. Leaves alternate triangular cordate or ovate or 3 lobed irregularly toothed. Heads monoecious, in terminal and axillary racemes. Achenes obovoid, thick enclosed in hardened involucre cells. Flowering and fruiting time: August-December.</p>	



Figure 1

Discussion and Conclusion

In the present investigation, total 30 plant species belonging to 20 families of angiosperms and some pteridophyte and bryophytes were recorded. Being an appropriate habitat for the lower forms of some Pteridophytes like *Marsilea sp.*, *Ceratopteris sp.* are also reported. Among the Bryophytes, *Riccia sp.* occurs during the late rainy season. Present investigation can prove as an important record for the study of various parameters associated like ethnobotany, phytodiversity, phytochemistry etc. Another important parameter which is necessary to consider from the location point of view of the lake; Barai lake is at the heart of Bramhapuri town. Once upon a time lake was totally undisturbed but now because of urbanization the lake as well as wetland diversity is in danger. Hence it is the need of the hour to record the findings and make the people aware about its importance to avoid future consequence.

Barai lake wetland is facing several anthropogenic pressures. Thus, the rapidly expanding city population, large scale changes in land use and landcover, development projects and improper use of watersheds has all caused a substantial decline of wetland biodiversity. Significant losses have resulted from its conversion threats from industrial, agricultural and various urban developments. These have led to hydrological disruptions, pollution and their effects. Unsustainable levels of grazing and fishing activities have also resulted in degradation of this wetland.

Wetland biodiversity is dependent on hydrologic system; geological conditions and efforts are being made to conserve the biodiversity found in wetland. The first step in conservation of biodiversity is to assess the diversity of natural resources present and identify those, which are important. There is obviously much ground to be covered in conservation efforts of Barai lake wetland.

There is no option except to develop research strategies and public policies, which can help us in conserving the wetland biodiversity.

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