

RESEARCH ARTICLE

Biodiversity of Aquatic Plants of Shivnibandh Lake of Sakoli Tehsil of Bhandara District of MS, India

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Manuscript details:	ABSTRACT
<p>Date of publication 18.10.2014</p> <p>Available online on http://www.ijlsci.in</p> <p>ISSN: 2320-964X (Online) ISSN: 2320-7817 (Print)</p> <p>Editor: Dr. Arvind Chavhan</p>	<p>The aim of present study was to document the aquatic plant diversity of Shivnibandh lake of Sakoli tehsil of Bhandara district of M.S. Floristic surveys were carried out during 2010 to 2014. Herbarium specimens were prepared and identification was confirmed through floras. 121 plant species of hydrophytes belonging to 41 families and 83 genera were documented during field visits. Conservation of aquatic plants is urgently needed to protect endemic and endangered plant species.</p> <p>Key words: biodiversity, hydrophytes, aquatic plants</p>
<p>Cite this article as: Tiwari Vijay Jagdishprasad (2014) Biodiversity of Aquatic Plants of Shivnibandh Lake of Sakoli Tehsil of Bhandara District of MS, India, <i>Int. J. of Life Sciences</i>, Special Issue, A2: 211-213.</p> <p>Acknowledgements: Author is thankful to Principal Vikas Dhomne for providing basic infrastructure to carry out present research work. Author express his deep sense of gratitude to the government officers of forest department and irrigation department for comfortable stay in guest houses during the course of field study.</p> <p>Copyright: © Author(s), This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>INTRODUCTION</p> <p>The hydrosphere of the earth is composed of all water bodies viz., oceans, rivers, ponds, lakes, ditches, streams etc. Aquatic bodies are natural water resources. Due to rapid industrialization, urbanization and rapid population growth the water bodies are polluted. It has disturbed the growth of flora and fauna. Works on floristic study of composition of hydrophytes in different water reservoirs in different parts of India were carried out by several workers like Cook (1996), Agharkar (1923), Dutta <i>et al.</i> (2002), Ghosai <i>et al.</i> (1993). Subrahmanyam (1962) has described 117 aquatic plants. Lavania <i>et al.</i> (1990) has compiled the wetland flora of India. Bhisare <i>et al.</i> (2013) reported 71 hydrophytes from Ravanwadi Lake of Bhandara tehsil. The Bhandara district is known as a Lake district of Maharashtra because it is inhabited by 1572 minor and major lakes and ponds. The district receives heavy rainfall hence Paddy is the main revenue crop of farmers. The district is also known as rice bowl of M.S. From biodiversity point of view many of the perennial and ephemeral lakes of district still remain unexplored. Therefore it is the urgent need of time to conduct such study. The paper for the first time present a checklist of aquatic angiosperm of Shivnibandh Lake.</p> <p>MATERIALS AND METHOD</p> <p>The Shivnibandh lake lies between 21°00'00"N & 79°59'00"E. It is a perennial earthen dam. The length of dam is 298.70 M. The maximum height of dam is 8.83 M. Total Storage capacity is 11.635 MCum. The catchment Area is 19.42 sq.km. The submergence area is 489.60 hectare. The irrigation potential is 1852 hectare. It is popular tourist spot for its scenic beauty. The lake is surrounded by dry deciduous forest wherein teak and bamboo are the dominant element. The lake is about 45 km. away from the district headquarter</p>

The study area was explored thoroughly and detail observations on hydrophytes plants are noted in the field book. Frequent field visits were conducted in various seasons to collect plant species. Hydrophytes were collected according to conventional herbarium techniques (Jain and Rao 1976). The Map indicate the locality of field study.

RESULTS AND DISCUSSION

The hydrophytic taxa is categorized as follows –1. Free Floating 2. Suspended 3.Submerged Anchored 4. Floating Leaves / Shoot Anchored 5. Emergent Amphibians 6. Wetlands and Swampy Hydrophytes 7. Hydrophytes growing along bank and margin of the lake. The present enumeration include Family, Genus, Species Names and Authority.

i) Free Floating Hydrophytes:

Araceae: *Pistia stratiotes* L.

Pontederiaceae: *Eichhornia crassipes* (Mart.)Solms.,
Wolffia arrhiza (L.) Harkel ex Wimmer.

Lemnaceae: *Spirodela polyrhiza* (L.) Schleiden.

Trapaceae: *Trapa natans* L.

Poaceae: *Hygrorhiza aristata* (Retz.)Nees.ex.Wt.&Arn.

Pteridophyte: *Azolla pinnata* R.Br.

ii) Suspended Hydrophytes

Ceratophyllaceae: *Ceratophyllum demersum* L.

Lentibulariaceae: *Utricularia caerulea* L., *U.exoleta*
R.Br., *U.flexuosa* Vahl., *U.stellaris* L.f.

iii) Submerged Anchored

Hydrocharitaceae : *Hydrilla verticillata* (L.f.)Royle.,
Ottelia alismoides (L.)Pers, *Vallisneria spiralis* L.,

Potamogetonaceae : *Potamogeton crispus* L., *P.nodosus*
Poir., *P.pectinatus* L.

iv) Floating Leaves/ Shoot Anchored Hydrophytes

Aponogetonaceae: *Aponogeton natans* (L.) Engl. &
Krause

Convolvulaceae; *Ipomoea aquatica* Forsk.

Nelumbonaceae: *Nelumbo nucifera* Gaertn.

Nymphaeaceae: *Nymphaea nouchali* Burm.f., *N.stellata*
Willd.

Menyanthaceae: *Nymphoides cristata* (Roxb.)Kuntze., *N.*
indica (L.)Kuntze.

Alismataceae: *Caldesia parnassiifolia* (L.)Parl.

Lemnaceae: *Lemna paucicostata* Hagelm.,

v) Emergent Amphibious

Fabaceae: *Aeschynomene indica* L., *Alysicarpus*
bupleurifolius (L.)DC

Eriocaulaceae: *Eriocaulon quinquangulare* L., *E.*
tuncatum Willd., *E.cinereum* R.Br.

Polygonaceae: *Polygonum barbatum* L., *P.glabrum*
Willd., *P.plebeium* R.Br., *P.hydripiper*L.

Onagraceae: *Ludwegia adscandens*(L.)Hara,
L.octavalis(Jacq.)Raven

Pontederiaceae: *Monocharia vaginalis* (Burm.f.)Presl.,

Alismataceae: *Sagittaria trifolia* L., *Limnophyton*
obtusifolium (L.)Miq.

Cyperaceae: *Schoenoplectus articulatus* (L.)Palla.

Typhaceae: *Typha angustata* Chaub & Bory

Poaceae: *Vetiveria zizanooides*(L.)Nach.

Scrophulariaceae: *Limnophila*
heterophylla(Roxb.)Bentham., *L.indica* (L.)Druce.

vi) Wetland Hydrophytes

Amaranthaceae: *Alternanthera pungens* Kunth.

Brassicaceae: *Rorripa indica* (L.)Hiern.

Lythraceae: *Ammania baccifera* L., *Rotala*
indica(Willd.)Koehne.

Scrophulariaceae: *Bacopa monnieri* (L.)Pennell.,

Asteraceae: *Eclipta prostrata* (L.)Mant., *Caesulia*
axillaris Roxb., *Sphaeranthus indicus* L., *Centepeda*
minima(L.)A.Br.et.Aeschers.

Poaceae: *Eragrostis viscosa*(Retz.)Trin.,
E.aspera(Jacq.)Nees., *E.tenella* (L.)P.Beauv.ex.Roem
& Schult., *E.pilosa* (L.)P.Beauv., *Coix lacryma-jobi* L.,
Echinochloa colonum (L.)Link.,
E.stagnina(Retz.)Pal.-Beauv.

Boraginaceae: *Coldenia procumbens* L.

Fabaceae: *Alysicarpus vaginalis* (L)DC.

Cyperaceae: *Cyperus iria* L., *C.exaltatus* Retz., *C.flavidus* Retz., *C.michelianus* (L.)Link. *C.corymbosus* Rottlb., *C.nutans* Vahl., *Fimbristylis falcate* (Vahl.)Kunth., *F.miliacea* (L.)Vahl., *F.ovata*(Burm.f.)Kern., *F.tetragona* R.Br.

Rubiaceae: *Dentella repens*(L.)Forst

Acanthaceae: *Hygrophila auriculata* (K.Schum.)Heine

Scrophulariaceae: *Lindernia antipoda* (L.)Alston., *L.crustacea* (L.)F.V.Muller., *L.parviflora*(Roxb.)Haines., *Veronica anagallis-aquatica* L.

vii) Species along banks/margin of lakes and ponds

Commelinaceae: *Floscopa scandens* Lour.

Convolvulaceae: *Evolvulus alsinoides* (L.)L., *Ipomoea fistulosa* Mart.ex.Choisy.

Chenopodiaceae: *Chenopodium ambrosioides* L., *Acalypha indica* L.

Euphorbiaceae: *Chrozophora prostrate* Dalz., *Croton bonplandianum* Baill., *Phyllanthus asparulatus* Hutch., *P.maderaspatensis* L., *P.virgatus* Forst., *Jatropha gossypifolia* L, Tiliaceae: *Corchorus capsularis* L., *Triumfetta rhomboidea* Jacq.

Asteraceae: *Grangea maderaspatana* (L.)Poir.,

Boraginaceae: *Heliotropium indicum* L.

Lamiaceae: *Leucas aspera* (Willd.)Spreng, *L.cephalotes* Spreng.

Solanaceae: *Nicotiana plumbaginifolia* Viv.

Verbenaceae: *Phyla nodiflora* (L.)Greene.

Polygonaceae: *Rumex dentatus* L.

Asteraceae: *Xanthium strumarium* L., *Parthenium hysterophorous* L., *Ageratum conyzoides*, *Vernonia cineria* L., *Gnaphalium luteo-album* L.

Caesalpinaceae: *Cassia tora* L.,

Acanthaceae: *Hygrophila auriculata* (K.Schum)Heine.

Commelinaceae: *Commelina benghalensis* L., *C.hasskarlii* L

Poaceae: *Imperata cylinderica* Beauv., *Heteropogon contortus*(L.)Pal.Beauv.ex.Roem & Schult., *Saccharum spontaneum* L., *Oryza rufipogon* Griff.

Scrophulariaceae: *Lindernia antipoda* Alst.

Molluginaceae: *Mollugo pentaphylla* L.

Pteridophyte: *Marsilea quadrifolia* L.

Amaranthaceae: *Amaranthus spinosus* L., *Aerva lanata*(L.)Juss.ex.Schult.

Cyperaceae: *Cyperus nutans* Vah., *C.rotundus* L., *C.flavidus* Retz., *C.iria* L., *C.difformis*L., *C.clarkei* Cook, *Furiena ciliaris* (L.)Roxb., *Fimbristylis tetragona* R.Br., *Kyllinga tenuifolia* Steud., *Eleocharis geniculata* (L.) Roem & Schult.

DISCUSSION & CONCLUSION

A total number of 121 species distributed among 83 genera and 41 families were recorded. Families with maximum number of species are Cyperaceae, Poaceae, Asteraceae and Euphorbiaceae. Further quantitative and qualitative floristic survey is needed to save these hydrophytes.

REFERENCES

- Agarkar S P (1923) The present position of our knowledge of the aquatic flora of India., Indian Bot. Soc.3: 252-260.
- Bhaisare M S, Tiwari V J & Kunjalwar S G (2013) Biodiversity of Wet and Marshy Places- Ravanwadi Lake of Bhandara District of Maharashtra State, India., In Kapgate, D K, Saha R C (Eds.) UGC sponsored National Seminar on *Biodiversity- A Global Need.*, J M Patel College, Bhandara.
- Cook C D K (1996) *Aquatic and Wetland Plants of India.* Oxford Uni.Press.
- Dutta S A., Desai N, Almeida S M and Das A P (2002) Aquatic Macrophytes of Apalchand Reserve in Jalpaiguri district of West Bengal., In Perspective of Plant Biodiversity ,(Ed.Das A P) Dehradun
- Ghosai S K, Santra S C & Mukherjee P K (1993) Phenological Studies in Aquatic Macrophyte Plants of Lower Gangetic Delta., West Bengal, India., Feddes Repertorium 104:93-111.
- Jain S K & Rao R R (1976) *A Handbook of Field and Herbarium Methods.*, Today and Tomorrow Publ., New Delhi
- Lavania G S., Paliwal, S C & Gopal B (1990) *Aquatic Vegetation of Indian Subcontinent:* In E. Gopal (Ed.)Ecology and Management of the Aquatic Vegetation of the Indian Subcontinent. Dordrecht: Kluwer Academy Publishers.
- Subrahmanyam K (1962) *Aquatic Angiosperm.*, Botanical Monograph 3. CSIR Publ., New Delhi.