

ENUMERATION OF WALL FLORAS OF MAHENDRANAGAR MUNICIPALITY, FAR WEST, NEPAL

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ABSTRACT

Wall florals are the plants growing on the manmade habitats such as walls, fences, buildings, temples, old walls, etc. In this study, wall florals of Mahendranagar municipality were enumerated. A total of 111 species belonging to 87 genera and 33 families of angiosperm were found within the study area. All the types of plant species like herbs, shrubs and trees are reported and among them herbs are dominant. The major wall florals associated with different walls are *Ficus bengalensis*, *Amaranthus spionus*, *Solanum nigrum*, *Adiantum sp*, *Dryopteris sp*, mosses and some grasses.

Keywords: Habitats, herbs, shrubs, tree, wall flora.

INTRODUCTION

Walls are man-made habitats representing a specific environment which is partly similar to rocks and rock fissures (Woodell, 1979). Generally, the walls having cracks and crevices support the growth and development of diversity of plant species, ranging from algae to angiosperms. The study on wall flora of Mahendranagar municipality is not yet documented. Therefore, present study was carried out to enumerate the wall florals, which may serve as basic sources of data for further study on vegetation of walls in Nepal.

MATERIALS AND METHODS

Study Site

The present study was carried out in Mahendranagar Municipality, Far-Western region of Nepal. The site is located between 28°52' N to 29°08' N latitudes and 80° 6' E to 80°14'5" E longitude. The elevation ranges from 220 m to 270 m above sea level. The total area of Municipality is of 196.4 km².

Methodology

The survey of wall flora was conducted in the different walls of Mahendranagar Municipality from May 2014 to April 2015 with the particular aim of assessing the relative frequency of different plants species on the various kinds of walls in the area. Fifty different walls were chosen with three criteria; firstly to cover the whole area of the Municipality, secondly types of walls and thirdly walls with relatively rich flora so as to enumerate the entire plants species colonizing the walls in the study area. The objectives of the study were to analyze the seasonal appearance of angiosperm flora on the walls of the present constructions of the municipality. The study area was divided into three sites i.e. site I, site II and site III.

The collection of wall flora was made from the different old walls (boundary walls, bridge walls, canals' walls, old houses' walls, dams' wall etc.) by random site visit method in all selected sites. Collected wall florals were identified with the help of relevant taxonomic literature, books, bulletins etc. The authentic identification

of wall flora was done with the help of the deposited specimens of plant species at National Herbarium Godawari, Lalitpur (KATH). The floral citation carried out by annotated checklist of the flowering plants of Nepal (2000).

RESULTS AND DISCUSSION

In the present investigation, a total of 111 angiosperm species belonging to 39 families and 84 genera were found from Mahendranagar municipality. Out of 39 families, 36 families belong to class dicotyledonae and only 3 families belong to class monocotyledae. On the basis of habitat, 88 species are herbs, 7 species are shrubs, 14 species are tree and 2 species are climber (Fig. 1). Among them, *Ficus* species is very common in all the study sites. Aslan and Atamov (2006) also reported 113 species of wall flora on the stony walls in South east Turkey. Thapa (2015) observed a similar type of result, with 94 species belonging to 69 genera and 29 families on the walls of Bhimkalipatan, Pokhara. of the study, the dominant family was Poaceae (12 species), followed by Leguminaceae (9 species), Asteraceae (7 species) and rest of families have less than 5 species. Doljapavolva (2005) also found similar types of result on the wall of city of Plovdiv (Bulgaria). He reported Asteraceae (14 species), Fabaceae (13 species), Poaceae (12 species), Brassicaceae (8 species).

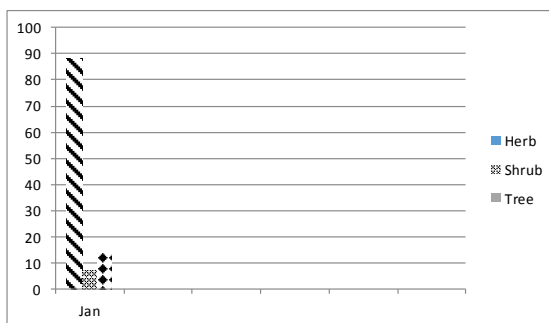


Fig.1. Habits of Plant Species



Fig. 2. Numbers of Families

Singh (2011) studied to analyze the seasonal vascular wall floristic composition of the Banaras Hindu University Campus, India. A total of 119 vascular wall floras were recorded, of which only one species was represented by Pteridophyte. No any species of Gymnosperm was observed as wall flora in the University Campus. Singh and Singh (2008) conducted a study to analyze the seasonal angiospermic wall floristic composition of city Buxar of state Bihar (India) covering the total land area of 24.7 km². A total of 78 angiospermic wall floras were recorded. The angiospermic wall flora was represented by 64 genera belonging to 29 different families. Urban vascular flora and ecological characteristics of Kadikoy district, Istanbul, Turkey was studied by Etem *et. al.* (2008). In this study, different kinds of urban habitats within the boundaries of Kadikoy are described. A total of 561 vascular plant taxa were determined, wherein 412 (337 species, 44 subspecies and 31 varieties) were native and 149 (143 species and 6 varieties) were exotic and cultivated.

Table 1: Wall floras of Mahendranagar Municipality

Class/Family/Genus and Species	Habit/life forms
I. MONOCOTYLEDONUS	
1. Family: Commelinaceae	
<i>Commelina benghalensis</i> L.	Herb
<i>Commelina diffusa</i> Burm	Herb
<i>Commelina paludosa</i> Blume.	Herb
<i>Cyanotis axillaris</i> Schult.	Herb
<i>Murdania nudiflora</i> L.	Herb
2. Family: Cyperaceae	
<i>Cyperus difformis</i> L.	Herb
<i>Cyperus esculentus</i> L.	Herb
<i>Cyperus iria</i> L.	Herb
<i>Cyperus nutans</i> Vahl, Enum.	Herb
<i>Fimbristylis ovate</i> (N.L. Burman), Kern	Herb
<i>Schoenoplectus juncooides</i> (Roxb.) Palla.	Herb
3. Family: Poaceae	
<i>Brachiaria ramosa</i> (L.) Stapf	Herb
<i>Cynodon dactylon</i> (L.) Pers.	Herb
<i>Dactyloctenium aegyptium</i> Beauv.	Herb
<i>Digitaria stricta</i> Roth ex Roem. and Schult.	Herb
<i>Eleusine indica</i> (L.) Gaertn.	Herb
<i>Eragrostis uniloides</i> (Retz.) Nees exstend.	Herb
<i>Eragrostis tenella</i> (L.) P. Beauv	Herb
<i>Echinochloa crusgalli</i> (L.) P. Beauv	Herb
<i>Imperata cylindrica</i> L.	Herb
<i>Oplismenus burmannii</i> Beauv.	Herb
<i>Setaria viridis</i> (L.) Beauv.	Herb
<i>Saccharum spontaneum</i> L.	Herb
II. DICOTYLEDONS	
1. Family: Acanthaceae	
<i>Rungia parviflora</i> (Retz.)	Herb
<i>Rungia repens</i> (L.) Nees	Herb
<i>Justicia adhatoda</i> L	Shrub

2. Family: Amaranthaceae

<i>Achyranthes aspera</i> L.	Herb
<i>Amaranthus spinosus</i> L.	Herb
<i>Amaranthus viridis</i> L.	Herb
<i>Amaranthus tricolor</i> L.	Herb
<i>Alternanthera sessili</i> R. Br.	Herb

3. Family: Anacardaceae

<i>Spondias pinnara</i> L.	Tree
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4. Family: Apocynaceae

<i>Trachelospermum lucidum</i> (D. Don) K. Schum.	Woody climber
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5. Family: Asclepiadaceae

<i>Calotropis gigantea</i> (L.) R. Br.	Shrub
<i>Calotropis procera</i> (Ait.) R. Br.	Shrub

6. Family: Asteraceae/compositae

<i>Ageratum conyzoides</i> L.	Herb
<i>Yongja japonica</i> (L.) Dc.	Herb
<i>Gnaphalium affine</i> D. Don	Herb
<i>Sonchus asper</i> (L.) Hill. Herb. Brit.	Herb
<i>Sonchus oleraceae</i> L.	Herb
<i>Eclipta alba</i> Hassk	Herb
<i>Tegetus erecta</i> L.	Herb
<i>Tridax procumbens</i> L.	Herb
<i>Xanthium strumarium</i> L.	Herb

7. Family: Cannabaceae

<i>Cannabis sativa</i> L.	Herb
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8. Family: Caryophyllaceae

<i>Stellaria media</i> var. <i>procera</i> Klatt and Richt.	Herb
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9. Family: Chinopodiaceae

<i>Chinopodium album</i> L.	Herb
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10. Family: Euphorbiaceae

<i>Euphorbia hirta</i> L.	Herb
<i>Euphorbia prostrata</i> Aiton	Herb
<i>Euphorbia parviflora</i> L.	Herb

<i>Ricinus communis</i> L.	Shrub
11. Family: Lamiaceae	
<i>Ocimum sanctum</i> L.	Herb
<i>Mentha spicata</i> L.	Herb
<i>Pogostemon glaber</i> Desf.	Herb
<i>Pogostemon benghalensis</i> (Burm. F.) Kunze	Herb
<i>Colebrookea oppositifolia</i> Sm.	Shrub
<i>Elsholtzia blanda</i> (Benth.) Benth.	Shrub
12. Family: Leguminosae	
<i>Acacia nilotica</i> (L.) Delile	Tree
<i>Cassia fistula</i> L.	Tree
<i>Cassia tora</i> L.	Tree
<i>Lathyrus aphaca</i> L.	Herb
<i>Mimosa pudica</i> L.	Herb
<i>Trifolium repens</i>	Herb
<i>Trifolium dubium</i> Sibthorp	Herb
<i>Trifolium alexandrium</i> L.	Herb
<i>Trifolium pratense</i> L.	Herb
<i>Medicago sativa</i> L.	Herb
<i>Leucaeria leucoceph</i> (Lam.) de Wit.	Herb
<i>Alysicarpus vaginalis</i> L. DC	Herb
<i>Dalbergia sissoo</i> Roxb. ex DC	Tree
13. Family: Malvaceae	
<i>Bombax ceiba</i> L.	Tree
<i>Corchorus acutangulus</i> L.	Herb
<i>Sida cordifolia</i>	Herb
<i>Urena lobata</i> L.	Herb
14. Family: Myrtaceae	
<i>Syzygium cumini</i> (L.) Skeels.	Tree
15. Family: Meliaceae	
<i>Azadirachta indica</i> A. Juss.	Tree
<i>Melia azedarach</i> L.	Tree
16. Family: Moraceae	
<i>Ficus benghalensis</i> L.	Tree

<i>Ficus glomerata</i> L.	Tree
<i>Ficus corica</i> L.	Tree
<i>Ficus hispida</i> L.F.	Tree
<i>Ficus religiosa</i> L.	Tree
<i>Morus alba</i> L.	Tree
17. Family: Nyctaginaceae	
<i>Boerhavia diffusa</i> L.	Herb
18. Family: Onagraceae	
<i>Desmodium trifolium</i> (L.) DC	Herb
19. Family: Oxalidaceae	
<i>Oxalis corniculata</i> L.	Herb
20. Family: Papavaraceae	
<i>Argemone mexicana</i> L.	Herb
<i>Papaver dubium</i> Koch	Herb
21. Family: Phyllanthaceae	
<i>Phyllanthus urinaria</i> L.	Herb
<i>Phyllanthus varigata</i> L.	Tree
22. Family: Piperaceae	
<i>Peperomia pellucida</i> (L.) Kunth.	Tree
<i>Piper longum</i> L.	Climber
23. Family: Plantaginaceae	
<i>Scoparia dulcis</i> Linnaeus	Tree
24. Family: Polygonaceae	
<i>Persicaria barbata</i> (L.) Hara.	Tree
<i>Polygonum plebeium</i> R. Br.	Tree
25. Family: Primulaceae	
<i>Anagallis arvensis</i> L.	Tree
26. Family: Portulacaceae	
<i>Portulaca oleracea</i> L.	Tree
<i>Portulaca quadrifida</i> L.	Tree
27. Family: Rhamnaceae	
<i>Ziziphus nummularia</i> (Burm. f.) Wt. and Arn.	Shrub
28. Family: Rubiaceae	
<i>Oldenlandia diffusa</i> Roxb.	Herb

29. Family: Scrophulariaceae	
<i>Mecardonia procumhence</i> Miller.	Herb
30. Family: Solanaceae	
<i>Datura metal</i> L.	Shrub
<i>Datura stramonium</i> L.	Herb
<i>Nicotiana plumbaginifolia</i> Viv.	Herb
<i>Solanum nigrum</i> L.	Herb
<i>Solanum virginianum</i> L.	Herb
31. Family: Tropaeolaceae	
<i>Tropaeolum majus</i> L.	Herb
32. Family: Umbeliferae	
<i>Centella asiatica</i> (L.) Urb.	Herb
33. Family: Verbenaceae	
<i>Lantana camara</i> L.	Shrub
<i>Lippa nodiflora</i> Rich	Herb
<i>Clerodendrum indicum</i> (Linnaeus) Kuntze, Revis. Gen	Herb

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