IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Phyto-diversity Assessment of Shaheed Chandra Shekhar Azad Bird Sanctuary, Unnao, Uttar Pradesh, India

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ABSTRACT:

Floristic documentation forms a fundamental basis for biodiversity assessment and conservation management, particularly in wetland-dominated protected areas where plant communities play a critical ecological role. Despite its conservation importance, Shaheed Chandra Shekhar Azad Bird Sanctuary, Unnao, Uttar Pradesh, India, lacks a comprehensive and seasonally validated account of vascular plant diversity. The present study aims to systematically assess the composition, distribution, and phytospectrum of pteridophytes and angiosperms within the sanctuary. Intensive field surveys were conducted across multiple habitat types during different seasons from 2024 to 2025 followed by critical taxonomic identification using standard floras and updated nomenclature. A total of 265 plant species were recorded, comprising 04 species of pteridophytes (03 genera) and 261 species of angiosperms distributed among 190 genera and 65 families. The family Fabaceae was the most species-rich, represented by 27 species across 23 genera, whereas the genus Cyperus exhibited maximum species representation with 12 species. The study provides detailed information on the accepted scientific names, current taxonomic citations, growth forms, occurrence status, and field collection numbers of all recorded species. The present floristic inventory establishes a critical baseline dataset for future ecological monitoring, habitat management, and conservation planning within the sanctuary.

KEY WORDS: Phytodiversity, Shaheed Chandra Shekhar Azad Bird Sanctuary, Unnao pteridophtes, angiosperms, floristic account.

INTRODUCTION:

"Shaheed Chandra Shekhar Azad Bird Sanctuary" (SCSABS) previously known as the "Kulli Ven Lake" is situated in Nawabganj of Unnao district of Uttar Pradesh, India, and in its wetland area is surrounded by various types of vegetations. It is situated nearly equidistant from Lucknow and Kanpur, at a distance of approximately 45 km. from each city, along the busy Lucknow-Kanpur National highway. It is lies between 26˚27'9.0696 N Latitude and 80˚39'11.2356 E longitude and it covers approximately 224 hectares total areas of wetland, making it an essential destination for birds, wildlife enthusiasts, and nature lovers. Hardoi district is situated on its north western, Lucknow is situated to its north east, Raebareli is situated to its south east and Ganga flows towards its south western. Wetland types are seasonal, intermittent, and freshwater and marshy plant species.

In present times, the awareness, realization, and significance of wetland have increased tremendously. Furthermore, concern about their drastic shrinking, either naturally or anthropoginacally has resulted in formulation of wetland (Dugan[6], 1990) by several agencies including governmental ones. Wetland ecosystems are characterized by shallow water bodies that may be aquatic or marshy in nature, occurring as perennial or seasonal habitats containing predominantly freshwater. These ecosystems perform a wide range of vital ecological functions and ecosystem services, including support for agriculture and irrigation, water purification, climate regulation, flood mitigation, domestic water supply, and recreational activities. Aquatic and wetland systems enhance biological productivity and play a crucial role in maintaining ecological balance by supporting diverse plant and animal communities. India possesses a rich diversity of wetland habitats due to its varied climatic and physiographic conditions, making wetlands one of the most significant natural ecosystems in the country. Owing to their multifaceted ecological, economic, and social importance, wetlands contribute substantially to human well-being and environmental sustainability.

The bird community of the sanctuary includes both year-round residents and seasonal migrants, demonstrating the site's ecological importance. Many migratory species cover vast distances, often exceeding 5,000 km, and navigate high altitudes above 8,500 meters to reach these habitats. The wetlands and surrounding areas provide essential resources for feeding, resting, and breeding, making the sanctuary a critical stopover and wintering site. The coexistence of resident and long-distance migratory birds emphasizes the area's significance for maintaining avian diversity and supporting regional and intercontinental migratory pathways. A variety of migratory and residential birds can be found here, they are Sarus cane, Little grebe, Mallard, Comb duck, Eurasian wigeon, Pigeon, Peafowl, Crow, Vulture, Purple moorhen, Asian openbill, common Moorhen, Little cormorant and Bee-eater. While primarily a bird sanctuary, it is also home to some Reptiles, such as the Krait, Cobra, Rat snake, and Viper. Tortoise, Deer and Nilgai (blue cow) are also found within its boundaries.

The Climatic condition of Shaheed Chandra Shekhar Azad Bird Sanctuary is subtropical, and it experiences three distinct seasons such as pre-monsoon (March – June), monsoon (July – October) and post-monsoon (November – February) seasons. The temperature of the bird's sanctuary ranges from 02˚C to 48˚.

The study of hydrophytic and aquatic plants in India has a long history of systematic documentation. Biswas and Calder[2] (1937) were among the first to publish on Indian hydrophytic flora. Subsequently, Subramanyam[21] (1962) provided a comprehensive account of aquatic plants. Later contributions include Chathrath[3] (1992) and Cook[4] (1996), who documented various aspects of aquatic and wetland plants in India. Detailed monographs, however, have been prepared for only a limited number of aquatic plant groups, such as those by Subramanyam[22] (1979), highlighting the need for continued taxonomic and ecological research in this field. The wetlands and aquatic flora of Uttar Pradesh have been the focus of several botanical studies, including those by Agnihotr[i1] *et al.* (2008), Trivedi and Sharma[23] (1965), Saini[19] *et al.* (2010), Narain and Mishra[15] (2008), Mishra and Narain[13] (2014), Khanna[12] (2015), Saini and Kumar[20] (2017), and Rahul[18] *et al*. (2025). Within Shaheed Chandra Shekhar Azad Bird Sanctuary (SCSABS), earlier investigations by Narain and Kumar[15] (2008), Kanaujia[11] *et al.* (2014), Garg[8] (2019), Prajapati and Singh[16] (2024) have documented aspects of plant diversity. However, these studies often lack a comprehensive, seasonally structured survey encompassing both pteridophytes and angiosperms across the sanctuary's diverse habitats. The present study aims to fill this gap by providing a systematic assessment of plant composition, distribution patterns, and phytospectrum in SCSABS, thereby generating an updated floristic inventory to support ecological research and conservation planning.

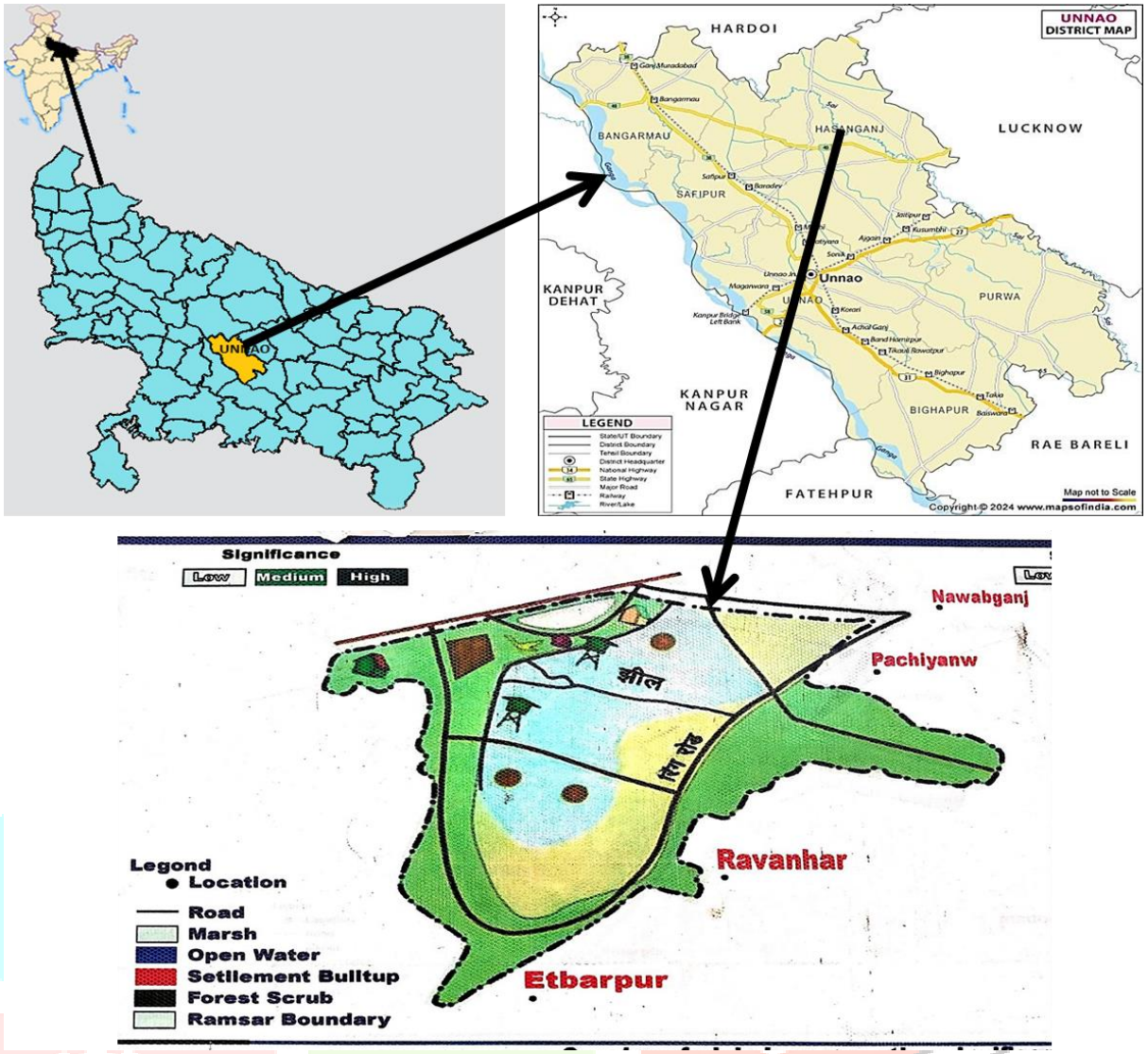


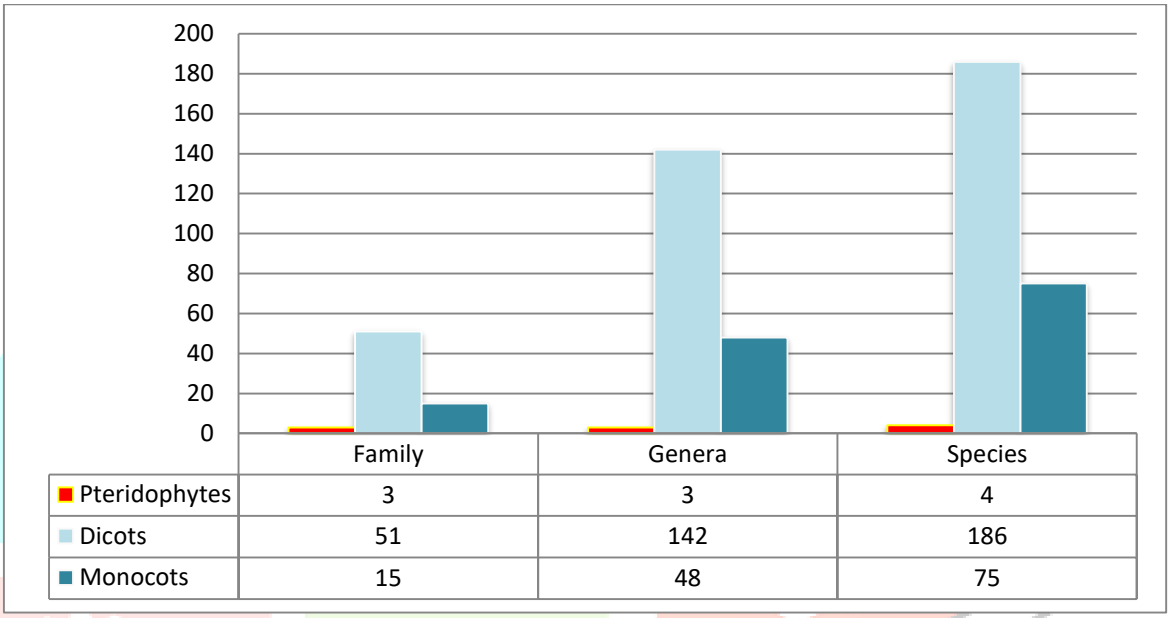
Fig:1- Map shows Shaheed Chandra Shekhar Azad Bird Sanctuary, Uttar Pradesh, India

Materials and methods:

Systematic field surveys were conducted throughout Shaheed Chandra Shekhar Azad Bird Sanctuary across different seasons to ensure comprehensive coverage of all major habitats. Plant specimens were collected from various locations, and detailed field notes were maintained for each sample, including collection number, accepted scientific name, family, vegetation type, and photographic records. Specimens were carefully prepared and mounted following standard herbarium protocols, with additional documentation of habitat, collection site, plant height, color, collector's name, and collection number, ensuring all information necessary for accurate identification was recorded (Jain and Rao[10], 1977). Identification of specimens was performed using authoritative floras and taxonomic references, including Hooker[9] (1872–1897), Duthie[7] (1960), Verma and Rao[24] (1982), and Prasad[17] et al. (2020). All collected specimens were deposited in the Department of Botany Herbarium at Prof. B. K. Verma, Maharaja Bijli Pasi Government P.G. College, Lucknow, Uttar Pradesh, providing a permanent record for future research and reference.

Result and Discussion:

During the floristic study of the "Shaheed Chandra Shekhar Azad Bird Sanctuary" in Uttar Pradesh, a very rich and divers flora of diversity of Angiosperms and Pteridophytes was observed. The sanctuary exhibits a variety of habitats, such as wetland, aquatic areas, marshy, and terrestrial zone, supporting diverse plant habits including herbs, shrubs, tree, climbers, and lianas. A complete observation yielding a total of 265 plant species, with 261 belonging to 190 genera and 66 families of angiosperms, 4 species belonging to 3 genera and 3 families of pteridophytes. Out of the 261 species, 186 species belong to 142 genera and 51 families of dicots, while 75 species belong to 48 genera and 15 families of monocots. (Fig: 2).



	Family	Genera	Species
Pteridophytes	3	3	4
Dicots	51	142	186
Monocots	15	48	75

Fig: 2- Current status of families, genera and species.

The ten dominant families in the study area are; Fabaceae (27 species, 23 genera), Cyperaceae (25 species, 7 genera), Poaceae (23 species, 18 genera), Asteraceae (18 species, 17 genera), Malvaceae (11 species, 7 genera), Amaranthaceae (11 species, 6 genera), Acanthaceae (8 species, 7 genera), Euphorbiaceae (8 species, 6 genera), Polygonaceae (8 species, 3 genera), and Schrophulariaceae (6 species, 6 genera) **(Fig: 3).**

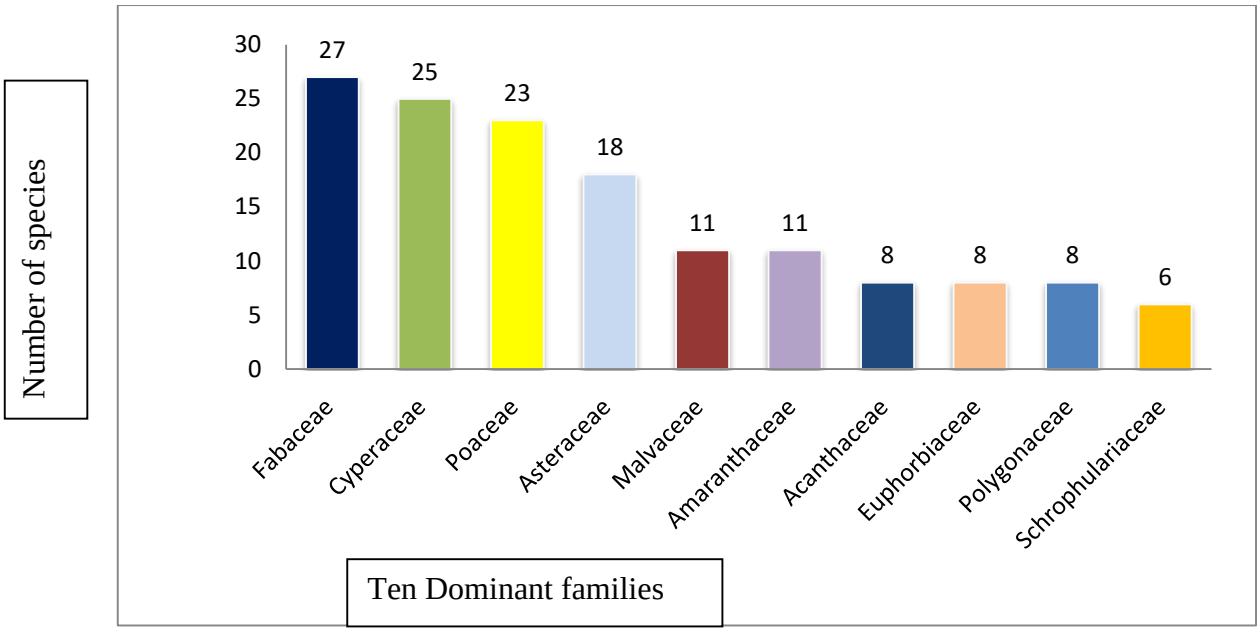


Fig:3- Ten dominant families in Shaheed Chandra Shekhar Azad Bird Sanctuary, Uttar Pradesh

During floristic study, herbaceous flora is most dominant is the Shaheed Chandra Shekhar Azad Bird Sanctuary, Uttar Pradesh. Out of 265 plant species, 200 species are herbs, 33 species are shrubs, 26 species are tree, 04 species are climbers, and 02 species linas (**Fig:4)**.

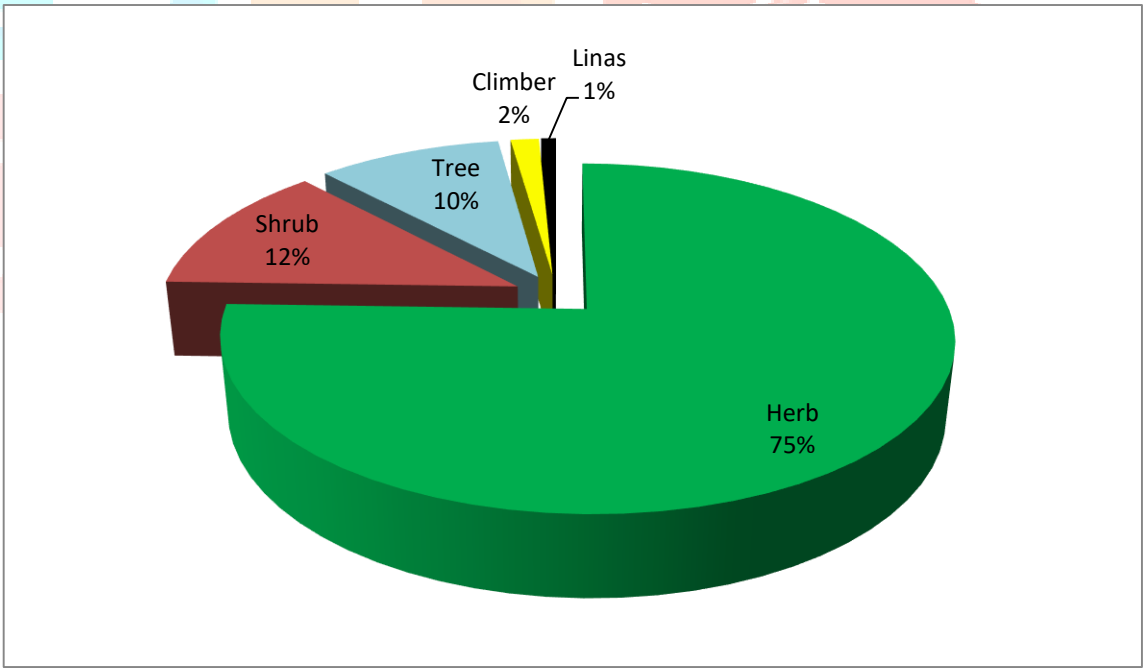


Fig:4- Habits of the plant species in Shaheed Chandra Shekhar Azad Bird Sanctuary, Uttar Pradesh.

The occurrence of plant in the study area is common, occasional, and rare. 95 plant species are common, 90 species are occasional, and 80 plant species are rare **(Fig:5).**

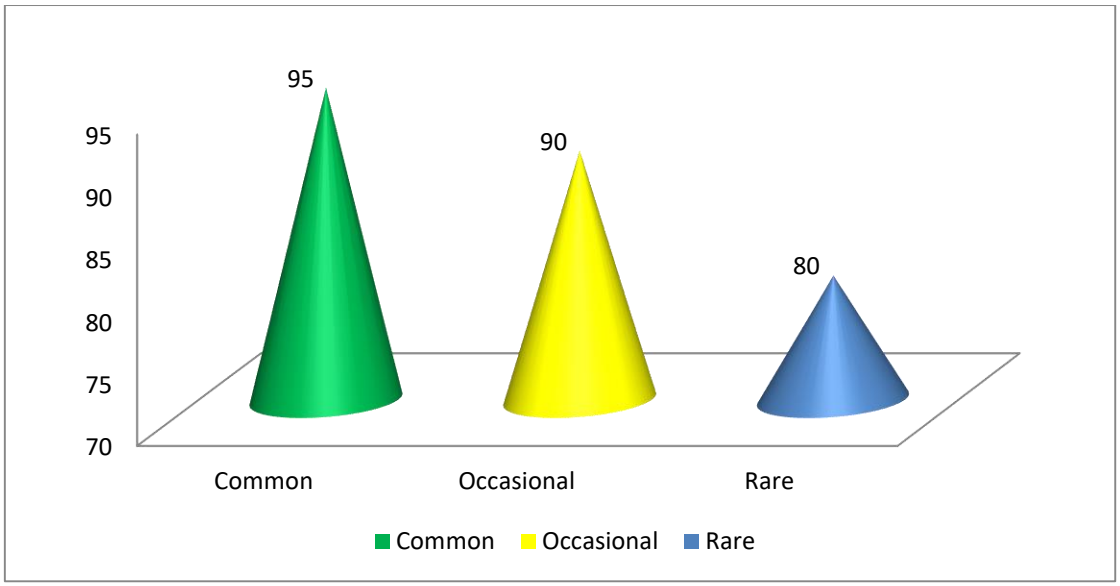


Fig:5- Occurrence of the plant species in Shaheed Chandra Shekhar Azad Bird Sanctuary, Uttar Pradesh.

The floristic account of Shaheed Chandra Shekhar Azad Bird Sanctuary, Uttar Pradesh is significant as it provides the current and latest status of the Pteridophytes and Angiosperms. The accounts, or floras, represent a fundamental tool in botanical science, providing a comprehensive inventory of the plant life within a defined geographical area. These accounts extend beyond simple species list, encompassing critical information on distribution, abundance, ecological roles, and taxonomic relationships. In an area marked by rapid environment change, the importance of accurate and up-to-date floristic accounts has been more pronounced **(Table:1).**

Table:1- Diversity of plant in Shaheed Chandra Shekhar Azad Bird Sanctuary, Uttar Pradesh

PTERIDOPHYTES						
S.No.	**Accepted Name**	**Common Name**	**Family**	**Field No.**	**Habit**	**Occurance**
1.	*Dryopteris cycadina* (Franch. & Sav.) C. Chr.	Shaggy shield fern	Polypodiaceae	17	Herb	Common
2.	*Dryopteris ludoviciana* (Kunze) Small	Southern woodfern	Polypodiaceae	18	Herb	Occasional
3.	*Marsilea minuta* L.	Sushni saag, Sava,	Marsileaceae	36	Herb	Common
4.	*Azolla pinnata* R. Br.	Mosquito fern	Salviniaceae	37	Herb	Common
ANGIOSPERMS						
5.	*Ranunculus sceleratus* L.	Celery-leaf buttercup	Ranunculaceae	38	Herb	Abundant
6.	*Cocculus hirsutus* (L.) W. Theob.	Jal-Jamini	Menispermaceae	173	Herb	Rare
7.	*Tinospora sinensis* (Lour.) Merr	Amrita, Giloe	Menispermaceae	137	Climber	Occasional
8.	*Nymphaea nouchali* Burn1.f.,	Turkia anar, Chhota Kamal	Nymphaeaceae	39	Herb	Abundant
9.	*Nymphaea pubescens* Willd.	Pink water-lily, Kumudini	Nymphaeaceae	40	Herb	Abundant
10.	*Argemone mexicana* L.	Prickly poppy	Papaveraceae	84	Herb	Occasional
11.	*Nelumbo nucifora* Gaertn.	Lotus, Kamal	Nelumbonaceae	12	Herb	Abundant
12.	*Lepidium didymium* L.	Wart-cress	Brassicaceae	285	Herb	Rare
13.	*Rorippa indica* (L.) Hiern	Indian field-cress	Brassicaceae	282	Herb	Rare
14.	*Mutarda nigra* (L.) Bernh.	Kali sarson	Brassicaceae	87	Herb	Occasional

15.	*CIeome viscosa* L.	Peela hur-hur	Cleomaceae	96	Herb	Rare
16.	*Spergula arvensis* L.	Jangli dhania,	Caryophyllaceae	191	Herb	Rare
17.	*Stellaria media* (L.) Vill.	Chickweed	Caryophyllaceae	197		Occasional
18.	*Arenaria serpyllifolia* Boiss. & Reut.	Thyme-leaf sandwort	Caryophyllaceae	76	Herb	Rare
19.	*Bergia capensis* L.	White water fire	Elatinaceae	128	Herb	Occasional
20.	*Abutilon indicum* (L.) Sweet	Kanghi	Malvaceae	72	Herb	Rare
21.	*Malvastrum coromandelianum* (L.) Garcke	Threelobe false mallow	Malvaceae	225	Herb	Common
22.	*Sida acuta* Bunn.f.	Mahabala	Malvaceae	212	Herb	Common
23.	*Sida cordata* (Bunn.f.) Borss. Waalk.	Farash-buti	Malvaceae	168	Herb	Occasional
24.	*Sida rhombifolia* L.	Atibala	Malvaceae	213	Shrub	Rare
25.	*Urena lobata* L.	Kunguaya	Malvaceae	192	Under shrub	Rare
26.	*Melochia corchorifolia* L.	Chocolate weed	Malvaceae	131	Under shrub	Occasional
27.	*Corchorus aestuans* L.	East Indian Mallow	Malvaceae	214	Herb	Rare
28.	*Corchorus capsularis* L.	Jute	Malvaceae	132	Herb	Rare
29.	*Triumfetta pentandra* A. Rich.	Fivestamen Burrbark	Malvaceae	215	Herb	Rare
30.	*Triumfetta rhomboidea* Jacq.	Bhora, Chiki	Malvaceae	193	Herb	Rare
31.	*Oxalis corniculata* L.	Creeping wood sorrel	Oxalidaceae	41	Herb	Occasional
32.	*Oxalis debilis* Kunth	Large flowered pink-sorrel	Oxalidaceae,	42	Herb	Rare
33.	*Azadirachta indica* Juss.	Neem	Meliaceae	16	Tree	Occasional
34.	*Ziziphus nummularia* (Bunn.f.) Wight & Arn.	Wild jujube or jhahrberi	Rhamnaceae	20	Shrub	Occasional
35.	*Ziziphus oenopolia* (L.) Mill	Jackal jujube	Rhamnaceae	06	Shrub	Occasional
36.	*Cyphostemma auriculatum* (Roxb.) P. Singh & B. V. Singh	Earaghatta, Kali Vel	Vitaceae	216	Succulent climber	Rare
37.	*Abrus prccatorius* L.	Ratti, ghunchu	Fabaceae	167	Climbing shrub	Rare
38.	*Aeschynomene indicum* L.	Laugauni	Fabaceae	217	Under shrub	Rare
39.	*Aeschynomene virginica* (L.) Britton, Sterns & Poggenb	Bara-Khurkhundi	Fabaceae	219	Shrub	Rare
40.	*Cullen corylifolium* (L.) Medik.	Babaki	Fabaceae	169	Herb	Rare
41.	*Dalbergia sissoo* Roxb.	Shisham	Fabaceae	09	Tree	Common
42.	*Pleurolobus gangeticus* (L) J. St.-Hil. Ex H.Ohashi & K. Ohashi	Salparni, Sarivar	Fabaceae	281	Under shrub	Occasional
43.	*Lathyrus sativus* L.	Jungle mater	Fabaceae	170	Herb	Common
44.	*Medicago polymorpha* L.	Toothed bur clover	Fabaceae	220	Herb	Common
45.	*Melilotus albus* Medik	Ran Methi	Fabaceae	194	Herb	Common
46.	*Pongamia pinnata* (L.) Pierre	Karanj	Fabaceae	221	Tree	Common
47.	*Trifolium alxandrium* L.	Burseem	Fabaceae	171	Herb	Rare
48.	*Trigonella balansae* Boiss. & Reut.	Sickle-Fruit Fenugreek	Fabaceae	218	Herb	Rare
49.	*Vicia hirsuta* (L.) Gray	Hairy vetch	Fabaceae	172	Herb	Occasional
50.	*Bauhinia variegata* L.	Kachnar	Fabaceae	10	Tree	Common
51.	*Guilandina bonduc* L.	Kanja	Fabaceae	222	Lianas	Rare
52.	*Cassia fistula* L.	Amaltas	Fabaceae	134	Tree	Common
53.	*Peltophorum pterocarpum* (DC.) Backer ex K. Keyne	Peela-Gulmohar	Fabaceae	195	Tree	Occasional
54.	*Senna occidentalis* (L.) Link	Bara-Chakwar	Fabaceae	135	Herb	Common
55.	*Senna tora* (L.) Roxb.	Chakwar	Fabaceae	223	Under	Occasional

					shrub	
56.	*Acacia auriculiformis* A. Cunn. ex Benth.	Ear-pod Wattle	Fabaceae	196	Tree	Rare
57.	*Acacia leucophloea* (Roxb.) Maslin, Seigler & Ebinger	Desi Kikar, Jand	Fabaceae	73	Tree	Rare
58.	*Vachellia nilotica* (L.) P.J.H. Hurter & Mabb.	Babool, Kikar	Fabaceae	70	Tree	Rare
59.	*Albizia lebbeck* (L.) Benth	Siris	Fabaceae	136	Tree	Occasional
60.	*Albizia odoratissima* (L f.) Benth.	Kali-Siris	Fabaceae	224	Tree	Rare
61.	*Neptunia oleracea* Lour.	Laj-alu	Fabaceae	85	Herb	Rare
62.	*Pithecellobium dulce* (Roxb.)Benth.	Jungle Jalebee	Fabaceae	138	Tree	Occasional
63.	*Neltuma juliflora* (Sw.) Raf.	Kabuli Kikar	Fabaceae	139	Tree	Rare
64.	*Terminalia arjuna* (Roxb. Ex DC) Wight & Arn.	Arjun tree, Koha, Kahu	Combretaceae	07	Tree	Abundant
65.	*Eucalyptus umbellata* Dum. 0Cours.	Safeda	Myrtaceae	21	Tree	Common
66.	*Psidium guajava* L.	Amrud	Myrtaceae	140	Tree	Common
67.	*Syzygium cumini* (L.) Skeels	Jamun	Myrtaceae	142	Tree	Occasional
68.	*Melaleuca citrinus* (Curtis) Dum. Cours.	Bottle brush	Myrtaceae	27	Shrub	Rare
69.	*Barringtonia acutangula* (L.) Gaertn.	Neer kadambu	Lecythidaceae	141	Tree	Rare
70.	*Ammannia baccifera* L.	Bhar~Jambhal	Lythraceae	133	Herb	Rare
71.	*Ammannia multiflora* Roxb.	Jerry-jerry	Lythraceae	197	Herb	Rare
72.	*Lagerstroemia indica* L.	Bonnet Flower	Lythraceae	174	Shrub	Occasional
73.	*Rotala indica* (Willd.) Koehne	Indian toothcup	Lythraceae	263	Herb	Common
74.	*Ludwigia adscendens* (L.) H. Hara	Kessara	Onagaraceae	119	Herb	Common
75.	*Ludwigia octovalvis* (Jacq.) P.H.Raven.	Primrose Willow	Onagaraceae	156	Herb / Under shrub	Common
76.	*Ludwigia pcrcnnis* L.	Perennial Water Primrose	Onagaraceae	88	Herb	Rare
77.	*Trapa natans* L.	Water chestnut	Trapaceae	43	Herb	Common
78.	*Coccinia grandis* (L.) Voigt	Kundru	Cucurbitaceae	15	Herb	Common
79.	*Momordica charantia* L.	Karela	Cucurbitaceae	252	Sub shrub	Common
80.	*Trichosanthes cucumerina* L.	Chichhinda, snake gourd	Cucurbitaceae	68	Herb	Rare
81.	*Glinus lotoides* L.	Hairy carpetweed	Mollugjnaceae	120	Herb	Occasional
82.	*Glinus oppositifolius* L.	Slender Carpet-weed	Mollugjnaceae	237	Herb	Rare
83.	*Coriandrum sativum* L.	Dhania	Apiaceae	157	Herb	Occasional
84.	*Centella asiatica* (L.) Urb.	Hotu kola	Apiaceae	275	Herb	Occasional
85.	*Oldenlandia corymbosa* L.	Old world diamond flower	Rubiaceae	288	Herb	Occasional
86.	*Acmella paniculata* (Wall. ex DC.) R.K.Jansen	Akkalgaro	Asteraceae	198	Herb	Common
87.	*Ageratina ligustrina* (DC.) R.M.King & H.Rob.	Privet-leaved snakeroot	Asteraceae	121	Shrub	Rare
88.	*Ageratum conyzoides* L.	Billygoat-weed	Asteraceae	25	Herb	Abundant
89.	*Ageratum houstonianum* Mill.	Flossflower, blueweed	Asteraceae	199	Herb	Rare
90.	*Blumea lacera* (Burm. F.) DC.	Janglimulli, Kukrondha	Asteraceae	28	Herb	Occasional
91.	*Caesulia axillaris* Roxb.	Gathila	Asteraceae	158	Herb	Occasional
92.	*Cirsium arvense* L.	Sialkanta	Asteraceae	201	Herb	Common
93.	*Cyanthillium cinereum* L.	Sahadevi	Asteraceae	04	Herb	Occasional
94.	*Eclipta prostrata* L.	Ghantira	Asteraceae	122	Herb	Common

95.	*Gamochaeta pensylvanica* (Willd.) Cabrera	Dhoodu	Asteraceae	200	Herb	Rare
96.	*Gnaphalium polycaulon* Pers.	Many-Stemmed Cudweed	Asteraceae	175	Herb	Common
97.	*Grangea maderaspatana* L.	Mustaru	Asteraceae	125	Herb	Rare
98.	*Launaea procumbens* (Roxb.) Ramayya & Rajagopal	Jangi Gobi	Asteraceae	08	Herb	Common
99.	*Parthenium hysterophorus* L.	Congress grass	Asteraceae	274	Herb	Common
100.	*Sonchus asper* L.	Prickly sow-thistle	Asteraceae	126	Herb	Common
101.	*Tridex procumbens* L.	Ghamra	Asteraceae	202	Herb	Occasional
102.	*Xanthium strumarium* L.	Common Cocklebur	Asteraceae	23	Shrub	Common
103.	*Erigeron bonariensis* L.	Fleabane, hairy horseweed,	Asteraceae	03	Herb	Rare
104.	*Sphenoclea zeylanica* Gaertn.	Chickenspik, gooseweed	Sphenocleaceae	176	Herb	Common
105.	*Anagallis arvensis* L.	Red chickweed	Primulaceae	159	Herb	Common
106.	*Cascabela thevetia* L.	Pila Kaner	Apocyanaceae	203	Large Shrub	Rare
107.	*Nerium oleander* L.	Lal kaner	Apocyanaceae	204	Shrub	Rare
108.	*Tabernaemontana divaricata* L.	Chandni	Apocyanaceae	160	Shrub	Occasional
109.	*Calotropis gigantean* L.	Aak	Ascelpiadaceae	123	Shrub	Common
110.	*Calotropis procera* L.	Aak, Madar	Ascelpiadaceae	124	Shrub	Occasional
111.	*Nymphoides hydrophylla* (Lour.) Kuntze	Crested floating-heart	Menyanthaceae	44	Herb	Occasional
112.	*Nymphoides indica* (L.) Kuntze	Water snowflake	Menyanthaceae	45	Herb	Occasional
113.	*Hydrolea zeylanica* L.	Koliary	Hydrophyllacea e	205	Herb	Common
114.	*Heliotropium indicum* L.	Hathisunda	Boraginaceae	206	Herb	Occasional
115.	*Cordia dichotoma* G. Forst.	Lasoda	Boraginaceae	77	Tree	Occasional
116.	*Cordia sebestena* L.	Sebesten Plum Tree	Boraginaceae	78	Tree or Shrub	Rare
117.	*Ipomoea aquatica* Forssk.	Karmua	Convolvulaceae	92	Herb	Abundant
118.	*Ipomoea cairica* L.	Railway creeper	Convolvulaceae	162	Climber	Common
119.	*Ipomoea carnea* Jacq.	Hedge glory, Besaram	Convolvulaceae	05	Shrub	Common
120.	*Ipomoea obscura* L.	Latar phool	Convolvulaceae	163	Herb	Occasional
121.	*Datura metel* L.	Dhatura	Solanaceae	164	Under Shrub	Common
122.	*Datura stramonium* L.	Jimson weed, Dhatura	Solanaceae	165	Under Shrub	Common
123.	*Lycopersicon esculentum* Mill.	Tamatar	Solanaceae	166	Herb	Common
124.	*Nicotiana plumbaginifolia* Viv.	Tex-Mex tobacco	Solanaceae	01	Herb	Rare
125.	*Solanum nigram* L.	Makoi	Solanaceae	127	Herb	Common
126.	*Bacopa monnieri* L.	Brahmi	Scrophulariacea e	128	Herb	Abundant
127.	*Limnophila indica* L.	Indian marshweed	Scrophulariacea e	207	Herb	Abundant
128.	*Bonnaya ciliata* (Colsm.) Spreng.	Hairy Slitwort	Scrophulariacea e	209	Herb	Rare
129.	*Lindernia procumbens* (Krock.) Philcox	Creeping slitwort	Scrophulariacea e	177	Herb	Abundant
130.	*Verbascum chinense* L.	Bhutakeshi	Scrophulariacea e	129	Herb	Common
131.	*Veronica anagallis-aqatica* L.	Water speedwell	Scrophulariacea e	208	Herb	Common

132.	*Utricularia aurea* Lour.	Bladderwort	Lentibulariaceae	210	Herb	Common
133.	*Utricularia gibba* L.	Floating bladderwort	Lentibulariaceae	130	Herb	Rare
134.	*Utricularia stellaris* L.	Star Bladderwort	Lentibulariaceae	211	Herb	Rare
135.	*Kigelia africana* (Lam.) Benth.	Balam khira	Bignoniaceae	79	Tree	Rare
136.	*Justicia gendarussa* Burm. f.	Nili nirgunthi	Acanthaceae	178	Shrub	Common
137.	*Hygrophila auriculata* (Schumach.) Heine	Talmathana	Acanthaceae	179	Herb	Common
138.	*Hygrophila polysperma* (Roxb.) T. Anderson	Indian waterweed	Acanthaceae	106	Herb	Occasional
139.	*Justicia adhatoda* L.	Adusa	Acanthaceae	75	Shrub	Common
140.	*Rostellularia quinqueangularis* (J. Koenig ex Roxb.) Nees	Five-Angled Justicia	Acanthaceae	107	Herb	Common
141.	*Dicliptera paniculata* (Forssk). I. Darbysh.	Atrilal	Acanthaceae	226	Herb	Rare
142.	*Ruellia tuberosa* L.	Snapdragon root	Acanthaceae	71	Herb	Occasional
143.	*Rungia pectinata* L.	Kharmauria	Acanthaceae	147	Herb	Rare
144.	*Clerodendrum indicum* L.	Bharangi	Verbenaceae	227	Shrub	Common
145.	*Clerodendrum phlomidis* L.f.	Arni	Verbenaceae	148	Shrub	Common
146.	*Lantana camara* L.	Baramasi, Panch Phuli	Verbenaceae	83	Shrub	Common
147.	*Phyla nodiflora* L.	Bukkan	Verbenaceae	24	Herb	Common
148.	*Hyptis suaveolens* L.	Pignut	Lamiaceae	108	Herb	Occasional
149.	*Orthosiphon pallidus* Royle ex Benth.	Pratanika	Lamiaceae	228	Herb	Common
150.	*Galeopsis segetum* Neck.	Downy hemp-nettle	Lamiaceae	19	Herb	Rare
151.	*Bougainvillea spectabilis* Wild.	Boganvel	Nyctaginaceae	109	Shrub	Common
152.	*Achyranthes aspera* L.	Latjira, Chirchira,	Amaranthaceae	11	Herb	Abundant
153.	*Aerva sanguinolenta* L.	Karadia	Amaranthaceae	229	Herb	Common
154.……	*Alternanthera bettzickiana* (Regel) G. Nicholson	Smooth Joyweed	Amaranthaceae	149	Herb	Rare
155.	*Alternanthera philoxeroides* (Mart.) Griseb	Alligator weed	Amaranthaceae	145	Herb	Occasional
156.	*Alternanthera pungens* Kunth	Khaki weed	Amaranthaceae	99	Herb	Common
157.	*Alternanthera sessilis* L.	Sissoo spinach,	Amaranthaceae	26	Herb	Common
158.	*Amaranthus spinosus* L.	Katili chaulai	Amaranthaceae	230	Herb	Common
159.	*Amaranthus viridis* L.	Jangali chaulai,	Amaranthaceae	34	Herb	Common
160.	*Centrostachys aquatic* (R.Br.) Moq.	Water scratch grass	Amaranthaceae	232	Herb	Rare
161.	*Chenopodium album* L.	Bathua	Amaranthaceae	150	Herb	Common
162.	*Chenopodium murale* L.	Australian-spinach	Amaranthaceae	151	Herb	Rare
163.	*Basella alba* L.	Poi	Basellaceae	231	Herb	Occasional
164.	*Persicaria barbatum* (L.) H. Hara	Knot grass	Polygonaceae	116	Herb	Common
165.	*Persicaria glabra* (Willd.) M. Gomez.	Dense flower knotweed	Polygonaceae	238	Herb	Common
166.	*Persicaria hydropiper* (L.) Delarbre	Marshpepper knotweed	Polygonaceae	240	Herb	Rare
167.	*Persicaria lapathifolium* (L.) Delarbre	Curlytop knotweed	Polygonaceae	117	Herb	Rare
168.	*Persicaria limbata* (Meisn.) H. Hara	Knotweed	Polygonaceae	97	Herb	Occasional
169.	*Polygonum plebeium* R. Br.	Small Knotweed	Polygonaceae	250	Herb	Rare

170.	*Rumex dentatus* L.	Wild spinach	Polygonaceae	69	Herb	Common
171.	*Persicaria maculosa* Gray	Smartweed, knotweed	Polygonaceae	67	Herb	Rare
172.	*Peperomia pellucida* (L.) Kunth	Pepper elder	Piperaceae	289	Herb	Rare
173.	*Acalypha indica* L.	Khokle, Kuppi	Euphorbiaceae	152	Herb	Common
174.	*Croton bonplandianus* L.	Kala Bhangra	Euphorbiaceae	244	Herb	Occasional
175.	*Chrozophora rottleri* (Geiseler) Spreng.	Suryavarti	Euphorbiaceae	249	Herb	Common
176.	*Euphorbia heterophylla* L.	Doohi	Euphorbiaceae	100	Herb	Common
177.	*Euphorbia heyneana* L.	Clark's Spurge	Euphorbiaceae	246	Herb	Common
178.	*Euphorbia hirta* L.	Dudhi	Euphorbiaceae	118	Herb	Common
179.	*Phyllanthus reticulatus* Poir.	Tilhari	Euphorbiaceae	248	Shrub	Common
180.	*Ricinus communis* L.	Arandi	Euphorbiaceae	101	Shrub	Common
181.	*Holoptelea integrifolia* (Roxb.)Planch.	Chilbil	Ulmaceae	102	Tree	Common
182.	*Cannabis sativa* L.	Charlotte's Web	Cannabaceae	74	Herb	Common
183.	*Ficus racemose L.*	Cluster fig, Gular	Moraceae	80	Tree	Common
184.	*Ficus religiosa* L.	Bodhi tree, peepul tree	Moraceae	22	Tree	Common
185.	*Morus alba* L.	Sahtoot	Moraceae	247	Tree	Occasional
186.	*Streblus asper* L.	Sihore	Moraceae	241	Tree	Rare
187.	*Ceratophyllum demersum* L.	Hornwort,	Ceratophyllaceae	46	Herb	Common
188.	*Hydrilla verticillata* L.f.	Water thyme	Hydrocharitaceae	47	Herb	Common
189.	*Ottelia alismoides* L.	Duck lettuce	Hydrocharitaceae	48	Herb	Common
190.	*Vallisneria spiralis* L.	Tape grass, or eel grass	Hydrocharitaceae	49	Herb	Occasional
191.	*Pontederia crassipes* Mart.	Water hyacinth	Pontederiaceae	13	Herb	Common
192.	*Pontederia vaginalis* Burm.f.	Oval-leafed pondweed.	Pontederiaceae	50	Herb	Occasional
193.	*Commelina benghalensis* L.	Kankaua	Commelinaceae	103	Herb	Occasional
194.	*Commelina erecta* L.	Slender dayflower	Commelinaceae	251	Herb	Common
195.	*Commelina caroliniana* Walter	Baby dayflower	Commelinaceae	90	Herb	Occasional
196.	*Commelina virginica* L.	Jalpipari,	Commelinaceae	187	Herb	Occasional
197.	*Commelina paludosa* Blume	Kanshira	Commelinaceae	245	Herb	Occasional
198.	*Cyanotis axillaris* L.	Kana	Commelinaceae	243	Herb	Occasional
199.	*Juncus bufonius* L.	Toad rush	Juncaceae	104	Herb	Occasional
200.	*Typha angustifolia* L.	Narrow-leaved cattail	Typhaceae	14	Herb	Common
201.	*Phoenix sylvestris* L.	Khajuri	Araceae	02	Tree	Occasional
202.	*Pistia stratiotes* L.	Water lettuce	Araceae	51	Herb	Occasional
203.	*Lemna minor* Torr.	Minute duckweed	Araceae	52	Herb	Common
204.	*Spirodela polyrhiza* (L.) Schleid.	Greater Duckweed	Araceae	53	Herb	Abundant
205.	*Wolffia globosa* (Roxb.) Hartog & Plas	Asian watermeal	Araceae	54	Herb	Common
206.	*Albidella oligococca* (F.Muell.) Lehtonen	Caldesia	Alismataceae	55	Herb	Common
207.	*Limnophyton obtusifolium* L.	Arrow head	Alismataceae	56	Herb	Rare
208.	*Sagittaria guayanensis* Kunth	Guyanese arrowhead	Alismataceae	57	Herb	Occasional
209.	*Sagittaria sagittifolia* L.	Katniss, duck potato	Alismataceae	58	Herb	Common
210.	*Butomopsis latifolia* (D. Don) Kunth	Karchhul Saag	Butomaceae	59	Herb	Rare
211.	*Najas graminea* Delile	Ricefield waternymph	Najadaceae	60	Herb	Rare
212.	*Aponogeton crispus* Thunb	Water hyssop	Aponongetonac	61	Herb	Occasional

			eae			
213.	*Potamogeton crispus* L.	Curly-leaf pondweed	Potamogetonaceae	62	Herb	Occasional
214.	*Potamogeton pectinatus* L.	Sago pondweed	Potamogetonaceae	63	Herb	Occasional
215.	*Potamogeton perfoliatus* L.	Claspingleaf pondweed	Potamogetonaceae	64	Herb	Rare
216.	*Zannichellia palustris* L.	Horned pondweed	Zannichelliaceae	65	Herb	Occasional
217.	*Eriocaulon quinquangulare* L.	Pipewort	Eriocaulaceae	66	Herb	Rare
218.	*Abildgaardia ovata (*Burm. f.) Kral.	Flatspike sedge	Cyperaceae	144	Herb	Rare
219.	*Bolboschoenus maritimus* (L.) Palla	Sea clubrush	Cyperaceae	283	Herb	Rare
220.	*Cyperus alopecuroides* Rottb.	Pater	Cyperaceae	89	Herb	Occasional
221.	*Cyperus alulatus* J. Kern.	Winged Sedge	Cyperaceae	239	Herb	Rare
222.	*Cyperus brevifolius* (Rottb.) Hassk.	Shortleaf Spikesedge	Cyperaceae	153	Herb	Common
223.	*Cyperus corymbosus* Rottb.	Jointed Flatsedge	Cyperaceae	188	Herb	Rare
224.	*Cyperus difformis* L.	Umbrella-sedge	Cyperaceae	154	Herb	Rare
225.	*Cyperus exaltatus* Retz.	Giant sedge	Cyperaceae	105	Herb	Occasional
226.	*Cyperus iria* L.	Rice flatsedge	Cyperaceae	276	Herb	Occasional
227.	*Cyperus imbricatus* Retz.	Shingle flatsedge	Cyperaceae	189	Herb	Rare
228.	*Cyperus laevigatus* L.	Smooth flatsedge	Cyperaceae	81	Herb	Rare
229.	*Cyperus nutans* Vahl	Drooping Sedge	Cyperaceae	155	Herb	Rare
230.	*Cyperus platystylis* R. Br.	Nut grass	Cyperaceae	287	Herb	Common
231.	*Cyperus rotundus* L.	Purple nutsedge	Cyperaceae	190	Herb	Common
232.	*Eleocharis acutangula* (Roxb.)Schult	Acute Spikerush	Cyperaceae	110	Herb	Rare
233.	*Eleocharis atropurpurea* Retz.	Purple spikerush	Cyperaceae	111	Herb	Occasional
234.	*Eleocharis dulcis* Burm.f.	Water Chestnut	Cyperaceae	91	Herb	Common
235.	*Fimbristylis dichotoma* L.	Fringe-rush	Cyperaceae	161	Herb	Occasional
236.	*Fimbristylis littoralis* Gaudich.	Grass-like Fimbry	Cyperaceae	253	Herb	Occasional
237.	*Fimbristylis squarrosa* Vahl	Fimbristylis	Cyperaceae	233	Herb	Rare
238.	*Schoenoplectiella articulata* (L) Lye.	Jointed flatsedge	Cyperaceae	93	Herb	Common
239.	*Schoenoplectus lacustris* (L.) Palla	Clubrush	Cyperaceae	181	Herb	Rare
240.	*Schoenoplectiella lateriflora* (J. F. Gmel.) Lye.	Wood club-rush	Cyperaceae	182	Herb	Rare
241.	*Schoenoplectus litoralis* (Schard) Palla	Bulrush	Cyperaceae	112	Herb	Occasional
242.	*Schoenoplectus triqueter* (L.) Palla	Ricefield bulrush	Cyperaceae	94	Herb	Rare
243.	*Bothriochloa pertusa* L.	Chinna-karai pullu	Poaceae	183	Herb	Common
244.	*Enterpogon dolichostachyus* (Lag.) Keng	Long-spike finger grass	Poaceae	98	Herb	Occasional
245.	*Cynodon dactylon* L.	Dhoob, dūrvā grass	Poaceae	33	Herb	Abundant
246.	*Desmostachya bipinnata* L.	Sacrificial grass, Darbha, and Kusha	Poaceae	32	Herb	Occasional
247.	*Dichanthium annulatum* Forssk,	Marvel grass	Poaceae	184	Herb	Occasional
248.	*Digitaria ciliaris* Retz.	Southern	Poaceae	113	Herb	Common

		crabgrass				
249.	*Echinochloa colona* L.	Jungle rice	Poaceae	185	Herb	Occasional
250.	*Echinochloa crusgalli* L.	Water grass	Poaceae	30	Herb	Rare
251.	*Echinochloa frumentacea* Roxb.	Japanese millet	Poaceae	146	Herb	Rare
252.	*Echinochloa stagnina* Retz.	Hippo grass	Poaceae	95	Herb	Occasional
253.	*Eragrostis atrovirens* Desf.	Thalia lovegrass	Poaceae	114	Herb	Occasional
254.	*Eragrostis sapra* (Jack) Nees.	Slimflower Lovegrass	Poaceae	186	Herb	Common
255.	*Hygrorhyza aristata* Retz.	Bengal wild rice	Poaceae	234	Herb	Occasional
256.	*Imperata cylindrical* L.	Cogongrass	Poaceae	236	Herb	Occasional
257.	*Oplismenus burmanni* (Retz.) P. Beauv.	Shara	Poaceae	35	Herb	Common
258.	*Oryza rufipogon* Griff.	Brownbeard rice	Poaceae	86	Herb	Occasional
259.	*Panicum paludosum* Roxb.	Panicgrass	Poaceae	235	Herb	Rare
260.	*Paspalidium fladium* Burm.f.	Angola grass	Poaceae	115	Herb	Occasional
261.	*Paspalum scrobiculatum* L.	Kodo millet	Poaceae	242	Herb	Common
262.	*Paspalum vaginatum* Sw.	Seashore paspalum	Poaceae	31	Herb	Occasional
263.	*Saccharum bengalense* Retz.	Munj, Baruwa grass	Poaceae	143	Herb	Common
264.	*Setaria verticillata* (L.) P. Beauv.	Bristly foxtail	Poaceae	180	Herb	Common
265.	*Vetiveria lawsonii* Hook. f.	Moras	Poaceae	29	Herb	Common

Conclusion:

The floristic survey of Shaheed Chandra Shekhar Azad Bird Sanctuary revealed a highly diverse vascular plant community, comprising 265 species, including 261 angiosperms and 4 pteridophytes, across 193 genera and 69 families. The sanctuary's mosaic of wetlands, aquatic zones, marshes, and terrestrial habitats supports a wide range of plant life forms, with herbs being the most dominant, followed by shrubs, trees, climbers, and lianas. Fabaceae, Cyperaceae, and Poaceae emerged as the most prominent families, reflecting patterns observed in other Indian wetlands. The distribution of species as common, occasional, and rare highlights the ecological heterogeneity and the importance of the sanctuary in maintaining regional plant diversity. This study provides a comprehensive baseline floristic inventory for SCSABS, which can inform future ecological monitoring, habitat management, and conservation planning. Continued research, including quantitative vegetation analyses and long-term monitoring, is recommended to understand ecosystem dynamics and support effective biodiversity conservation.

ACKNOWLEDGMENT:

The authors are thankful to the Director, Higher Education Department, U.P., for funding this project. We are also thankful to the Department of forest, Wildlife Conservation Department, Government of India for the necessary permits to carry out field work in protected areas. Our sincere gratitude to the staff of SCSABS for their kind support during field work and studies.

(Project is funded by Research and Development Cell, Higher Education Department, Uttar Pradesh, India)
Source of financial Support: 427/ रा0 उ0 शि0 प0 /01/2021, दिनाँक:16.09.2022 एवं पत्र संख्या- 442/ रा0 उ0 शि0 प0 /01/2021, दिनाँक: 22.09.2022.
Conflict of Interest: None, Declared.

References:

[1] Agnihotri, P., T. Hussain, and D. Maliya, (2008). Aquatic flora of some notified bird sanctuary of Uttar Pradesh., *Indian Forester*. 134: 1398-1401.

[2] Biswas, K. and Calde, C. C. (1937). Hand-book of Common Water and Marshy Plants of India and Burma (Govt. Press, Delhi).

[3] Chathrath, K., J. S. (1992). *Wetlands of India*. Ashish Publ. House. New Delhi. PP 1 – 196.

[4] Cook, C. and D. K. (1976). Aquatic and wetland plants of India. Oxford University Press, 1996. London, Deb DB. A study on the aquatic vascular plants of India. *Bulletin of the Botanical Society of Bengal* 29: 155-230.

[5] Das, D, Mondal. S. and Manda .S. (2016). Studies on Some Economically Important Aquatic Plants of Katwa Subdivision of Burdwan District, West Bengal, India, *International Journal of Current Microbiology and Applied Sciences* 5 (6): 961-972.

[6] Dugan, P. J. (1990). *Wetland conservation: A review of current issues and required action*. IUCN, Gland, Switzerland, 96 pp.

[7] Duthie, J. F. (1903-1929). *Flora of Upper Gangatic Plain and of the adjacent Siwalik & Sub-Himalayan tracts.* 3 Vol. Govt. Press, Calcutta.

[8] Garg. A. (2019). *Flora of Saheed Chandra Shekhar Azad Bird Sanctuary, Uttar Pradesh* (Formerly Known as Nawabganj Bird Sanctuary). BSI, Kolkata.

[9] Hooker, J. D. (1872-1897). *The Flora of British India*. 7 London.

[10] Jain, S. K. & R. R. Rao (1977). *A Handbook of field and Herbarium Methods.* Today and Tomorrow's Print and Publ. New Delhi.

[11] Kanaujia, A., A. Kumar, A. Kumar, S. Kushwaha, and A. Kumar (2014). A Blooming Fungal diversity of Nawabganj Bird Sanctuary, Unnao, Uttar Pradesh, India. *Journal of Environmental Science and Technology*. 2(2): 14-24.

[12] Khanna, K. K. (2015a). Aquatic and marshy plants of Parvati Arga wetland, Gonda district, Uttar Pradesh, India. *J. Econ. Taxon. Bot.* 39(2): 392–406.

[13] Mishra, S. and Narain, S. (2014). Aquatic and marshy angiospermic diversity of Eastern Uttar Pradesh. *Indian Journal of Plant Sciences* 3 (2): 63-75.

[14] Narain, S. and S. Mishra (2008). A list of aquatic and marshy of Bundelkhand region of Uttar Pradesh. *Indian Journal of Forestry*. 31(2): 301-308.

[15] Narain, S. and Kumar, S. (2008). Phytodiversity of Nawabganj Bird Sanctuary, Unnao, Uttar Pradesh, India. *Phytotaxonomy*. 8: 76-80.

[16] Prajapati, V. K. and M. V. P. V. Singh (2024). Wetland flora of Shaheed Chandra Shekhar Azad Bird Sanctuary (SCSABS)- A Natural resources for food and breeding for Avian Fauna. *Octa Journsl of Environmental Research*. 12(03): 001- 015.

[17] Prasad, V. P., Chowdhary, S. D., Jana, B. and Maji, A. (2020). Cyperraceae In: *Flowering Plants of India: An Annotated Checklist; Monocotyledons*. (Eds. Mao, A. A. and Dash, S. S.) Botanical Survey of India. Kolkata.

[18] Rahul, S. Narain and P. Kumar (2025). *Cyperus Bipartitus* Torr. (Cyperaceae): A New Record for India from Uttar Pradesh. *Indian Forester.* 151(1): 72 – 73.

[19] Saini, D. C., S. K. Singh, and K. Rai (2010). *Biodiversity of Aquatic and Semi-aquatic plants of Uttar Pradesh* (special reference to eastern U.P.). U. P. State Biodiversity Board, Lucknow, U. P., India.

[20] Saini, H. and Kumar, N. (2017). Assessment and Identification of Aquatic Diversity of Wetlands of Yamuna Nagar District, Haryana, India. *International journal of life sciences scientific research* 3(4): 1253-1261.

[21] Subramanyam, K. (1962). Aquatic Angiosperms: a systematic account of common Indian aquatic angiosperms. *Botanical Monograph* 3(1-6): 1-190. CSIR, New Delhi.

[22] Subramanyam, K. (1979). Studies on Indian *Utricularia* Linn. A review. Journal of the Indian Botanical Society 58(1): 1- 16.

[23] Trivedi, B. S. and P. C. Sharma (1965). Studies on the hydrophytes of Lucknow and environs. *Prodc. Nat. Acad. Sci. India*. 35: 1 – 14.

[24] Verma, D. M. and A. S. Rao (1982). Cyperaceae of North - East India. *Botanical survey of India.* Howrah.