

Floristic assessment of angiosperms in the Lower-Gangetic Plains along Katwa and Kalna stretch, West Bengal, India

Saikat Mondal*, Suwendu Pal, Pabitra Mukhopadhyay, Malay Maji, Samir Kumar Mukherjee

Department of Botany, Bankura University, Bankura, West Bengal, India.

ARTICLE INFO

Article history:

Received on: 24/07/2025

Accepted on: 13/10/2025

Available online: 25/11/2025

Key words:

Angiosperm,
Flora,
Gangetic plain,
Herb,
Shrub,
Tree.

ABSTRACT

Research undertaken in riverine Plains has significantly contributed to the foundational ecological theories we rely on today. In recent decades, the number of studies on plant groups has increased, enhancing our comprehension of plant community dynamics within various riverine plane ecosystems. In the present communication, we have recorded angiospermic diversity in the riverine plane of the lower Gangetic region along Katwa and Kalna stretch. Floristic diversity is very rich along river banks. In this study, 162 species from 46 families have been recorded. The research determines that the zone possesses considerable conservation significance due to its support of great species variety, including red-listed species and habitat-specific flora, and its role as a crucial zone within the landscape.

1. INTRODUCTION

Angiosperms are fundamental to the majority of terrestrial ecosystems and human sustenance due to the food, pharmaceuticals, and raw materials they supply. Biodiversity of angiosperms in any geographical region has an immense influence on the geographical regions. Biodiversity, an abbreviation for biological diversity, refers to the total quantity, variety, and variability of living creatures, together with the diversity of their ecosystems [1]. Biological diversity refers to the variety of living creatures, encompassing diversity among species, between species, and within ecosystems, as well as the ecological processes in which they are involved [2]. Biodiversity is significantly dependent on several topographical and climatic factors. Several workers reported that riverine regions of West Bengal are rich in plant biodiversity [3]. Biodiversity has lately become a matter of scientific and political significance, especially due to rising extinction rates attributed to human activities [4]. The significance of biodiversity has been widely acknowledged in recent decades, with several countries asserting that it is crucial for facilitating the sustainable growth of diverse human activities [5]. However, most of the focus has been fixed on forested areas and conserved areas. Aside from protected areas and reserve forests, scientific research on the biodiversity of unique ecosystems in India is scarce, similar to other regions globally [6]. Currently, biodiversity is experiencing a significant decline worldwide,

underscoring the necessity of conservation planning [6]. Biodiversity management includes the preservation of current flora and fauna, re-vegetation of deforested areas, reintroduction of locally extinct species, and the introduction of appropriate plant and animal species [5].

The Gangetic Plains, especially in West Bengal, are one of the most fertile and biologically diverse areas in India [7]. The Lower Gangetic Plains of the Indian subcontinent are one of the world's largest fluvial/deltaic plains [8]. The Indo-Gangetic Plain divides the peninsula from the Himalayas. It is the most densely inhabited area of India [9]. The Lower Gangetic Plains, located southeast of the Middle Gangetic Plains, constitute the delta region formed by the confluence of the Ganga and Brahmaputra rivers before their convergence with the Bay of Bengal. The Lower Gangetic plain region has tremendous biodiversity, especially in aquatic species and mangroves inside the marshy forests of the Sundarbans, which has been designated a UNESCO World Heritage Site [10]. Although the region is very important in the perspective of taxonomy and ecology, only a few parts of the region are critically studied to enumerate plant biodiversity [10-12]. Given the essential roles of vegetation, it is imperative to enhance our understanding of its diverse characteristics and patterns, which are vital for biodiversity and conservation management by offering habitats for wildlife and supporting the ecologically sustainable management of natural resources. This study concentrated on evaluating the vegetation features of the unexplored areas of the Lower Gangetic Plains in West Bengal. The region between Katwa and Kalna in the Purba Bardhaman district is one of the less studied areas, which is situated within the Lower Gangetic

*Corresponding Author:

Saikat Mondal,

Department of Botany, Bankura University,

Bankura, West Bengal, India. E-mail: saikatbotany95@gmail.com

alluvial zone, noted for its fertile soil, temperate temperature, and enduring agricultural heritage. This study seeks to record the diversity of angiospermic plants in this area and evaluate their socioeconomic significance based on their use in local communities. Given the increasing population density and alterations in land use, comprehending plant diversity and its applications are essential for devising sustainable lifestyles and conserving biodiversity. Rural tribal populations globally rely on wild plants to meet their nutritional needs, which are essential for their food security [13,14].

2. MATERIALS AND METHODS

2.1. Study Area

The study was conducted in selected villages and semi-urban zones between Katwa and Kalna (23.65°N to 23.22°N latitude and 88.12°E to 88.37°E longitude). The region lies in the Lower Gangetic Plain with a tropical climate, marked by hot summers, high monsoonal rainfall, and mild winters.

2.2. Methodology

Extensive field excursions were conducted in various regions of the study sites throughout different seasons from 2022 to 2025 to gather plant specimens and ethnobotanical information. The gathered plant specimens have been meticulously identified using several floras, books, and pertinent publications [5,14-20]. Collected plant specimens have been conserved as herbarium specimens according to conventional herbarium techniques [18] and are maintained at the departmental herbarium of the Department of Botany, Bankura University, West Bengal, for future reference.

3. RESULTS AND DISCUSSION

The current study offers a foundational understanding of the taxonomical characteristics of the study sites. In this study, 162 species from 46 families have been recorded [Table 1]. The Gangetic region is the largest and most significant agro-climatic zone, located in the northern and northern and northeastern part of India. Plant communities of some study sites have been shown in Figure 4. Among the species, 129 are dicot and 33 are monocot [Figure 1]. The plant assemblage includes 105 herbs, 28 shrubs and 29 tree species [Figure 2]. Families such as *Poaceae*, *Fabaceae*, *Lamiaceae*, and *Asteraceae* are the dominant in comparison to other families [Figure 3]. Several angiospermic plants growing in the region are under threat from an array of reasons. Floral assemblages in the riparian zones of the river serve as good markers of both upland and aquatic plant communities, facilitating the assessment of the river's health in a specific location. Riparian zones serve as the interface between terrestrial and aquatic environments, facilitating the exchange of materials, nutrients, and organisms in both groundwater and surface water [19]. The terrestrial borders of riparian zones often extend laterally to the limits of flooding, which, in certain systems, may extend beyond the definition of the stream channel. The riparian buffer relies on both the characteristics of the stream and the diverse

elements of the adjacent environment [20]. In the past few decades, riparian vegetation has garnered attention in conservation initiatives due to its scarcity, the dangers it encounters, and its significance in preserving water quality, habitats for fish and animals, and recreational possibilities.

Floristic diversity should be assessed at both local and regional levels to provide information on the present status necessary for developing an effective conservation management strategy [21]. Aquatic and wetland angiosperms are exceptional plant types that sustain the livelihoods of millions residing in their vicinity [16]. The work is entirely based on primary sources, focusing on the utilization of locally accessible plants by tribal communities as home remedies. The documentation of flora is essential for the study of riverine ecology and faunal research, as several plant species exhibit direct or indirect interdependence [22]. The ecological integrity of any river ecosystem is directly related to the integrity of the plant communities that make up and surround the river catchments and their ecological characteristics [23-25].

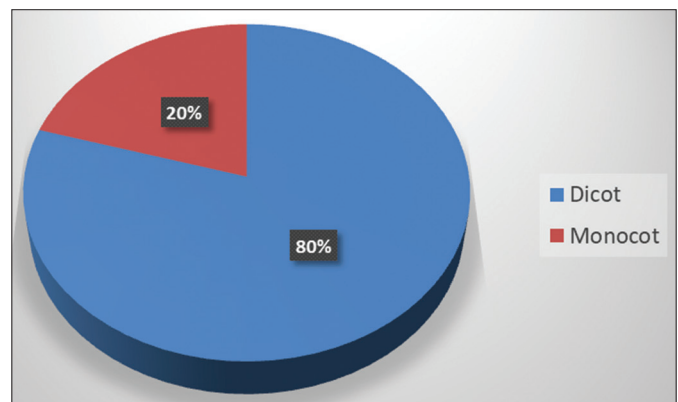


Figure 1: Graphical representation of dicot and monocot in study sites.

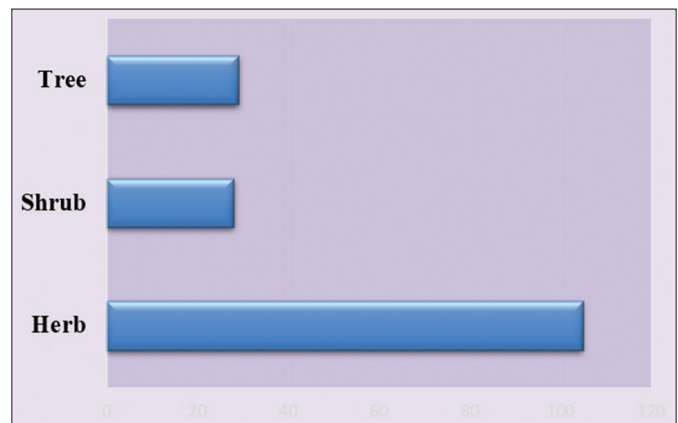


Figure 2: Graphical representation of Herbs, Shrubs and Trees in study sites.

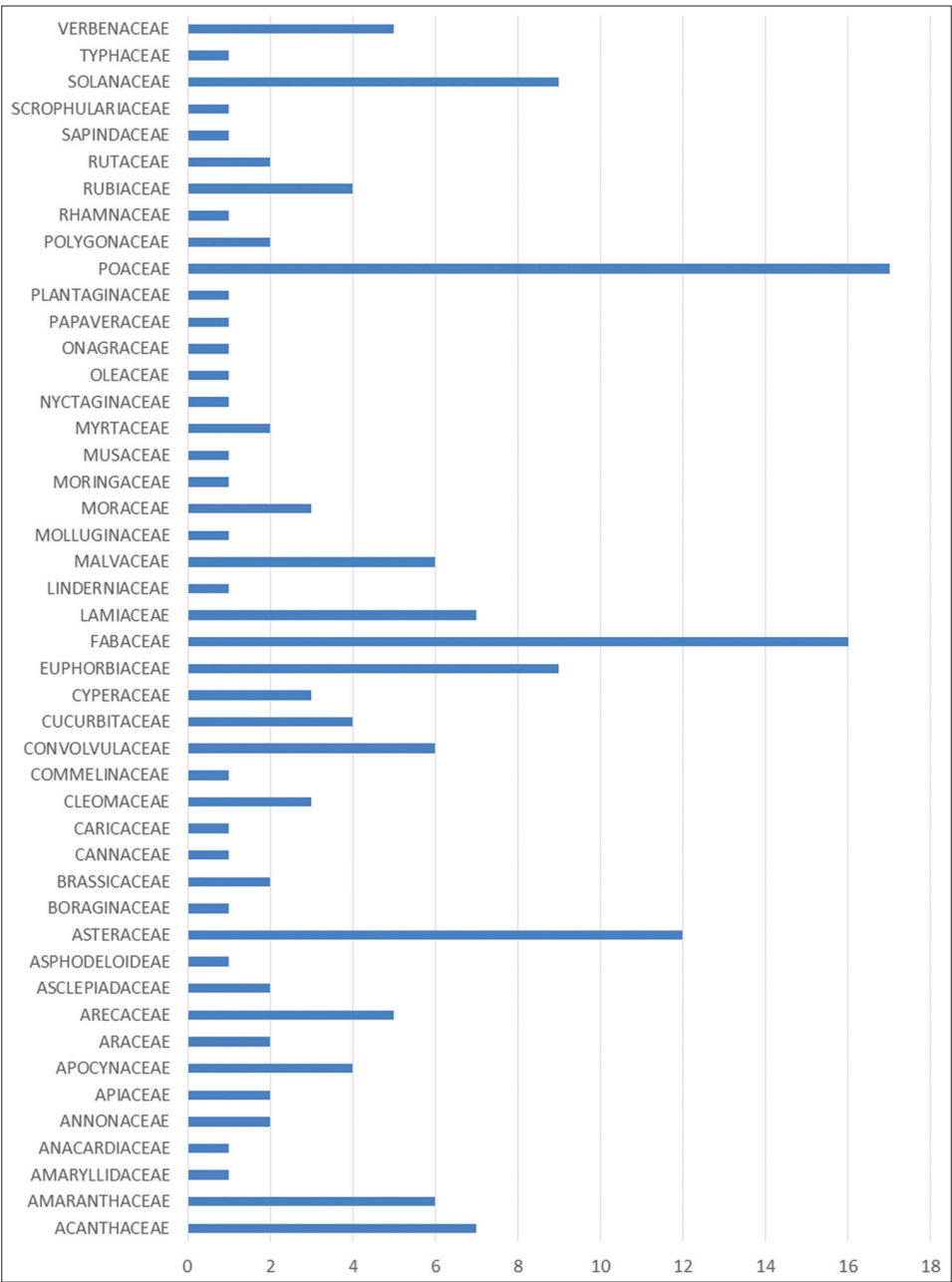


Figure 3: Graphical representation of Family wise species number.

Table 1: Detailed list of plant specimens as collected from the study area.

Serial No.	Scientific name	Family	Division	Habit	Habitat	Herbarium accession no
1	<i>Abutilon indicum</i> (L.) Sweet	Malvaceae	Dicot	S	Terrestrial	BKU/SM/2023/41
2	<i>Acacia auriculiformis</i> A. Cunn. ex Benth.	Fabaceae	Dicot	T	Terrestrial	BKU/SM/2024/103
3	<i>Acalypha indica</i> L.	Euphorbiaceae	Dicot	H	Terrestrial	BKU/SM/2022/6
4	<i>Achyranthes aspera</i> L.	Amaranthaceae	Dicot	H	Terrestrial	BKU/SM/2024/115
5	<i>Acmella oleracea</i> (L.) R.K. Jansen	Asteraceae	Dicot	H	Terrestrial	BKU/SM/2023/42
6	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	Dicot	T	Terrestrial	BKU/SM/2024/116
7	<i>Albizia lebbek</i> (L.) Benth	Fabaceae	Dicot	T	Terrestrial	BKU/SM/2024/104
8	<i>Alocasia macrorrhizos</i> (L.) G. Don	Araceae	Monocot	H	Semi aquatic	BKU/SM/2022/7
9	<i>Allium cepa</i> L.	Amaryllidaceae	Monocot	H	Terrestrial	BKU/SM/2024/117
10	<i>Aloe vera</i> (L.) Burm. f.	Asphodeloideae	Monocot	H	Terrestrial	BKU/SM/2025/151
11	<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	Dicot	T	Terrestrial	BKU/SM/2024/105
12	<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	Amaranthaceae	Dicot	H	Terrestrial	BKU/SM/2024/78
13	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Dicot	H	Terrestrial	BKU/SM/2025/152
14	<i>Amaranthus viridis</i> L.	Amaranthaceae	Dicot	H	Terrestrial	BKU/SM/2024/120
15	<i>Andrographis paniculata</i> (Burm f.) Nees	Acanthaceae	Dicot	H	Terrestrial	BKU/SM/2025/153
16	<i>Anisomeles indica</i> (L.) Kuntze	Lamiaceae	Dicot	H	Terrestrial	BKU/SM/2024/79
17	<i>Annona squamosa</i> L.	Annonaceae	Dicot	T	Terrestrial	BKU/SM/2024/118
18	<i>Areca catechu</i> L.	Arecaceae	Monocot	T	Terrestrial	BKU/SM/2024/80
19	<i>Argemone mexicana</i> L.	Papaveraceae	Dicot	H	Terrestrial	BKU/SM/2023/43
20	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Dicot	T	Terrestrial	BKU/SM/2024/119
21	<i>Bambusa bambos</i> (L.) Voss	Poaceae	Monocot	T	Terrestrial	BKU/SM/2024/106
22	<i>Bauhinia acuminata</i> L.	Fabaceae	Dicot	S	Terrestrial	BKU/SM/2022/8
23	<i>Blumea lacera</i> (Burm. f.) DC.	Asteraceae	Dicot	H	Terrestrial	BKU/SM/2023/44
24	<i>Boerhavia diffusa</i> L.nom.cons.	Nyctaginaceae	Dicot	H	Terrestrial	BKU/SM/2024/77
25	<i>Borassus flabellifera</i> L.	Arecaceae	Monocot	T	Terrestrial	BKU/SM/2024/101
26	<i>Caesalpinia pulcherrima</i> (L.) Sw	Fabaceae	Dicot	T	Terrestrial	BKU/SM/2024/100
27	<i>Calotropis gigantea</i> (L.) Dryand	Asclepiadaceae	Dicot	S	Terrestrial	BKU/SM/2022/9
28	<i>Canna indica</i> L.	Cannaceae	Monocot	H	Terrestrial	BKU/SM/2024/76
29	<i>Capsicum annum</i> L.	Solanaceae	Dicot	S	Terrestrial	BKU/SM/2023/48
30	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Dicot	H	Terrestrial	BKU/SM/2024/102
31	<i>Carica papaya</i> L.	Caricaceae	Dicot	S	Terrestrial	BKU/SM/2023/47
32	<i>Catharanthus roseus</i> (L.) G. Don	Apocynaceae	Dicot	S	Terrestrial	BKU/SM/2023/45
33	<i>Chloris barbata</i> Sw.	Poaceae	Monocot	H	Terrestrial	BKU/SM/2024/114
34	<i>Chrozophora tinctoria</i> (L.) A. Juss.	Euphorbiaceae	Dicot	S	Terrestrial	BKU/SM/2025/121
35	<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Poaceae	Monocot	H	Terrestrial	BKU/SM/2022/40
36	<i>Citrullus colocynthis</i> (L.) Schrad.	Cucurbitaceae	Dicot	H	Terrestrial	BKU/SM/2024/107
37	<i>Cleome viscosa</i> L.	Cleomaceae	Dicot	H	Terrestrial	BKU/SM/2023/46
38	<i>Clerodendrum indicum</i> (L.) Kuntze	Verbenaceae	Dicot	S	Terrestrial	BKU/SM/2024/81
39	<i>Clerodendrum infortunatum</i> L.	Verbenaceae	Dicot	S	Terrestrial	BKU/SM/2024/99
40	<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Dicot	H	Terrestrial	BKU/SM/2022/39
41	<i>Coix lacryma-jobi</i> L.	Poaceae	Monocot	H	Terrestrial	BKU/SM/2024/98
42	<i>Commelina benghalensis</i> L.	Commelinaceae	Monocot	H	Terrestrial	BKU/SM/2024/108
43	<i>Coriandrum sativum</i> L.	Apiaceae	Dicot	H	Terrestrial	BKU/SM/2024/75
44	<i>Crotalaria pallida</i> Aiton	Fabaceae	Dicot	S	Terrestrial	BKU/SM/2022/36
45	<i>Croton bonplandianus</i> Baill	Euphorbiaceae	Dicot	H	Terrestrial	BKU/SM/2022/37
46	<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Dicot	H	Terrestrial	BKU/SM/2022/38
47	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Monocot	H	Terrestrial	BKU/SM/2024/109

(Contd...)

Table 1: (Continued).

Serial No.	Scientific name	Family	Division	Habit	Habitat	Herbarium accession no
48	<i>Cyperus iria</i> L.	<i>Cyperaceae</i>	Monocot	H	Semi aquatic	BKU/SM/2024/74
49	<i>Cyperus kyllingia</i> Endl.	<i>Cyperaceae</i>	Monocot	H	Semi aquatic	BKU/SM/2024/82
50	<i>Cyperus rotundus</i> L.	<i>Cyperaceae</i>	Monocot	H	Semi aquatic	BKU/SM/2024/73
51	<i>Centella asiatica</i> (L.) Urban	<i>Apiaceae</i>	Dicot	H	Semi aquatic	BKU/SM/2024/97
52	<i>Chromolaena odorata</i> (L.) R.M. King and H. Rob.	<i>Asteraceae</i>	Dicot	H	Terrestrial	BKU/SM/2024/83
53	<i>Citrus limon</i> (L.) Osbeck	<i>Rutaceae</i>	Dicot	S	Terrestrial	BKU/SM/2024/110
54	<i>Cleome viscosa</i> L.	<i>Cleomaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/148
55	<i>Cleome rutidosperma</i> DC.	<i>Cleomaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/154
56	<i>Clitoria ternatea</i> L.	<i>Fabaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/155
57	<i>Cocos nucifera</i> L.	<i>Arecaceae</i>	Monocot	T	Terrestrial	BKU/SM/2025/149
58	<i>Colocasia esculenta</i> (L.) Schott	<i>Araceae</i>	Monocot	H	Terrestrial	BKU/SM/2025/150
59	<i>Corchorus capsularis</i> L.	<i>Malvaceae</i>	Dicot	S	Terrestrial	BKU/SM/2025/147
60	<i>Cucurbita maxima</i> Duchesne	<i>Cucurbitaceae</i>	Dicot	H	Terrestrial	BKU/SM/2024/111
61	<i>Dalbergia sissoo</i> Roxb	<i>Fabaceae</i>	Dicot	T	Terrestrial	BKU/SM/2024/84
62	<i>Datura metel</i> L.	<i>Solanaceae</i>	Dicot	S	Terrestrial	BKU/SM/2025/146
63	<i>Digitaria ciliaris</i> (Rrtz.) Koeler	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2024/85
64	<i>Digitaria sanguinalis</i> (L.) Scop	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2024/112
65	<i>Ecbolium viride</i> (Forssk.) Alston	<i>Acanthaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/156
66	<i>Echinochloa colonum</i> (L.) Link	<i>Poaceae</i>	Monocot	H	Semi aquatic	BKU/SM/2024/72
67	<i>Eclipta prostrate</i> (L.) L.	<i>Asteraceae</i>	Dicot	H	Terrestrial	BKU/SM/2024/96
68	<i>Eleusine indica</i> (L.) Gaertn.	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2024/71
69	<i>Enhydra flactuans</i> Lour.	<i>Asteraceae</i>	Dicot	H	Semi aquatic	BKU/SM/2024/113
70	<i>Eragrostis amabilis</i> (L.) Wight and Arn. ex Nees	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2022/34
71	<i>Eucalyptus tereticornis</i> Sm	<i>Myrtaceae</i>	Dicot	T	Terrestrial	BKU/SM/2024/86
72	<i>Euphorbia hirta</i> L.	<i>Euphorbiaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/32
73	<i>Evolvulus nummularius</i> (L.) L.	<i>Convolvulaceae</i>	Dicot	H	Terrestrial	BKU/SM/2024/95
74	<i>Ficus benghalensis</i> L.	<i>Moraceae</i>	Dicot	T	Terrestrial	BKU/SM/2023/68
75	<i>Ficus religiosa</i> L.	<i>Moraceae</i>	Dicot	T	Terrestrial	BKU/SM/2023/69
76	<i>Gomphrena celosioides</i> Mart	<i>Amaranthaceae</i>	Dicot	H	Terrestrial	BKU/SM/2023/70
77	<i>Heliotropium indicum</i> L.	<i>Boraginaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/33
78	<i>Hibiscus rosa sinensis</i> L.	<i>Malvaceae</i>	Dicot	S	Terrestrial	BKU/SM/2025/144
79	<i>Hygrophila auriculata</i> Schumach	<i>Acanthaceae</i>	Dicot	H	Semi aquatic	BKU/SM/2025/145
80	<i>Ipomoea aquatic</i> Forssk	<i>Convolvulaceae</i>	Dicot	H	Aquatic	BKU/SM/2024/87
81	<i>Ipomoea cairica</i> (L.) Sweet	<i>Convolvulaceae</i>	Dicot	H	Semi aquatic	BKU/SM/2024/88
82	<i>Ipomoea nil</i> (L.) Roth	<i>Convolvulaceae</i>	Dicot	H	Terrestrial	BKU/SM/2024/94
83	<i>Ixora coccinea</i> L.	<i>Rubiaceae</i>	Dicot	S	Terrestrial	BKU/SM/2023/67
84	<i>Jatropha gossypifolia</i> L.	<i>Euphorbiaceae</i>	Dicot	S	Terrestrial	BKU/SM/2023/64
85	<i>Justicia adhatoda</i>	<i>Acanthaceae</i>	Dicot	S	Terrestrial	BKU/SM/2024/89
86	<i>Lablab purpureus</i> (L.) Sweet	<i>Fabaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/142
87	<i>Lantana camara</i> L.	<i>Verbenaceae</i>	Dicot	S	Terrestrial	BKU/SM/2025/143
88	<i>Leonotis nepetifolia</i> (L.) R. Br	<i>Lamiaceae</i>	Dicot	H	Terrestrial	BKU/SM/2023/65
89	<i>Leonurus sibiricus</i> L.	<i>Lamiaceae</i>	Dicot	H	Terrestrial	BKU/SM/2024/90
90	<i>Limnophila heterophylla</i> (Roxb) Benth.	<i>Plantaginaceae</i>	Dicot	H	Aquatic	BKU/SM/2023/66
91	<i>Lippia alba</i> (Mill.) N. E. Br. ex Britton and P. Wilson	<i>Verbenaceae</i>	Dicot	H	Terrestrial	BKU/SM/2023/61
92	<i>Ludwigia parviflora</i> Roxb.	<i>Onagraceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/139
93	<i>Luffa aegyptiaca</i> Mill.	<i>Cucurbitaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/157
94	<i>Mangifera indica</i> L.	<i>Anacardiaceae</i>	Dicot	T	Terrestrial	BKU/SM/2023/62

(Contd...)

Table 1: (Continued).

Serial No.	Scientific name	Family	Division	Habit	Habitat	Herbarium accession no
95	<i>Merremia hederacea</i> (Burm.f.) Hallier f.	<i>Convolvulaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/140
96	<i>Mesosphaerum suaveolens</i> (L.) Kuntze	<i>Lamiaceae</i>	Dicot	H	Terrestrial	BKU/SM/2023/63
97	<i>Micrococca mercurialis</i> (L.) Benth.	<i>Euphorbiaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/141
98	<i>Mikania micrantha</i> Kunth	<i>Asteraceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/138
99	<i>Mimosa pudica</i> L.	<i>Fabaceae</i>	Dicot	H	Terrestrial	BKU/SM/2023/60
100	<i>Mollugo spargula</i> L.	<i>Molluginaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/158
101	<i>Monoon longifolium</i> Sonn. B. Xue and R.M.K. Saunders	<i>Annonaceae</i>	Dicot	T	Terrestrial	BKU/SM/2025/135
102	<i>Moringa oleifera</i> Lam.	<i>Moringaceae</i>	Dicot	T	Terrestrial	BKU/SM/2025/122
103	<i>Musa balbisiana</i> Colla	<i>Musaceae</i>	Monocot	S	Terrestrial	BKU/SM/2025/123
104	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	<i>Rubiaceae</i>	Dicot	T	Terrestrial	BKU/SM/2025/136
105	<i>Nerium oleander</i> L.	<i>Apocynaceae</i>	Dicot	S	Terrestrial	BKU/SM/2025/125
106	<i>Nicotiana plumbaginifolia</i> Viv.	<i>Solanaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/159
107	<i>Nyctanthes arbor-tristis</i> L.	<i>Oleaceae</i>	Dicot	T	Terrestrial	BKU/SM/2025/137
108	<i>Ocimum tenuiflorum</i> L.	<i>Lamiaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/124
109	<i>Oldenlandia corymbosa</i> L.	<i>Rubiaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/126
110	<i>Oplismenus burmannii</i> (Retz.) P. Beauv	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2022/5
111	<i>Oryza sativa</i> L.	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2023/59
112	<i>Ourel lanata</i> (L.) Kuntze	<i>Amaranthaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/1
113	<i>Panicum indicum</i> (L.) L.	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2023/58
114	<i>Parthenium hysterophorous</i> L.	<i>Asteraceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/128
115	<i>Paspalum distichum</i> L.	<i>Poaceae</i>	Monocot	H	Aquatic	BKU/SM/2025/160
116	<i>Peltophorum pterocarpum</i> (DC.) K. Heyne	<i>Fabaceae</i>	Dicot	T	Terrestrial	BKU/SM/2025/127
117	<i>Pergularia daemia</i> (Forssk.) Chiov	<i>Asclepiadaceae</i>	Dicot	H	Terrestrial	BKU/SM/2023/55
118	<i>Peristrophe paniculata</i> (Forssk.) Brummitt	<i>Acanthaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/2
119	<i>Phoenix dactylifera</i> L.	<i>Arecaceae</i>	Monocot	T	Terrestrial	BKU/SM/2023/56
120	<i>Phoenix sylvestris</i> (L.) Roxb.	<i>Arecaceae</i>	Monocot	T	Terrestrial	BKU/SM/2023/57
121	<i>Phyla nodiflora</i> (L.) Greene	<i>Verbenaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/3
122	<i>Phyllanthus fraternus</i> Webster	<i>Euphorbiaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/4
123	<i>Physalis angulate</i> L.	<i>Solanaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/129
124	<i>Pleurolobus gangeticus</i> (L.) J.St.-Hil. Ex H.Ohashi	<i>Fabaceae</i>	Dicot	H	Terrestrial	BKU/SM/2025/130
125	<i>Polygonum barbatum</i> L.	<i>Polygonaceae</i>	Dicot	H	Semi aquatic	BKU/SM/2022/13
126	<i>Polygonum hydropiper</i> (L.) Delabre	<i>Polygonaceae</i>	Dicot	H	Semi aquatic	BKU/SM/2022/10
127	<i>Psidium guajava</i> L.	<i>Myrtaceae</i>	Dicot	T	Terrestrial	BKU/SM/2023/54
128	<i>Rauvolfia tetraphylla</i> L.	<i>Apocynaceae</i>	Dicot	S	Terrestrial	BKU/SM/2022/14
129	<i>Rhamphospermum nigrum</i> L. Al-Shehbaz	<i>Brassicaceae</i>	Dicot	H	Terrestrial	BKU/SM/2023/53
130	<i>Ricinus communis</i> L.	<i>Euphorbiaceae</i>	Dicot	S	Terrestrial	BKU/SM/2022/11
131	<i>Rorippa indica</i> (L.) Hiern	<i>Brassicaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/12
132	<i>Ruellia prostrate</i> Poir	<i>Acanthaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/28
133	<i>Ruellia tuberosa</i> L.	<i>Acanthaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/29
134	<i>Saccharum officinarum</i> L.	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2025/131
135	<i>Saccharum spontaneum</i> L.	<i>Poaceae</i>	Monocot	H	Terrestrial	BKU/SM/2022/31
136	<i>Scoparia dulcis</i> L.	<i>Scrophulariaceae</i>	Dicot	H	Terrestrial	BKU/SM/2023/49
137	<i>Senna occidentalis</i> (L.) Link	<i>Fabaceae</i>	Dicot	S	Terrestrial	BKU/SM/2025/132
138	<i>Senna sophora</i> (L.) Roxb	<i>Fabaceae</i>	Dicot	S	Terrestrial	BKU/SM/2022/27
139	<i>Senna tora</i> (L.) Roxb	<i>Fabaceae</i>	Dicot	S	Terrestrial	BKU/SM/2022/26
140	<i>Sida acuta</i> Burm.f.	<i>Malvaceae</i>	Dicot	H	Terrestrial	BKU/SM/2022/20

(Contd...)

Table 1: (Continued).

Serial No.	Scientific name	Family	Division	Habit	Habitat	Herbarium accession no
141	<i>Sida cordifolia</i> L.	Malvaceae	Dicot	H	Terrestrial	BKU/SM/2022/19
142	<i>Sida rhombifolia</i> L.	Malvaceae	Dicot	H	Terrestrial	BKU/SM/2022/18
143	<i>Solanum lycopersicum</i> L.	Solanaceae	Dicot	H	Terrestrial	BKU/SM/2023/50
144	<i>Solanum torvum</i> Sw.	Solanaceae	Dicot	H	Terrestrial	BKU/SM/2022/17
145	<i>Solanum tuberosum</i> L.	Solanaceae	Dicot	H	Terrestrial	BKU/SM/2022/30
146	<i>Solanum violaceum</i> Ortega	Solanaceae	Dicot	S	Terrestrial	BKU/SM/2022/16
147	<i>Solanum virginianum</i> L.	Solanaceae	Dicot	H	Terrestrial	BKU/SM/2025/161
148	<i>Sonchus oleraceus</i> L.	Asteraceae	Dicot	H	Terrestrial	BKU/SM/2022/15
149	<i>Spermacoce hispida</i> L.	Rubiaceae	Dicot	H	Terrestrial	BKU/SM/2022/21
150	<i>Tagetes patula</i> L.	Asteraceae	Dicot	H	Terrestrial	BKU/SM/2022/25
151	<i>Tamarindus indica</i> L.	Fabaceae	Dicot	T	Terrestrial	BKU/SM/2025/133
152	<i>Tectona grandis</i> L.f.	Lamiaceae	Dicot	T	Terrestrial	BKU/SM/2024/93
153	<i>Torenia crustacean</i> (L.) Cham. and Schldt.	Linderniaceae	Dicot	H	Aquatic	BKU/SM/2022/22
154	<i>Trewia nudiflora</i> L.	Euphorbiaceae	Dicot	T	Terrestrial	BKU/SM/2025/134
155	<i>Tridax procumbens</i> L.	Asteraceae	Dicot	H	Terrestrial	BKU/SM/2025/162
156	<i>Typha angustifolia</i> L.	Typhaceae	Monocot	H	Semi aquatic	BKU/SM/2024/92
157	<i>Urochloa reptans</i> (L.) Stapf	Poaceae	Monocot	H	Terrestrial	BKU/SM/2024/91
158	<i>Vachellia nilotica</i> (L) P.J.H. Hurter and Mabb	Fabaceae	Dicot	T	Terrestrial	BKU/SM/2022/35
159	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	Dicot	H	Terrestrial	BKU/SM/2023/52
160	<i>Vitex negundo</i> L.	Lamiaceae	Dicot	S	Terrestrial	BKU/SM/2022/23
161	<i>Xanthium strumarium</i> L.	Asteraceae	Dicot	S	Terrestrial	BKU/SM/2023/51
162	<i>Ziglyphus mauritiana</i> Lam.	Rhamnaceae	Dicot	T	Terrestrial	BKU/SM/2022/24



Figure 4: Plant communities of different study sites of Lower-Gangetic Plains along Katwa and Kalna stretch.

4. CONCLUSION

The study elucidates the richness and distribution of plant species present in the Lower Gangetic Plain. Diverse plant groups exist along the banks of the Ganga River in this area. The region functions as a dynamic and diversified mixed ecosystem, playing a crucial role in sustaining the equilibrium between aquatic and terrestrial habitats. These locations function as homes for a diverse array of flora and allied organisms, all of which depend on the availability of water and the distinctive environmental conditions present in these places.

5. AUTHOR CONTRIBUTIONS

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work. All the authors are eligible to be authors as per the International Committee of Medical Journal Editors (ICMJE) requirements/guidelines.

6. FUNDING

There is no funding to report.

7. CONFLICTS OF INTEREST

The authors report no financial or any other conflicts of interest in this work.

8. ETHICAL APPROVALS

This study does not involve experiments on animals or human subjects.

9. DATA AVAILABILITY

All the data is available with the authors and shall be provided upon request.

10. PUBLISHER'S NOTE

All claims expressed in this article are solely those of the authors and do not necessarily represent those of the publisher, the editors and the reviewers. This journal remains neutral with regard to jurisdictional claims in published institutional affiliation.

11. USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that they have not used artificial intelligence (AI)-tools for writing and editing of the manuscript, and no images were manipulated using AI.

REFERENCES

- Sarkar AK, Mazumder M. A surveillance to evaluate the diversity, dominance and community structure of tree species in Nagrakata forest beat, Chalsa forest range, West Bengal, India. *Int J Pure Appl Biosci.* 2016;4(5):133-43. <https://doi.org/10.18782/2320-7051.2395>
- McNeely JA. Forest biodiversity at the ecosystem level: Where do people fit in? *Unasylva. Spec Issue For Biol Divers.* 1991;53(2):10-5.
- Mazumder M, Sarkar AK. Ecological status of angiospermic macrophytes in retention ponds and drainage ditches of Jalpaiguri District, West Bengal, India. *Indian Forester.* 2020;146(3):226-34. <https://doi.org/10.36808/if/2020/v146i3/145704>
- Ehrlich PR, Wilson E. Biodiversity studies: Science and policy. *Science.* 1991;253:758-62. <https://doi.org/10.1126/science.253.5021.758>
- Dey M, Sarkar AK. Plant assemblages within and adjacent to protected areas of Adina Deer Park (Forest), Malda, West Bengal, India. *Bull Env Pharmacol Life Sci.* 2021;10(12):162-87.
- Sarkar AK. Ecological studies of tree vegetation of Ramshai forest range, Gorumara National Park. *Int Res J Biol Sci.* 2016;5(7):53-9.
- Das GK. River systems of West Bengal - a review. *Indian Sci Cruiser.* 2023;37(2):11-24. <https://doi.org/10.24906/isc/2023/v37/i2/223481>
- Singh LP, Parkash B, Singhvi AK. Evolution of the lower Gangetic plain landforms and soils in West Bengal, India. *Catena.* 1998;33(2):75-104. [https://doi.org/10.1016/S0341-8162\(98\)00066-6](https://doi.org/10.1016/S0341-8162(98)00066-6)
- Mani MS. *Ecology and Biogeography in India.* Dordrecht: Springer; 1974. <https://doi.org/10.1007/978-94-010-2331-3>
- Roy R, Maity M, Manna S. Study of soil and vegetation characteristics in the lower Gangetic plains of West Bengal. *Res J Pharm Biol Chem Sci.* 2017;8(3):1558-68.
- Naskar K, Guha Bakshi DN. *Mangrove Swamps of the Sundarbans: An Ecological Perspective.* Kolkata: Naya Prakash; 1987.
- Singh R, Singh GS. Integrated management of the Ganga river: An ecohydrological approach. *Ecohydrol Hydrobiol.* 2020;20(2):153-74. <https://doi.org/10.1016/j.ecohyd.2019.10.007>
- Prasad KN, Shivamurthy GR, Aradhya SM. *Ipomoea aquatica*, an underutilized green leafy vegetable: A review. *Int J Bot.* 2008;4(1):123-9. <https://doi.org/10.3923/ijb.2008.123.129>
- Mazumder M, Sarkar AK. Ethnobotanical survey of indigenous leafy vegetables consumed in rural areas of Terai-Dooars region of West Bengal, India. *J Threat Taxa.* 2019;11(12):14612-8. <https://doi.org/10.11609/jott.5039.11.12.14612-14618>
- Prain D. *Bengal Plants.* Vol. 1 and 2. Kolkata: Botanical Survey of India; 1903.
- Das D, Mondal S, Mandal S. Studies on some economically important aquatic plants of Katwa subdivision of Burdwan district, West Bengal. *Int J Curr Microbiol Appl Sci.* 2016;5(6):961-72. <https://doi.org/10.20546/ijcmas.2016.506.103>
- Dey M, Mazumder M, Sarkar AK, Ghosh S, Sarkar D, Rahaman R. Floristic composition and fodder availability in Patlakhawa forest patches under Cooch Behar forest division, West Bengal, India. *NeBio.* 2020;11(3):220-33.
- Das B, Mazumder M, Sarkar AK, Dey M. Weed composition in rice field agroecosystem of Terai-Dooars and northern plain of West Bengal, India. *Int J Recent Sci Res.* 2018;9(6):27375-81. <https://doi.org/10.24327/ijrsr.2018.0906.2245>
- Sarkar AK, Mazumder M, Dey M. Weed species composition of pineapple based cropping system at Northern part of West Bengal, India. *Adv Biores.* 2017;6(6):258-69.
- Sarkar AK, Dey M, Mazumder M. Impact of non-timber forest products on forest and in livelihood economy of the people of adjoining areas of Jalpaiguri forest division, West Bengal, India. *Int J Life Sci.* 2018;6(2):365-85.
- Jain SK, Rao RR. *Dictionary of Indian Folk Medicine and Ethno-Botany.* Vol. 1. New Delhi: Deep Publication; 1977.
- Smith JD. The Relationship between Riparian Zone Width and Floristic Quality in Shenandoah County, Virginia. [Masters Theses]; 2014.
- Flotemersch JE, Leibowitz SG, Hill RA, Stoddard JL, Thoms MC, Tharme RE. A watershed integrity definition and assessment approach to support strategic management of watersheds. *River Res Appl.* 2016;32(7):1654-71. <https://doi.org/10.1002/rra.2978>
- Parmar R, Purani K, Das L, Kamboj RD. Phytosociological study of riparian flora of Sabarmati river in Prantij Taluka of Sabarkantha District, Gujarat, India. *Int J Creat Res Thoughts.* 2021;9(4):5447-55.
- Devi RS. Trees of Mahanadi river areas of Cuttack, Odisha: Part I. *J Biodivers. Conserv.* 2024;8(4):52-60.

How to cite this article: Mondal S, Pal S, Mukhopadhyay P, Maji M, Mukherjee SK. Floristic assessment of angiosperms in the Lower-Gangetic Plains along Katwa and Kalna stretch, West Bengal, India. *J Appl Biol Biotech* 2026;14(1):174-181. DOI: 10.7324/JABB.2025.254114