



Floristic diversity of wetlands of Narja Taal of Fatehpur in district Mau, Uttar Pradesh

Bhimsen¹, CO Samuel², Deepak Kumar Gond³, Rupendra Kumar Yadav⁴, Swapnil Anand⁴

¹ Research Scholar, Department of Botany, St. Andrew's College Gorakhpur, Uttar Pradesh, India

² Professor, Department of Botany, St. Andrew's College Gorakhpur, Uttar Pradesh, India

³ Assistant Professor, Department of Botany, C.M.P. College Prayagraj, Uttar Pradesh, India

⁴ Research Scholar, Department of Botany, C.M.P. College Prayagraj, Uttar Pradesh, India

Abstract

Wetlands are exclusive type of ecosystems that arises when flood by water produces soils controlled by living and nonliving processes. Wetlands are measured the most biological diversity of all ecosystems, serving as home to a wide range of plants and animals on life. Narja Taal is a large wetland is nearby Kopaganj Block in Ghosi Tehsil of Mau District. Narja taal is about away from 16 km by Mau district. Narja Taal is permanently, shallow containing muddy water and freshwater connected with agriculture field. Wetlands are provided usefull on human life. The present study of aquatic plant diversity of Narja taal in Fatehpur Mau have been recorded and the plants belonging to 29 families, 46 genera and 53 species.

Keywords: Floristic, diversity, wetlands, Narja Taal, Fatehpur, Mau

Introduction

The Mau district is a very importance city that right to across the Eastern Uttar Pradesh of India are surrounded by East in Ballia, west in Azamgarh, north in Deoria, south in Ghazipur district. But it is the only one state of Uttar Pradesh has a largrst diversity to which of the virtual widespread geographical area of Mau district. Narja Taal is varied by environment and climatic conditions, supports a rich diversity of wetland ecosystems. According to Bhimsen (2024) ^[1] Wetlands is a common term used to define the word of damp habitats comprising marshes, swamps, bogs, fens, temporary ponds, riverbanks, and paddy fields and similar area. Such land has water present at or near the surface for significant period that affect the land use. The wetlands are very beneficial water logged, productive and sometime unproductive natural water storage bodies as well as reservoirs on the earth. The waterlogged species serve as a food source for intrinsic creatures. For example: Marshy plants cover a large surface area in the wetland. Such plants which are found in marshy place, have small roots. The aquatic and marshy angiospermic plants are most important component of aquatic and wetland ecosystem. The deepness of a wetland is two meters which does not exceed 6 metres. Wetlands are areas where water is primary factor controlling the environment and the connected with plants and animals of life. The aquatic plants such as mosses, non-microscopic algae and vascular plants, which grow on a substrate that is at least periodically deficient of oxygen as a result of excessive water content. This term includes both aquatic plants and wetland plants. Submerged species serve as a food source for native flora, and also possess purification abilities. For example: Floating plants cover a large surface area in the wetland. They have small roots and are only found in slow-moving water. They provide food source for avian species for example Water lilies etc. India have a rich variety of vegetation that no other country in this world. The inclusive account of hydrophytic plants of India and Burma

were published by Biswas and Calder (1937) ^[2]. Later, Subramanyam (1962) ^[16, 18] published a volume on aquatic plants of India, followed by an enumeration of aquatic plants of India by Deb (1976). Cook (1996) ^[3] published a volume on aquatic and wetland plants of India covering northern boundary of India. Monographs have been prepared for only a few groups of aquatic plants (Subramanayam & Balakrishanan 1962, Subramanyam & Abraham 1968, Singh 1972, Subramanyam 1979, Kumar & Banerjee 1999, Kothari 2001. Several botanists and plant explorers have contributed to the flora of various part of Uttar Pradesh.

Material and methods

Narja taal is located of Mau district lies between 26.056239° N latitude and 83.502268° E longitude of the total area of 7.6 Km (fig:1). Mau district is surrounded by east in Ballia, west in Azamgarh, north Deoria and south in Ghazipur district. The field survey was conducted during October 2021 and February 2022. The survey of Narja Taal carried out for the duration of four months. Durning the survey was necessary field equipment for example Khurpi, Cutter, Stick, Rope, field book and polybag etc. During on this period the plant species occurring in aquatic plant diversity and water situated area of Narja Taal were collected on photography and collection of 4-6 plant specimen from the moist area and placed in the fold newspaper. The collected plant specimens were dipped in mercury chloride and alcohol mixed solution then pressed in newspaper and changed the paper every alternate day. The newspaper under pressure, remove moisture from the plants and moisture is absorbed by the newspaper sheets. The completely dried specimens were mounted on hand made Herbarium sheets with the help of modern synthetic glue. The specimens mounted provides data pertinent to field number, collection date, botanical name, family belongs, local name and uses in the form of the brief description. The

plant specimens were identified with the help of standard worldwide or Indian flora and other taxonomists, Bentham (1866), Hooker (1872- 1897) [6], Bailey (1949), Dassnayake & Fosberg (1991), Duthie (1903-1929), Fasset (1940), Raizada (1976), Cook (1996) [3] and local flora viz. Mishra & Verma (1992), Verma *et al.*, (1997), Singh *et al.*, (2001) and others. The herbarium specimens are prepared by following the standard method compared with the genus and

species keys and thereafter it was carefully compared with earlier identified plants of that species or variety as the case may be. Literature was consulted and collected from the library of D.D.U. Gorakhpur University Gorakhpur, Department of Botany, St. Andrew's College Gorakhpur, Department of Botany. All collected plants were deposited in the herbarium, Department of Botany, St. Andrew's college Gorakhpur, Uttar Pradesh for future use.

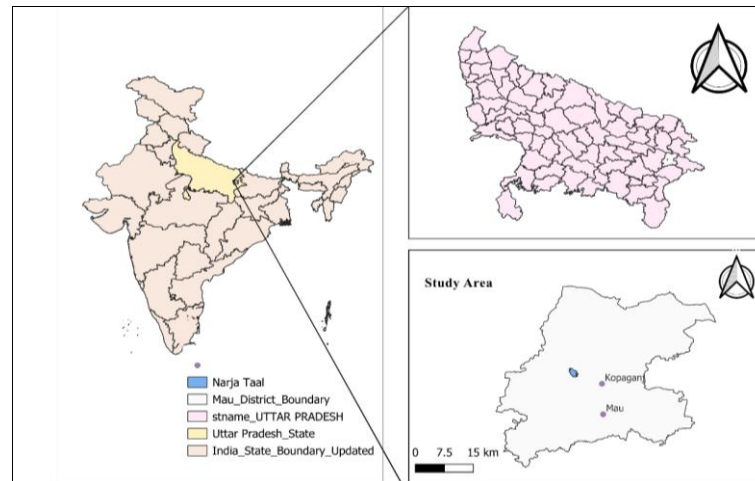


Fig 1: Study area of Mau District, Uttar Pradesh

Results and Discussion

The present study shown that the occurrence of 29 aquatic and marshy families with 46 Genera and 53 species of angiosperm were identified. The most dominant family with respect to number of species is Asteraceae with 8 plants, Amaranthaceae with 5 plants, Polygonaceae with 4 plants, Malvaceae with 2 plants, Fabaceae with 2 plants, Onagraceae with 2 plants, Solanaceae with 2 plants, Euphorbiaceae with 2 plants, Cyperaceae with 2 plants, Araceae with 2 plants, Ranunculaceae with 1 plant, Primulaceae with 1 plant, Menyanthaceae with 1 plant, Boraginaceae with 1 plant, Convolvulaceae with 1 plant, Mazaceae with 1 plant, Lamiaceae with 1 plant, Verbenaceae with 1 plant, Cannabaceae with 1 plant, Acanthaceae with 1 plant, Apiaceae with 1 plant, Commelinaceae with 1 plant, Potamogetonaceae with 1 plant, Hydrocharitaceae with 1 plant, Marsileaceae with 1 plant, Salviniaceae with 1 plant, Lentibulariaceae with 1 plant, and Pontederiaceae with 1 plant (fig:2). The plants are belonging to 41 species were dicot, remaining 9 species were monocot and rest of two species were Pteridophytes (fig:3). According to habit wise contribution are herbs 69%, large herb 6%, shrub 13% and Aquatic plants 12% (fig:4). The survey of Narja Taal was conducted from October 2021 to February 2022. The recorded plants have been enumerated with families, have been arranged according to Bentham & Hooker's (1862-1883) System of classification. However, genera within a family and species within a genus are arranged alphabetically (Table:1). In this study, the plants were observed with floristic diversity of Narja Taal of Mau District in Uttar Pradesh like as *Achyranthes aspera*, *Acmella uliginosa*, *Ageratum conyzoides*, *Ageratum houstonianum*, *Alternanthera sessilis*, *Amaranthus spinosus*, *Amaranthus viridis*, *Anagallis arvensis*, *Azolla pinnata*,

Chenopodium album, *Cannabis sativa*, *Chenopodium murale*, *Commelina benghalensis*, *Croton bonplandianus*, *Coriander sativum*, *Cyperus rotundus*, *Eclipta prostrata*, *Eichhornia crasipes*, *Euphorbia hirta*, *Grangea moderaspatana*, *Gnaphalium affine*, *Heliotropium indicum*, *Hydrilla verticillata*, *Hygrophilla* spp, *Ipomoea aquatica*, *Lathyrus sativus*, *Lemna minor*, *Ludwigia adscendens*, *Ludwigia octovalvis*, *Marsilea minula*, *Mazus pumilus*, *Melochia corchorifolia*, *Nicotiana plumbiginifolia*, *Nymphaea nouchali*, *Nymphoides indica*, *Oxalis corniculata*, *Parthenium hysterophorus*, *Persicaria glabara*, *Persicaria maculosa*, *Pistia stratiotes*, *Phylla nodiflora*, *Polygonum aviculare*, *Potamogeton natans*, *Ranunculus sceleratus*, *Rumex dentatus*, *Salvia verbenasa*, *Schoenoplectus* spp., *Solanum nigrum*, *Soliva sessilis*, *Utricularia vulgaris*, *Trifolium alexandrinum*, *Urena lobata* and *Xanthium strumarium*. The enumeration embodies alphabetically arranged list of plant species priding correct botanical names of species followed by local name part use and uses. Plant part uses in food, Fodder and different medicinals problems like skin problems including diuretic, wounds, eczema, hypotension, ulcer, chest pain, stomach problems gastro-intestinal, rheumatic pain, insulin levels, diarrhea, diabetes, pyresis, malaria, dysentery, fracture of bone, joint and pain muscles, spermatorrhoea, blood dysentery, blood pressure, colic, cold, cough, asthma and use as a tonic in different forms such as juice, extract, paste, etc, and some plants are used in biogas, bioenergy, bioremedoater, terpenoids, alkaloids and flavonoids. Most of the area of the wetland has been converted to agriculture fields and residential colonies an urgent need of the time is to conduct a detailed survey of the wetlands of this region. With respect to different seasons, the maximum numbers of plant species were recorded during winter and rainy seasons

followed by summer seasons. The floristic diversity of wetland is mostly affected by flooding, the nutrients discharged from number of sources and season and flood regimes also affects the wetland biota and define adaptations. According to the Tiner *et al.* the wetlands are unique ecosystems and not simply mixture of aquatic and marshy ecosystems. Wetlands are provided an economic value and their ecosystem services can have both economic

and environmental consequences of important and incredible services to society. This survey was report documented the species of angiosperms diversity similarly finding hydrophytes families. They registered plants of many species of different families that is Cyperaceae with, Polygalaceae and Nymphaeaceae, Hydrocharitaceae similar to Kumar and Narain.

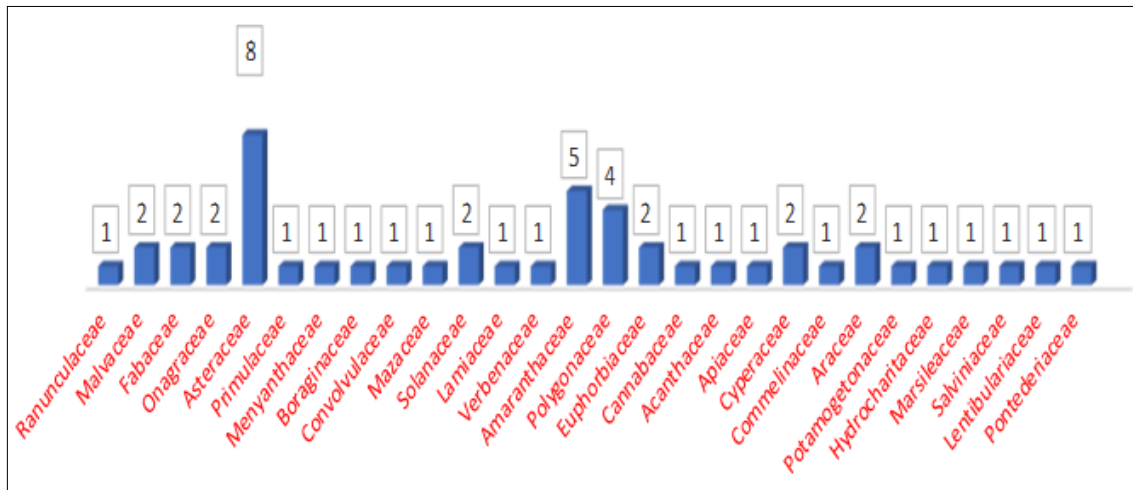


Fig 2: Total number of Families

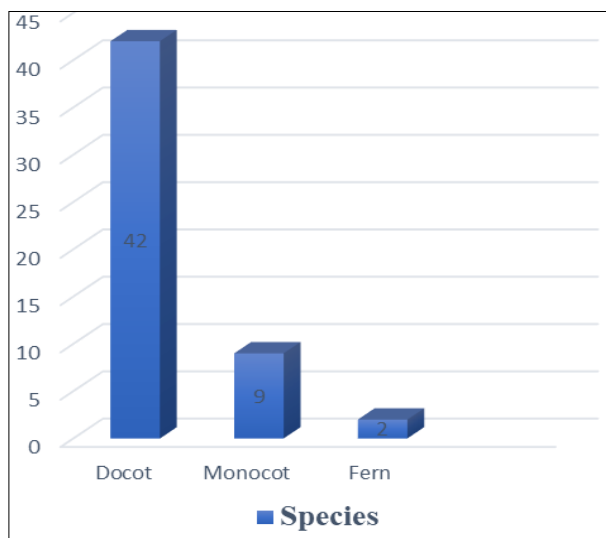


Fig 3: Plants contribution

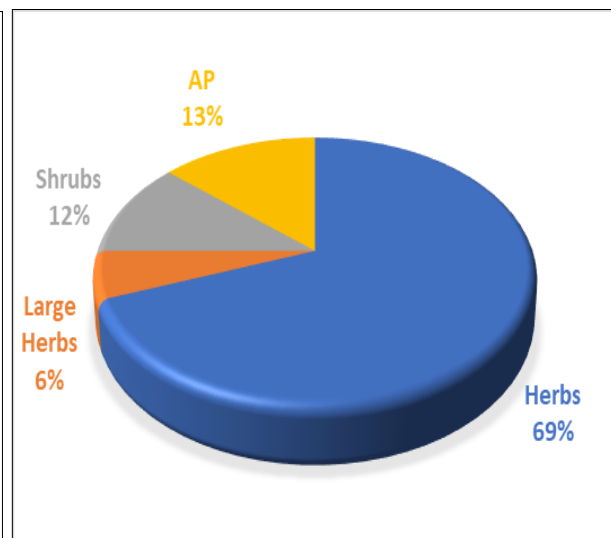


Fig 4: Habit contribution

Table 1: Floristic Diversity of Wetlands Plants of Used in Medicine

S.N.	Botanical Name	Family	Vernacular Name	Uses
1.	<i>Achyranthes aspera</i> L.	Amaranthaceae	Latjeera, Chirchira	It is used in the treatment of boils, asthma, bleeding, cold, colic, cough, etc.
2.	<i>Acmella uliginosa</i> (Sw.) Cass.	Asteraceae	Akarkar, Pipulka	It is used for antibiotic in the treatment of infection diseases.
3.	<i>Ageratum conyzoides</i> L.	Asteraceae	Jungli pudina	It is used for cuts, wounds, bleeding, antiseptic piles and juice etc.
4.	<i>Ageratum houstonianum</i>	Asteraceae	Sota ka Ful	It is used for treat throat pain and swelling.
5.	<i>Alternanthera sessilis</i> (L.) DC	Amaranthaceae	Gudrishak, Kanchari	It is used for hepatitis, tight chest, bronchitis, asthma and other lung troubles etc.
6.	<i>Amaranthus spinous</i> L.	Amaranthaceae	Kanta chaulai	It is used for treatment of pain and fever.
7.	<i>Amaranthus viridis</i>	Amaranthaceae	Jungle chaulai	It is used for ayurvedic medicine as ulcer, diabetic

	L.			asthma etc.
8.	<i>Anagallis arvensis</i> L.	Primulaceae	Krishna neel	It is used for animal fodder.
9.	<i>Azolla pinnata</i> R.Br.	Salviniaceae	Mosquito fern	It is used for fertilizer in rice production.
10.	<i>Cannabis sativa</i> L.	Cannabaceae	Bhang	It is used for treatment of rheumatism, epilepsy, asthma, skin burns etc.
11.	<i>Chenopodium album</i> L.	Amaranthaceae	Bathua	It is used for food.
12.	<i>Chenopodium murale</i> L.	Amaranthaceae	Nettle-leaved goosefoot	It is used for treatment of hair loss and cough etc.
13.	<i>Commelina benghalensis</i> L.	Commelinaceae	Kana, kankawa, Buchna	It is used for animal fodder.
14.	<i>Coriander sativam</i> L.	Apiaceae	Dhaniya	It is used in spices.
15.	<i>Croton bonplandianus</i> Baill.	Euphorbiaceae	Ban tulsi	It is used for controlling high pressure, and treatment of skin diseases etc.
16.	<i>Cyperus rotundus</i> L.	Cyperaceae	Motha	It is used for diarrhea, diabetes, pyresis, malaria etc.
17.	<i>Eclipta prostrata</i> L.	Asteraceae	Bhingraj	It is used for hair control, skin, liver and stomach etc.
18.	<i>Eichhornia crasipes</i> (Mart.) Solms	Pontederiaceae	Jhalkumbhi	It is used for biogas, biofuel production, vermicomposting and bioremediation etc.
19.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Bada dudhi	It is used for treatment of cough, coryza, bronchitis, and asthma etc.
20.	<i>Grangea moderaspata</i> (L.)Poir.	Asteraceae	Mukhtari, Mustaru	It is used for treatment of rheumatism in knee joint and pain in the muscles etc.
21.	<i>Gnaphalium affine</i> D.Don	Asteraceae	Cotton weed	The whole plant is used in the treatment of influenza, sore throat, productive coughing etc.
22.	<i>Heliotropium indicum</i> L.	Boraginaceae	Hathi shud	It is used for treatment of diuretic and numerous skin problems etc.
23.	<i>Hydrilla verticillata</i> (L.f) Royle	Hydrocharitaceae	sewar	This plant is used in biogas and bioenergy
24.	<i>Hygrophilla</i> spp.	Acanthaceae	Kokilaksha	The plant contains terpenoids, alkaloids, flavonoids etc.
25.	<i>Ipomoea aquatica</i> Forssk	Convolvulaceae	Kalmi sag	It is used for food and treatment of blood pressure etc.
26.	<i>Lathyrus sativus</i> L.	Fabaceae	Latari, khesari	It is used in food and animal fodder.
27.	<i>Lemna minor</i> L.	Araceae	Duckweed	It is used in animal fodder, bioremedoater etc.
28.	<i>Ludwigia adscendens</i> L Hara. syn	Onagraceae	Pokal Panlawang, Water Primrose	The whole plant is used of antiseptic and poultice in ulcer etc.
29.	<i>Ludwigia octovalvis</i> (Jacq) P.H. Raven	Onagraceae	Banlong	It is used for treatment of edema, nephritis and hypotension etc.
30.	<i>Marsilea minula</i> L.	Marsileaceae	Water clover	Leaves are used for treatment of cough and respiratory troubles.
31.	<i>Mazus pumilus</i> (Burm.f.) Streenis	Mazaceae	Maalti jhar	It is used for treatment of emmenagogue febrifuge and tonic etc.
32.	<i>Melochia corchorifolia</i> L.	Malvaceae	Thulak, Bundava, Chitrabeez	It is used for animal fodder and treatment of reduce ulcers, abdominal swelling and chest pain etc.
33.	<i>Nicotiana plumbiginifolia</i> Viv.	Solanaceae	Tobacco plant	It is used for tobacco.
34.	<i>Nymphaea nouchali</i> Burm.f.	Nymphaeaceae	Water lily	It is used for regulating insulin levels, promoting liver health.
35.	<i>Nymphoides indica</i> Kuntz.	Menyanthaceae	Chandmala	It is used for unani medicine and pharmaceutical etc.
36.	<i>Oxalis corniculata</i> L.	Oxalidaceae	Yellow woodsorrel	This plant is used in anti-inflammatory, anxiolytic, antifungal etc.
37.	<i>Parthenium hysterophorus</i> L.	Asteraceae	Ghazar ghas	It is used for treatment of skin inflammation, rheumatic pain, diarrhoea, uti, malaria etc.
38.	<i>Persicaria glabara</i> (Willd.) M, Gomez	Polygonaceae	Pani-mirch	It is used for treatment of astringent, analgesic and hemostatic agent etc.

39.	<i>Persicaria maculosa</i>		Ladysthumb	It is used for treat of patients with atonic constipation etc.
40.	<i>Pistia stratiotes</i> L.	Araceae	Water cabbage	It is used in tridosha, fever and deseases of blood etc.
41.	<i>Phyla nodiflora</i> L. greene	Verbenaceae	Jalbuti, jal pippali	It is mainly used for dandruff.
42.	<i>Polygonum aviculare</i> L.	Polygonaceae	Birdweed, Doorweed, Knotgrass, Pigweed	It is used for animal fodder etc.
43.	<i>Potamogeton natans</i> L.	Potamogetonaceae	Floating pondweed	It is used in an oxygenator of ponds.
44.	<i>Ranunculus sceleratus</i> L.	Ranunculaceae	Jal-dhaniya	It is used for treatment for skin diseases such as eczema, herpes, pruritus, burn and swelling etc.
45.	<i>Rumex dentatus</i> L.	Polygonaceae	Banpalak	It is used for animal fodder and treatment of bacterial and fungal infections, including dysentery etc.
46.	<i>Salvia verbenasa</i> L.	Lamiaceae	Wild clary	This plant is used in antiseptic, diuretic etc.
47.	<i>Schoenoplectus spp</i> (Rchb)	Cyperaceae	Bulrush	It is used for making matting, chair bottoms etc.
48.	<i>Solanum nigrum</i> L.	Solanaceae	Makoy	It is used for tradinational medicine of antiproliferative, antiinflammatory etc.
49.	<i>Soliva sessilis</i> Ruiz & Pav.	Asteraceae	Bindi weed	Bindi can be treated with herbicide.
50.	<i>Utricularia vulgaris</i> L.	Lentibulariaceae	Bladderwort	It is used for kidney stones and uninary tract infections.
51.	<i>Trifolium alexandrinum</i> L.	Fabaceae	Barshim	It is used for animal fodder.
52.	<i>Urena lobata</i> L.	Malvaceae	Bachita	
53.	<i>Xanthium strumarium</i> L.	Asterceae	Chhota-dhatura, chhota Gokhuru	It is used for treatment of rhinitis nasal sinusitis, headache, gastric ulcer, urticarial etc.



Fig 5: Some selected Plants of Narja Taal Mau District

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