

BIODIVERSITY OF AQUATIC MACROPHYTES IN SUCHINDRAM THEROOR BIRDS SANCTUARY, KANYAKUMARI DISTRICT, TAMIL NADU, INDIA

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ABSTRACT

A detailed survey of aquatic macrophytes in Suchindram Theroor Birds Sanctuary, Kanyakumari district of Tamil Nadu was made during the period of two year (January-2011 to December-2012). A total of 46 species belonging to 24 families and 35 genera were identified, of these 3 are pteridophytes and 43 angiosperms. Further, the aquatic macrophytes classified in morphological group viz., floating (12), submerged anchored and floating leaved anchored (7) and emergent anchored (20). In Suchindram Perennial water source of the "Sanctuary serves as an important gateway for the migratory waterfowl.

Key words : Suchindram Theroor Birds Sanctuary, Aquatic Macrophytes, migratory waterfowl.

Introduction

Aquatic flora is an important source for well functioning of wetland ecosystem, biological productivity and support for other organisms (Shah *et al.*, 2011). Aquatic diversity is considered as a key component for the fresh water ecosystem of shallow, lakes and ponds, where they form an extensive and diverse littoral zone with numerous associated invertebrates, fish and birds (Jappesen *et al.*, 1998; Mitchell and Perrow, 1998) and also act as an efficient accumulator of heavy metals (Devlin, 1967; Chung and Jeng, 1974).

Fresh water ecosystem is tremendously threatens to abiotic and biotic pollution of different kinds, rapidly expanding human population, land use/land cover changes, unfavorable climatic changes that disrupts rainfall are all the other stresses on freshwater habitat, which also greatly threatens the floral diversity of aquatic ecosystem (Chambers *et al.*, 2008; Rasingam, 2010; Ramachandra, 2010).

Previously Subrahmanyam (1962) has described 117 aquatic angiosperms and Lavania *et al.* (1990) has compiled the wetland flora of India; Cook (1996) has published the aquatic and wetland flora of India. From plant biodiversity point of view, many of the perennial ponds of Tamil Nadu still remain unexplored. In this paper, for the first time we present a checklist of aquatic angiosperms in the pond of Suchindram Theroor Birds Sanctuary, Tamil Nadu state, India.

Material and Methods

Study area

The Suchindram Theroor Birds Sanctuary is one of the biggest fresh water tanks in Kanyakumari district of Tamil Nadu state, India. Constitution of this new wildlife sanctuary was proposed in 2002 and remains under consideration of the Government. It is located between Nagarcoil and Kanyakumari on the National Highway with two water bodies, namely Suchindram (8°08'25.58" to 8°09'45.48" N Lat. and 77°27'13.14" E to 77°27'00.56" E Long.) and Theroor (8°11'49.83" to 8°10'27.65" N Lat. and 77°26'43.30" E to 77°28'51.71" E Long.), which are 2 km apart.

Kanyakumari district receives rainfall from both, the south-west and the north-east monsoons. The south-west monsoon starts from June and ends in September, while the north-east monsoon extends from October to the mid-December.

The present work is based on the results of extensive systematic field surveys of the plants for a period of two year (January-2011 to December-2012). Field trips were made once in a week covering entire water body with a view to find out the aquatic macrophytes.

The plants have been identified from fresh materials with the help of different floras (Gamble and Fischer, 1935; Subramanyam, 1962; Nair and Henry, 1983; Henry *et al.*, 1987; Henry *et al.*, 1989; Matthew,

Survey of aquatic macrophytes in Suchindram Theroor Birds Sanctuary, reveals 46 species belonging to 24 families and 35 genera.

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Table 1 : The number of genus and species in each family

S.No	Botanical Name	Life form	Family	SPKCEES Herbarium No
Pteridophytes				
1	<i>Azolla pinnata</i> R.Br.	Floating	Salviniaceae	914
2	<i>Ceratopteris thalictroides</i> (L.) Brongn.	Floating	Parkeriaceae	916
3	<i>Marsilia minutta</i> L	Emergent anchored	Marsileaceae	924
Angiosperms				
4	<i>Hygrophila auriculata</i> (Sch.) Heine	Emergent anchored	Acanthaceae	912
5	<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	Emergent anchored	Amaranthaceae	312
6	<i>Alternanthera pungens</i> Kunth.	Emergent anchored		911
7	<i>Limnophyton obtusifolium</i> (L.) Miq.	Floating	Alismataceae	122
8	<i>Aponogeton natans</i> (L.) Engl. & K.Krause	Floating leaved anchored	Aponogetonaceae	982
9	<i>Pistia stratiotes</i> L.	Floating	Araceae	970
10	<i>Wolffia globosa</i> (Roxb.) Hartog & Plas	Floating		981
11	<i>Spirodela polyrrhiza</i> (L.) Schleid.	Floating		986
12	<i>Eclipta prostrata</i> (L.) L.	Emergent anchored	Asteraceae	971
13	<i>Ipomoea aquatica</i> Forssk.	Floating leaved anchored	Convolvulaceae	812
14	<i>Ipomoea carnea</i> Jaeq.	Emergent anchored		960
15	<i>Ipomoea obscura</i> (L.) Ker. G.	Floating leaved anchored		965
16	<i>Cyperus compressus</i> L.	Emergent anchored		990
17	<i>Cyperus halpan</i> L.	Emergent anchored		815
18	<i>Cyperus iria</i> L.	Emergent anchored		913
19	<i>Cyperus rotundus</i> L.	Emergent anchored		822
20	<i>Fimbristylis aestivalis</i> (Retz.) Vahl.	Emergent anchored	Cyperaceae	963
21	<i>Kyllinga squamulata</i> Vahl.	Emergent anchored		977
22	<i>Rhynchospora corymbosa</i> (L.) Bri.	Emergent anchored		820
23	<i>Hydrilla verticillata</i> (L.f.) Royle	Submerged anchored	Hydrocharitaceae	315
24	<i>Ottelia alismoides</i> (L.) Pers.	Submerged anchored		316
25	<i>Vallisneria natans</i> (Lour.) H.Hara	Submerged anchored		923
26	<i>Nechamandra alternifolia</i> (Roxb. ex Wight) Thwaites	Submerged anchored		925
27	<i>Najas graminea</i> Delile	Submerged anchored		940
28	<i>Najas indica</i> (Willd.) Cham.	Submerged anchored		941
29	<i>Najas minor</i> All.	Submerged anchored		500
30	<i>Lemna gibba</i> L.	Floating	Lemnaceae	830
31	<i>Nymphoides hydrophylla</i> (Lour.) K.	Floating leaved anchored	Menyanthaceae	834
32	<i>Neptunia oleracea</i> Lour.	Floating	Mimosaceae	835
33	<i>Nelumbo nucifera</i> Gaertn.	Floating leaved anchored	Nelumbonaceae	810
34	<i>Nymphaea nouchali</i> Burm. f.	Floating leaved anchored	Nymphaeaceae	860
35	<i>Nymphaea pubescens</i> Willd.	Floating leaved anchored		865
36	<i>Ludwigia adscendens</i> (L.) Hara	Emergent anchored	Onagraceae	891
37	<i>Ludwigia perennis</i> L.	Emergent anchored		892
38	<i>Panicum repens</i> L.	Emergent anchored		890
39	<i>Saccharum spontaneum</i> L.	Emergent anchored	Poaceae	989
40	<i>Polygonum glabrum</i> Willd.	Emergent anchored	Polygonaceae	990
41	<i>Polygonum barbatum</i> L.	Emergent anchored		978
42	<i>Eichhornia crassipes</i> (Mart.) S.L.	Floating	Pontederiaceae	878
43	<i>Monochoria vaginalis</i> (Burm. f.) C. Presl ex Kunth.	Floating		875
44	<i>Trapa natans</i> L.	Floating	Trapaceae	874
45	<i>Typha angustata</i> B. and Chaub.	Emergent anchored	Typhaceae	870
46	<i>Clerodendrum inerme</i> (L.) Gae.	Floating	Verbenaceae	919

1991). Bentham and Hooker's Natural system of classification was followed to classify the species. Author citation and binomial of collected species were verified with international plant names index (IPNI, 2009). The collected specimens were pressed and dried. After drying, the plants were mounted on the herbarium sheets and labeled properly for future reference. Herbarium sheets of the collected material were

deposited in Sri Paramakalyani Center for Excellence Environmental Sciences Herbarium (SPKCEESH), Manonmaniam Sundaranar University, Alwarkurichi, Tamil Nadu, India.

Results

Total numbers of aquatic macrophytes recorded from Suchindram Theroor Birds Sanctuary water bodies were 46 species of 35 genera distributed in 24 families. Of

Table 2 : List of families with number of species

Family	Number of species
Cyperaceae, Hydrocharitaceae	7
Araceae, Convolvulaceae	3
Amaranthaceae, Nymphaeaceae, Onagraceae, Poaceae, Polygonaceae, Pontederiaceae	2
Alismataceae, Acanthaceae, Aponogetonaceae, Asteraceae, Lemnaceae, Menyanthaceae, Mimosaceae, Nelumbonaceae, Trapaceae, Typhaceae, Verbenaceae, Salviniaceae, Parkeriaceae, Marsileaceae	1

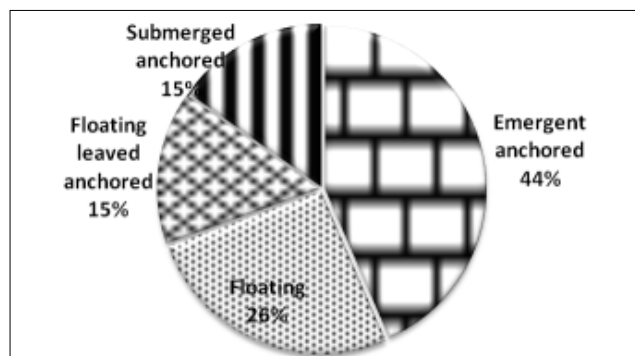


Fig. 1 : Habit wise distribution of plant species in the study area

these 3 were Pteridophytes and 43 Angiosperms (Table 1 and Fig. 1). Cyperaceae and Hydrocharitaceae were the dominant families represented by 7 species, followed by Araceae and Convolvulaceae (3 species in each), Amaranthaceae, Nymphaeaceae, Onagraceae, Poaceae, Polygonaceae and Pontederiaceae (2 species in each), while remaining fourteen families with single species (Table 2). Beside these, the aquatic plants contribute 44% for emergent anchored species; 21% for floating plants and 15% each for submerged anchored and floating leaved anchored species (Fig. 1).

Discussion

Suchindram Theroor Birds Sanctuary filled with water throughout the year, owing to this it has floral richness. *Nymphaea* is one of the economically

important plants. Since the flowers have a spiritual importance and the leaves are used for flowers' packing, due to the fact people are interested to cultivate it in large scale. More than that the place is marked as good water storage area to provide sufficient water for agriculture and irrigation purposes and also increases the ground water level. In the present study 46 species of aquatic flora the area were recorded. Lavania *et al.* (1990) has compiled the wetland flora of India. Cook (1996) has published the aquatic and wetland flora of India; Udayakumar and Ajithadoss (2010) has observed for 45 species in Thiruvallur district.

Aquatic ecosystems are threatened globally due to their widespread resources which are utilized for human use. The main problems around the sanctuary are overgrazing and construction, accumulation of garbage and encroachment, which are eliminating the emergent vegetation from the margins of the water bodies. Nowadays increase in habitat loss is due to growth of human population leading to development of human activities into affected natural ecosystem (Sisk *et al.*, 1994; Fahrig, 2001). Further, studies on impacts of pollutants, water quality and ecological quantitative studies are needed to conserve this sanctuary and assessment of biota, continuous monitoring and conservation of water bodies are the important components to safeguard the biological wealth of Suchindram Theroor Birds Sanctuary.

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सुचिन्द्रम थरूर पक्षी अभयारण्य, कन्याकुमारी जिला, तमिलनाडु, भारत में जलीय बृहदपादपों की जैवविविधता

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सारांश

तमिलनाडु के सुचिन्द्रम थरूर पक्षी अभयारण्य, कन्याकुमारी जिले में दो साल की अवधि (जनवरी, 2011 से दिसम्बर, 2012 तक) के दौरान जलीय बृहदपादपों का एक वस्तुतः वेंक्षण किया गया। 12 कुलों में 3 व 5 व 'शसे'स बंधित कुल 4 6 प. जातियों को प हचानक 1 ग ई.इ नमैंसे 3 टेरीडोफाइट और 43 आवृतबीजी हैं। इसके अलावा जलीय बृहदपादपों को आकारिकीय समूह में वर्गीकृत किया गया, उदाहरणार्थ, चलायमान (12), जलमग्न स्थिरक और चलायमान पत्तीदार स्थिरक (7) और उद्गामी स्थिरक (20)। सुचिन्द्रम में अभयारण्य के बारहमासी जल स्रोत प्रवासी जलकुक्कट के लिए एक महत्वपूर्ण मार्ग के रूप में कार्य करते हैं।

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