DISCOVERY

Vascular plant diversity of Sonaimuri Upazila, Noakhali, Bangladesh

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To Cite:
Uddin MS. Vascular plant diversity of Sonaimuri Upazila, Noakhali, Bangladesh. *Discovery* 2023; 59: e123d1383
doi: https://doi.org/10.54905/disssi.v59i333.e123d1383

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Peer-Review History
Received: 08 September 2023
Reviewed & Revised: 12/September/2023 to 13/November/2023
Accepted: 17 November 2023
Published: 21 November 2023

Peer-Review Model
External peer-review was done through double-blind method.

Discovery
pISSN 2278–5469; eISSN 2278–5450

ABSTRACT

A survey of vascular plant diversity in Sonaimuri Upazila, Noakhali, Bangladesh, was conducted from August 2019 to October 2022. This study recorded 360 species under 248 genera in 87 families, including those cultivated and planted. Based on habit distribution, there are 47% herbs, 15% shrubs, 28% trees, 9% climbers, and 1% epiphytes. The families Fabaceae, Asteraceae, Poaceae, and Euphorbiaceae were the most numerous in terms of species. *Ficus* and *Solanum*, with six species each, are the largest of the ten dominant genera found in the Sonaimuri, followed by *Polygonum* (5 species). For each species, a scientific name, vernacular name, family, plant group, and habit character have been presented. Many anthropogenic activities, the most prevalent of which are land grabs, agricultural expansion following vegetation clearance, infrastructure development, settlement, the gathering of fuel wood and leaf litter, significant visits, and other anthropogenic activities, are endangering the biodiversity of the study area.

Keywords: Vascular plant diversity, Sonaimuri, Noakhali, Bangladesh.

1. INTRODUCTION

To enhance and manage biological resources responsibly, as well as to address and alleviate environmental issues, a nation must have an essential awareness of its biodiversity. Taxonomic research employing diverse data sets the foundation for comprehending and evaluating multiple facets of plant biodiversity. To confirm plant species' identities, descriptions, distributions, origins, evolutions, relationships, classifications, management, and sustainable uses, taxonomic studies provide highly relevant and vital knowledge and expertise. Three thousand eight hundred eighty-six species of vascular plants have been identified in Bangladesh as a result of numerous taxonomic investigations (Hossain et al., 2022).

Since 1814, these investigations have been carried out in multiple forests, regions, small to large administrative territories, and small to moderate-sized households at various times (Roxburgh, 1814). The composition of plant species in many regions or the majority of the country's significant plant families is still unknown or just partially understood (Hossain et al., 2022; Khan et al., 2021a; Khan et al., 2021b;).

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The specific distribution and voucher specimens of the reported plant species are not included in nearly all large-scale Ahmed et al., (2009), Ahmed et al., (2008), Ahmed et al., (2008a), Ahmed et al., (2009), Ahmed et al., (2009c), Prain, (1903), Siddiqui et al., (2007a), Siddiqui et al., (2007b) or many small-scale Ara et al., (2007), Rashid et al., (2018), Rahman, (2013), Rahman, (2018), Uddin and Hassan, (2010), taxonomic publications on the flora of this country (Haque et al., 2018; Hossain et al., 2021; Hossain et al., 2022; Khanam et al., 2020; Khanam and Khan, 2020; Nahar and Rahman, 2016; Rahman et al., 2015; Roy and Khan, 2020; Sarker et al., 2013; Tutul et al., 2010; Uddin et al., 2023; Bakar et al., 2021; Basar & Rahman, 2023; Islam & Rahman, 2023). Thus, it is imperative that more thorough floristic surveys be conducted, collecting data on the distribution patterns and voucher specimens of the plant taxa in the uncharted regions of this nation. Consequently, a thorough floristic study of the entire Sonaimuri upazila is urgently needed. The current study intends to explore and catalog the vascular flora of the Sonaimuri region. An inventory of the vascular flora of the Sonaimuri upazila, Noakhali district, has been made available for the first time in Bangladesh.

2. MATERIALS AND METHODS

The Sonaimuri region, rich in biodiversity, is situated in Bangladesh's Noakhali district. In addition, this area is rich in social, political, and economic conditions as well as in religious harmony, history, heritage, and education (Dash et al., 2020). The current upazila of Sonaimuri was formerly a part of the larger upazila of Begumganj. It was declared Sonaimuri Upazila in 2005 after being split off from Begumganj. Sonaimuri Upazila is a 169.14 sq km territory that lies between latitudes 23°02' and 23°06' north and longitudes 91°00' and 91°13' east. It is surrounded by the upazilas of Chatkhil on the west, Senbagh on the east, Begumganj, and Monoharganj (Comilla) on the south (Figure 1). The Dakatia is the main river of Sonaimuri Upazila, which is a tributary of the Meghna and enters the country at Bagmara in the Comilla district, coming from the Indian state of Tripura.

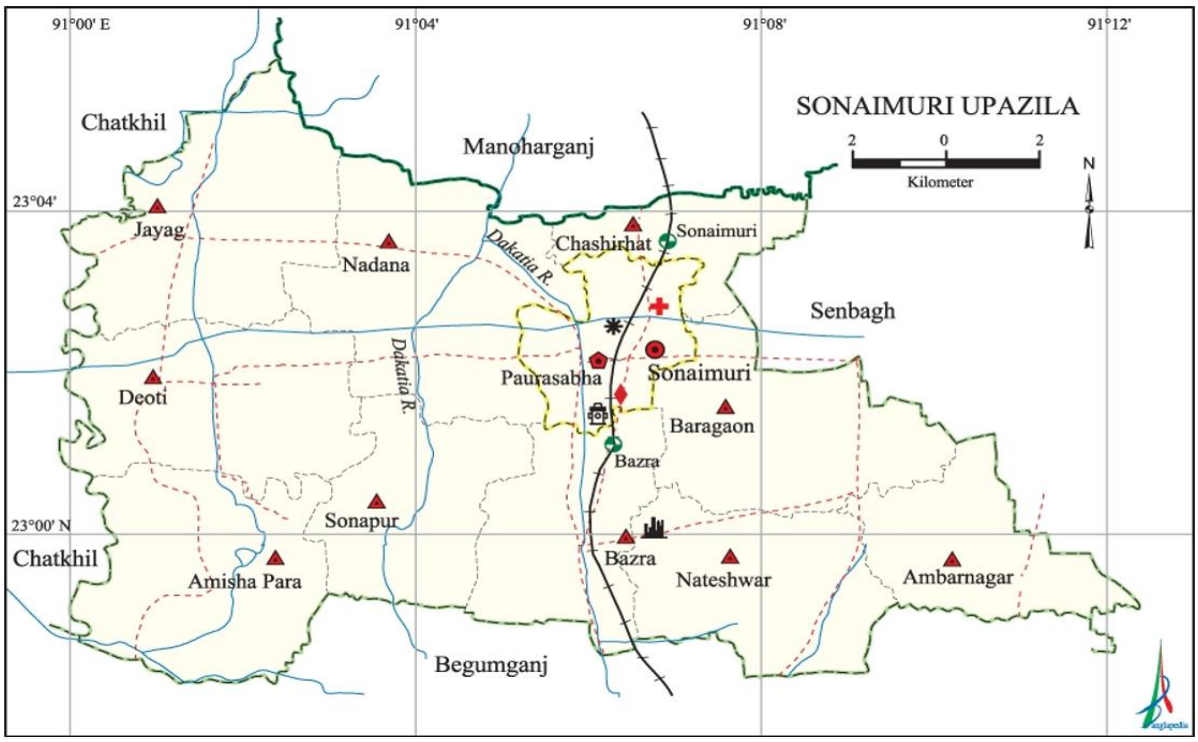

Figure 1 Map of the study area (source: Banglapedia)

This study was conducted in Sonaimuri upazila throughout several 2019–2022 seasons. The plant specimens were collected and identified through repeated field trips (35 in total) from August 2019 to October 2022. Study sites have been selected randomly from all the union areas. The fresh materials were collected during different seasons and brought to the Ethnobotanical Database of Bangladesh Herbarium (EDBH). Photographs have been taken with a digital camera. The collected plant specimens were dried using a plant press with newspaper, and the herbarium sheet was prepared by mounting and labeling the specimens following the standard herbarium technique.

Voucher specimens were preserved, examined, and studied carefully in the Herbarium of EDB (EDBH). The authenticity of the collected specimens was verified through comparison with herbarium specimens housed by the Bangladesh Forest Research

Institute Herbarium (BFRIH), Bangladesh National Herbarium (DACB), and Chittagong University Herbarium (CTGUH). In some cases, standard literature Ahmed et al., (2009), Ahmed et al., (2008), Ahmed et al., (2008a), Ahmed et al., (2009), Ahmed et al., (2009c), Heinig, (1925), Hooker, (1872-1897), Prain, (1903), Siddiqui et al., (2007a), Siddiqui et al., (2007b), Uddin et al., (2014), Uddin et al., (2016), Uddin et al., (2017), Uddin et al., (2019) was consulted for identification purposes. However, for the most recent nomenclature of all specimens, Plants of the World Online by Kew was taken into consideration.

3. RESULTS AND DISCUSSION

A total of 360 angiosperm species classified into 284 genera and 87 families have been documented from the research area in this study. These species comprise about 9.26% of the 3886 plant species that have been reported from Bangladesh (Hossain et al., 2022). The species' scientific name, vernacular name, family, plant group, and habit characteristics are listed alphabetically (Table 1).

Table 1 List of Vascular Plants of Sonaimuri Upazila.

s/n	Scientific Name	Vernacular Name	Family	Plant Group	Habit
1.	*Abelmoschus esculentus* (L.) Moench	Dheros	Malvaceae	M	Herb
2.	*Abroma augusta* (L.) L.f.	Ulatkambal	Malvaceae	M	Shrub
3.	*Acacia auriculiformis* Benth.	Akashmoni	Fabaceae	M	Tree
4.	*Acacia mangium* Willd.	Mangium	Fabaceae	M	Tree
5.	*Acacia nilotica* (L.) Del. Subsp. *indica* (Benth.) Brenan	Babla	Fabaceae	M	Tree
6.	*Acampe ochracea* (Lindl.) Hochr.	Kampera	Orchidaceae	L	Epiphyte
7.	*Acampe praemorsa* (Roxb.) Blatt. & McCann	Rashna	Orchidaceae	L	Epiphyte
8.	*Achyranthes aspera* L.	Apang	Amaranthaceae	M	Herb
9.	*Achyranthes bidentata* Blume	Didati	Amaranthaceae	M	Herb
10.	*Acmella paniculata* (Wall. ex DC.) R.K.Jansen	Acmellapanai	Asteraceae	M	Herb
11.	*Acmella uliginosa* (Sw.) Cass.	Choto marhatitiga	Asteraceae	M	Herb
12.	*Acmella ciliata* (Kunth) Cass.	Surjo kannya	Asteraceae	M	Herb
13.	*Actinoscirpus grossus* (L.f.) Goetgh. & D.A. Simpson	Shirpa	Cyperaceae	L	Herb
14.	*Aegle marmelos* (L.) Corr.	Bel	Rutaceae	M	Tree
15.	*Aeschynomene aspera* L.	Shola	Fabaceae	M	Herb
16.	*Ageratum conyzoides* L.	Fulkuri	Asteraceae	M	Herb
17.	*Albizia lebbeck* (L.) Benth. & Hook.	Kala Koroi	Fabaceae	M	Tree
18.	*Albizia procera* (Roxb.) Benth.	Sada Koroi	Fabaceae	M	Tree
19.	*Albizia richardiana* (Voigt.) King & Prain	Raj Koroi	Fabaceae	M	Tree
20.	*Allamanda cathartica* L.	Ghanta-phul	Apocynaceae	M	Shrub
21.	*Alocasia macrorrhizos* (L.) G. Don	Mankachu	Araceae	L	Herb
22.	*Aloe vera* (L.) Burm.f.	Ghritokumari	Asphodelaceae	L	Herb
23.	*Alpinia conchigera* Griff.	Konchi Elachi	Zingiberaceae	L	Herb
24.	*Alpinia malaccensis* (Burm.f.) Roscoe	Amli Elach	Zingiberaceae	L	Herb
25.	*Alpinia zerumbet* (Pers.) B.L.Burtt & R.M.Sm.	Boro Elachi	Zingiberaceae	L	Herb

26.	*Alstonia macrophylla* Wall. ex G.Don	Boro chhatim	Apocynaceae	M	Tree
27.	*Alstonia scholaris* (L.) R. Br.	Chhatim	Apocynaceae	M	Tree
28.	*Alternanthera paronichyoides* St.-Hil.	Kaowa dima	Amaranthaceae	M	Herb
29.	*Alternanthera philoxeroides* (Mart.) Griseb.	Helencha	Amaranthaceae	M	Aquatic herb
30.	*Alternanthera sessilis* (L.) R.Br. ex DC.	Sachi Shak	Amaranthaceae	M	Herb
31.	*Amaranthus gangeticus* L.	Rakna-shak	Amaranthaceae	M	Herb
32.	*Amaranthus spinosus* L.	Katanotey	Amaranthaceae	M	Herb
33.	*Amaranthus viridis* L.	Notey Shak	Amaranthaceae	M	Herb
34.	*Ammannia baccifera* L.	Janglimendi	Lythraceae	M	Herb
35.	*Ananas comosus* (L.) Merr.	Anaras	Bromeliaceae	L	Herb
36.	*Annona reticulata* L.	Nona Ata	Annonaceae	M	Tree
37.	*Annona squamosa* L.	Ata	Annonaceae	M	Tree
38.	*Anthocephalus chinensis* (Lamk.) Rich. ex Walp.	Kadam	Rubiaceae	M	Tree
39.	*Aphanamixis polystachya* (Wall.) R. Parker	Royena	Meliaceae	M	Tree
40.	*Ardisia elliptica* Thunb.	Sayatika	Primulaceae	M	Shrub
41.	*Ardisia humilis* Thw.	Chauldhoa	Primulaceae	M	Shrub
42.	*Ardisia solanacea* (Poir) Roxb.	Ban Jam	Primulaceae	M	Shrub
43.	*Areca catechu* L.	Supari	Arecaceae	L	Palm tree
44.	*Argyreia nervosa* (Burm.f.) Bojer	Guguli	Convolvulaceae	M	Climber
45.	*Artocarpus heterophyllus* Lamk.	Kanthal	Moraceae	M	Tree
46.	*Artocarpus lacucha* Buch-Ham.	Dewa	Moraceae	M	Tree
47.	*Averrhoa bilimbi* L.	Belumbu	Oxalidaceae	M	Tree
48.	*Averrhoa carambola* L.	Kamranga	Oxalidaceae	M	Tree
49.	*Axonopus compressus* (Sw.) P.Beauv.	Carpet-ghas	Poaceae	L	Herb
50.	*Azadirachta indica* A. Juss.	Neem	Meliaceae	M	Tree
51.	*Azolla filiculoides* Lam.	Sara khudipana	Salviniaceae	P	Aquatic herb
52.	*Azolla pinnata* R. Br.	Lal khudipapana	Salviniaceae	P	Aquatic herb
53.	*Baccaurea ramiflora* Lour.	Lotkon	Euphorbiaceae	M	Tree
54.	*Bacopa monnieri* (L.) Pennell	Brahmishak	Plantaginaceae	M	Herb
55.	*Bambusa arundinacea* (Retz.) Willd.	Bans	Poaceae	L	Herb
56.	*Bambusa bambos* (L.) Voss	Ban Bans	Poaceae	L	Herb
57.	*Bambusa balcooa* Roxb.	Borakbash	Poaceae	L	Herb
58.	*Barringtonia acutangula* (L.) Gaertn.	Hijal	Lecythidaceae	M	Tree
59.	*Basella alba* L.	Puishak	Basellaceae	M	Climber
60.	*Bauhinia acuminata* L.	Sada Kanchan	Fabaceae	M	Tree
61.	*Benincasa hispida* (Thunb.) Cogn.	Chalkumra	Cucurbitaceae	M	Climber
62.	*Blumea lacera* (Burn.f.) DC.	Shealmutra	Asteraceae	M	Herb
63.	*Boerhavia diffusa* L.	Punarnava	Nyctaginaceae	M	Herb
64.	*Bombax ceiba* L.	Shimul-tula	Bombacaceae	M	Tree
65.	*Borassus flabellifer* L.	Tal	Arecaceae	L	Palm tree
66.	*Bougainvillea spectabilis* Willd.	Kagoj Phul	Nyctaginaceae	M	Climber

67.	*Brassica oleracea* L. var. *botrytis* L.	Phul kopi	Brassicaceae	M	Herb
68.	*Brassica oleraceae* var. *capitata* L.	Bandhakapi	Brassicaceae	M	Herb
69.	*Breynia vitis-idaea* (Burm.f.) C.E.C.Fisch.	Vita Salpoti	Euphorbiaceae	M	Shrub
70.	*Bryophyllum pinnatum* (Lam.) Oken	Patharkuchi	Crassulaceae	M	Herb
71.	*Cajanus cajan* (L.) Huth.	Arhar	Fabaceae	M	Shrub
72.	*Calamus tenuis* Roxb.	Bet	Arecaceae	L	Climber
73.	*Calophyllum inophyllum* L.	Sultan Champa	Calophyllaceae	M	Tree
74.	*Calotropis gigantea* (L.) R. Br.	Akanda	Apocyanaceae	M	Shrub
75.	*Calotropis procera* (Ait.) R. Br.	Chhoto Akand	Apocyanaceae	M	Shrub
76.	*Canthium confertum* Korth.	Kaligoda	Rubiaceae	M	Tree
77.	*Capsicum frutescence* L.	Marich	Solanaceae	M	Herb
78.	*Carallia brachiata* (Lour.) Merr.	Farui	Rhizophoraceae	M	Tree
79.	*Carica papaya* L.	Pepe	Caricaceae	M	Herb
80.	*Cassia fistula* L.	Sonalu	Fabaceae	M	Tree
81.	*Casuarina littorea* L.	Jhau	Casuarinaceae	G	Tree
82.	*Catharanthus roseus* (L.) G.Don	Nayan tara	Apocynaceae	M	Herb
83.	*Cayratia trifolia* (L.) Domin	Amal Lata	Vitaceae	M	Climber
84.	*Centella asiatica* (L.) Urban	Thankuni	Apiaceae	M	Herb
85.	*Centipeda minima* (L.) A.Braun & Asch.	Nakchikni	Asteraceae	M	Herb
86.	*Chenopodium album* L.	Bathua Shak	Amaranthaceae	M	Herb
87.	*Chrozophora rottleri* (Geiseler) A.Juss. ex Spreng.	Khudiphora	Euphorbiaceae	M	Herb
88.	*Chrysopogon aciculatus* (Retz.) Trin.	Premkata	Poaceae	L	Herb
89.	*Chukrasia tabularis* A.Juss.	Chikrashi	Meliaceae	M	Tree
90.	*Cicer arietinum* L.	Chhola	Fabaceae	M	Herb
91.	*Citrus aurantifolia* (Christ.) Sw.	Kaghzilebu	Rutaceae	M	Shrub
92.	*Citrus grandis* (L.) Osbeck.	Jambura	Rutaceae	M	Tree
93.	*Citrus reticulata* Blanco	Komla Lebu	Rutaceae	M	Tree
94.	*Citrus sinensis* (L.) Osbeck	Malta	Rutaceae	M	Tree
95.	*Cleome viscosa* L.	Holde Hurhure	Cleomaceae	M	Herb
96.	*Clerodendrum inerme* (L.) Gaertn.	Ban Jui	Verbenaceae	M	Shrub
97.	*Clerodendrum viscosum* Vent.	Bhat	Verbenaceae	M	Shrub
98.	*Clitoria ternatea* L.	Nil aparajita	Fabaceae	M	Climber
99.	*Coccinea grandis* (L.) Voigt.	Telakucha	Cucurbitaceae	M	Climber
100.	*Cocos nucifera* L.	Narikel	Arecaceae	L	Palm tree
101.	*Colocasia esculenta* (L.) Schott.	Kachu	Araceae	L	Herb
102.	*Commelina benghalensis* L.	Kanchira	Commelinaceae	L	Herb
103.	*Commelina cyanea* R.Br.	Kanaiya	Commelinaceae	L	Herb
104.	*Commelina diffusa* Burm.f.	Monayna Kanshira	Commelinaceae	L	Herb
105.	*Corchorus olitorius* L.	Toshapat	Malvaceae	M	Herb
106.	*Cordia dichotoma* Forst. f.	Bohal	Boraginaceae	M	Tree
107.	*Cordia myxa* L.	Bol goda	Boraginaceae	M	Tree

108.	*Coriandrum sativum* L.	Dhaniya	Apiaceae	M	Herb
109.	*Crateva magna* (Lour.) DC.	Barun	Capparaceae	M	Tree
110.	*Crateva religiosa* G.Forst.	Dharmo barun	Capparaceae	M	Tree
111.	*Crinum asiaticum* L.	Nagdaun	Liliaceae	L	Herb
112.	*Crotalaria incana* L.	Choto Jhunjhuni	Fabaceae	M	Herb
113.	*Crotalaria pallida* Aiton	Jhun-jhuni	Fabaceae	M	Herb
114.	*Croton bonplandianum* Baill.	Ban tulsi	Euphorbiaceae	M	Shrub
115.	*Cucurbita maxima* Duch. ex Lamk.	Mistikumra	Cucurbitaceae	M	Climber
116.	*Cuphea hyssopifolia* Kunth	Kuphea	Lythraceae	M	Herb
117.	*Curcuma caesia* Roxb.	Kalo Holud	Zingiberaceae	L	Herb
118.	*Curcuma longa* L.	Halud	Zingiberaceae	L	Herb
119.	*Curcuma zedoaria* (Christm.) Roscoe	Sothi	Zingiberaceae	L	Herb
120.	*Cuscuta chinensis* Lam.	China swarnalata	Convoluvlaceae	M	Climber
121.	*Cuscuta reflexa* Roxb.	Swarnalata	Convoluvlaceae	M	Climber
122.	*Cyathula prostrata* (L.) Blume	Shyontula	Amaranthaceae	M	Herb
123.	*Cynodon dactylon* Pers.	Durbaghas	Poaceae	L	Herb
124.	*Cyperus rotundus* L.	Mutha	Cyperaceae	L	Herb
125.	*Dalbergia sissoo* Roxb.	Sisu	Fabaceae	M	Tree
126.	*Datura metel* L.	Dhutra	Solanaceae	M	Herb
127.	*Daucus carota* L.	Gajor	Apiaceae	M	Herb
128.	*Delonix regia* (Bojer ex Hook.) Raf.	Krishnochura	Fabaceae	M	Tree
129.	*Dendrophthoe falcata* (L.f.) Etting.	Bandha	Loranthaceae	M	Parasite
130.	*Dendrophthoe pentandra* (L.) Miq.	Panskeshore Bandha	Loranthaceae	M	Parasite
131.	*Dillenia indica* L.	Chalta	Dilleniaceae	M	Tree
132.	*Diospyros blancoi* A. DC.	Beelati Gab	Ebenaceae	M	Tree
133.	*Diospyros malabarica* (Desr.) Kostel	Deshi gab	Ebenaceae	M	Tree
134.	*Diplazium esculentum* (Retz.) Sw.	Dheki Shak	Aspleniaceae	P	Herb
135.	*Drimia indica* (Roxb.) Jessop	Bonpeaj	Liliaceae	L	Herb
136.	*Drynaria quercifolia* (L.) J.Sm.	Pankhiraj	Polypodiaceae	P	Epiphyte
137.	*Ecbolium ligustrinum* (Vahl) Vollesen	Nam ecbol	Acanthaceae	M	Herb
138.	*Echinochloa colona* (L.) Link	Aligacha	Poaceae	L	Herb
139.	*Eclipta alba* (L.) Hassk.	Keshraj	Asteraceae	M	Herb
140.	*Eichhornia crassipes* (Mart.) Solms.	Kachuripana	Pontederiaceae	L	Aquatic herb
141.	*Elaeocarpus floribundus* Blume.	Jalpai	Elaeocarpaceae	M	Tree
142.	*Eleusine indica* (L.) Gaertn.	Malankuri	Poaceae	L	Herb
143.	*Enhydra fluctuans* Lour.	Helencha	Asteraceae	M	Aquatic herb
144.	*Eryngium foetidum* L.	Bilati Dhone	Apiaceae	M	Herb
145.	*Erythrina fusca* Lour.	Kanta Mandar	Fabaceae	M	Tree
146.	*Erythrina variegata* L.	Madar	Fabaceae	M	Tree
147.	*Eucalyptus camaldulensis* Dehnh.	Duli Eucalyptus	Myrtaceae	M	Tree
148.	*Eucalyptus globulus* Labill.	Eucalyptus	Myrtaceae	M	Tree
149.	*Eucalyptus grandis* W.Hill ex Maiden	Toolar	Myrtaceae	M	Tree

		Eucalyptus			
150.	*Euphorbia neriifolia* L.	Mansa Sij	Euphorbiaceae	M	Shrub
151.	*Ficus benghalensis* L.	Bot	Moraceae	M	Tree
152.	*Ficus hispida* L. f.	Dumur	Moraceae	M	Tree
153.	*Ficus microcarpa* L.f.	Jir	Moraceae	M	Tree
154.	*Ficus racemosa* L.	Jagadumur	Moraceae	M	Tree
155.	*Ficus religiosa* L.	Aswath	Moraceae	M	Tree
156.	*Ficus rumphii* Blume	Jhula Bot	Moraceae	M	Tree
157.	*Fimbristylis aestivalis* Vahl	Valis fimbry	Cyperaceae	L	Herb
158.	*Fimbristylis bisumbellata* (Forssk.) Bubani	Bisu fimbry	Cyperaceae	L	Herb
159.	*Garcinia cowa* Roxb. ex DC.	Kau	Clusiaceae	M	Tree
160.	*Gardenia jesminoides* J.Ellis	Gondhoraj	Rubiaceae	M	Shrub
161.	*Glinus lotoides* L.	Kakdim	Molluginaceae	M	Herb
162.	*Glinus oppositifolius* (L.) A. DC.	Gima Shak	Molluginaceae	M	Herb
163.	*Glycosmis pentaphylla* (Retz.) A. DC.	Datmajan	Rutaceae	M	Shrub
164.	*Gmelina arborea* L.	Gamari	Verbenaceae	M	Tree
165.	*Gnaphalium luteo-album* L.	Bara Kamra	Asteraceae	M	Herb
166.	*Gnaphalium pulvinatum* (Delile) Greuter	Nomophali	Asteraceae	M	Herb
167.	*Grangea maderaspatana* (L.) Poir.	Holde-ghas	Asteraceae	M	Herb
168.	*Heliotropium indicum* L.	Hatisur	Boraginaceae	M	Herb
169.	*Hemigraphis hirta* (Vahl) T.Anderson	Borati-gas	Acanthaceae	M	Herb
170.	*Hibiscus rosa-sinensis* L.	Jaba	Malvaceae	M	Shrub
171.	*Hibiscus sabdariffa* L.	Mesta	Malvaceae	M	Shrub
172.	*Hibiscus schizopetalus* (Mast.) Hook.f.	Jhumko Joba	Malvaceae	M	Shrub
173.	*Hopea odorata* Roxb.	Telsur	Dipterocarpaceae	M	Tree
174.	*Hydrolea zeylanica* (L.) Vahl	Kasschara	Hydrophyllaceae	M	Herb
175.	*Hygrophila polysperma* (Roxb.) T.Anderson	Jabree	Acanthaceae	M	Herb
176.	*Hygrophila salicifolia* (Vahl) Nees	Kakmasha	Acanthaceae	M	Herb
177.	*Hygrophila schulli* (Buch. - Ham.) M.R. & S.N.Almeida	Talmakhna	Acanthaceae	M	Herb
178.	*Hygroryza aristata* (Retz.) Nees ex Wight & Arn.	Jongli Dhan	Poaceae	L	Herb
179.	*Ipomoea aquatica* Forsk.	Kalmi Shak	Convolvulaceae	M	Aquatic herb
180.	*Ipomoea batatas* (L.) Poir.	Misti Alu	Convolvulaceae	M	Climber
181.	*Ipomoea fistulosa* Mart. ex Choisy	Dhol Kolmi	Convolvulaceae	M	Shrub
182.	*Ipomoea mauritiana* Jacq.	Huffta Alu	Convolvulaceae	M	Herb
183.	*Jatropha gossypifolia* L.	Lal Bherenda	Euphorbiaceae	M	Shrub
184.	*Justicia adhatoda* L.	Bashak	Acanthaceae	M	Shrub
185.	*Justicia gendarussa* Burm.	Jagatmadan	Acanthaceae	M	Shrub
186.	*Lablab purpureus* (L.) Sweet.	Shim	Fabaceae	M	Climber
187.	*Lagenaria siceraria* (Molina) Standl.	Lau	Cucurbitaceae	M	Climber
188.	*Lagerstroemia indica* L.	Choto Jarul	Lythraceae	M	Tree
189.	*Lagerstroemia speciosa* (L.) Pers.	Jarul	Lythraceae	M	Tree
190.	*Lannea coromandelica* (Houtt.) Merr.	Bhadi	Anacardiaceae	M	Tree
191.	*Lasia spinosa* (L.) Thwaites	Kanta Kachu	Araceae	L	Herb

192.	*Lawsonia inermis* L.	Mehedi	Lythraceae	M	Tree
193.	*Leea aequata* L.	Kakjangla	Leeaceae	M	Shrub
194.	*Leea indica* Merr.	Kukurjhibba	Leeaceae	M	Shrub
195.	*Lemna perpusilla* Torr.	Guripana	Araceae	L	Herb
196.	*Leonurus sibricus* L.	Raktodron	Lamiaceae	M	Shrub
197.	*Lepisanthes rubiginosa* (Roxb.) Leenh.	Aphin	Sapindaceae	M	Tree
198.	*Lepisanthes senegalensis* (Por.) Leenh.	Amjam	Sapindaceae	M	Shrub
199.	*Leucas aspera* (Willd.) Link	Shetadrone	Lamiaceae	M	Shrub
200.	*Leucas indica* (L.) R.Br. ex Vatke	Korponath	Lamiaceae	M	Herb
201.	*Leucas zeylanica* (L.) R.Br.	Lankadron	Lamiaceae	M	Herb
202.	*Limnophila aquatica* (Roxb.) Alston	Panikutra	Plantaginaceae	M	Herb
203.	*Limonia acidissima* L.	Koethbel	Rutaceae	M	Tree
204.	*Lindernia antipoda* (L.) Alston	Zai ghas	Linderniaceae	M	Herb
205.	*Lindernia crustacea* (L.) F.Muell.	Chapra-ghas	Linderniaceae	M	Herb
206.	*Lindernia rotundifolia* (L.) Alston	Tan chapra	Linderniaceae	M	Herb
207.	*Lindernia multiflora* (Roxb.) Mukerjee	Bohu-phuli	Linderniaceae	M	Herb
208.	*Linum usitatissimum* L.	Tisi	Linaceae	M	Herb
209.	*Lippia alba* (Mill.) Briton et Wilson	Pichas-lakri	Verbenaceae	M	Shrub
210.	*Litchi chinensis* Sonn.	Lichu	Sapindaceae	M	Tree
211.	*Litsea glutinosa* (Lour.) C.B.Rob.	Meda	Lauraceae	M	Tree
212.	*Litsea monopetala* (Roxb.) Pers.	Kat Meda	Lauraceae	M	Tree
213.	*Ludwigia adscendens* (L.) Hara	Malcha	Onagraceae	M	Herb
214.	*Ludwigia hyssopifolia* (G.Don) Exell	Panilong	Onagraceae	M	Herb
215.	*Ludwigia perennis* L.	Amorkura	Onagraceae	M	Herb
216.	*Ludwigia prostrata* Roxb.	Shayankura	Onagraceae	M	Herb
217.	*Luffa acutangula* (L.) Roxb.	Jhinga	Cucurbitaceae	M	Climber
218.	*Luffa cylindrica* (L) M.Roem.	Dhundul	Cucurbitaceae	M	Climber
219.	*Lycopersicon esculentum* Mill	Tomato	Solanaceae	M	Herb
220.	*Mangifera indica* L.	Aam	Anacardiaceae	M	Tree
221.	*Manilkara zapota* (L.) P.Royen	Safeda	Sapotaceae	M	Tree
222.	*Melia azedarach* L.	Ghoranim	Meliaceae	M	Tree
223.	*Mentha viridis* L.	Pudina	Lamiaceae	M	Herb
224.	*Meyna spinosa* Roxb. ex Link	Moyena	Rubiaceae	M	Shrub
225.	*Microsorum punctatum* (L.) Copel.	Punctasorum fern	Polypodiaceae	P	Epiphyte
226.	*Mikania cordata* (Burm. f.) Rob.	Toofainna lata	Asteraceae	M	Climber
227.	*Mimosa pudica* L.	Lajjabati	Fabaceae	M	Shrub
228.	*Mimusops elengi* L.	Bakul	Sapotaceae	M	Tree
229.	*Mollugo stricta* L.	Kharapapra	Molluginaceae	M	Herb
230.	*Momordica charantia* L.	Karola	Cucurbitaceae	M	Climber
231.	*Momordica cochinchinensis* (Lour.) Sprengel	Kakrol	Cucurbitaceae	M	Climber
232.	*Monochoria hastata* (L.) Solms.	Baranukha	Pontederiaceae	L	Aquatic herb
233.	*Morinda angustifolia* Roxb.	Horinar phul	Rubiaceae	M	Tree
234.	*Morinda citrifolia* L.	Noni	Rubiaceae	M	Shrub

235.	*Moringa concanensis* Nimmo ex Daiz & Gibbs	Bati sajna	Moringaceae	M	Tree
236.	*Moringa oleifera* Lamk.	Sajna	Moringaceae	M	Tree
237.	*Murraya koenigii* (L.) Spreng.	Karipata	Rutaceae	M	Shrub
238.	*Musa acuminata* Colla	Kach Kola	Musaceae	L	Herb
239.	*Musa paradisiaca* L.	Aittakola	Musaceae	L	Herb
240.	*Nelsonia canescens* (Lam.) Spreng.	Paramul	Acanthaceae	M	Herb
241.	*Neonauclea sessilifolia* (Roxb.) Merr.	Kodom	Rubiaceae	M	Tree
242.	*Nicotiana plumbaginifolia* Viv.	Bon Tamak	Solanaceae	M	Herb
243.	*Nyctanthes arbor-tristis* L.	Sheuli	Verbenaceae	M	Tree
244.	*Nymphaea nouchali* Burm.f.	Shapla	Nymphaeaceae	M	Herb
245.	*Nymphaea pubescens* Willd.	Shaluk	Nymphaeaceae	M	Herb
246.	*Nymphoides hydrophylla* (Lour.) Kuntze	Chand mala	Menyanthaceae	M	Herb
247.	*Nymphoides indica* (L.) Kuntze	Panchuli mala	Menyanthaceae	M	Herb
248.	*Ocimum sanctum* L.	Tulshi	Lamiaceae	M	Herb
249.	*Ocimum tenuiflorum* L.	Kalo tulsi	Lamiaceae	M	Herb
250.	*Oenanthe benghalensis* Benth. & Hook. f.	Bon dhonia	Apiaceae	M	Herb
251.	*Oenanthe javanica* (Blume) DC.	Pan tulsi	Apiaceae	M	Herb
252.	*Oroxylum indicum* (L.) Vent.	Thona	Bignoniaceae	M	Tree
253.	*Oryza sativa* L.	Dhan	Poaceae	L	Herb
254.	*Paederia foetida* L.	Gandhabaduli	Rubiaceae	M	Climber
255.	*Pedilanthus tithymaloides* Poit.	Rangchita	Euphorbiaceae	M	Herb
256.	*Peperomia pellucida* (L.) Kunth	Luchipata	Piperaceae	P	Herb
257.	*Persicaria acuminata* (Franch. & Savat.) Hassan	Lal Bishkatali	Polygonaceae	M	Herb
258.	*Persicaria glabra* (Willd) Gomez de la Maza	Sada kukri	Polygonaceae	M	Herb
259.	*Persicaria lapathifolia* (L.) S.F. Gray	Lomosh Bishkatali	Polygonaceae	M	Herb
260.	*Persicaria odorata* (Lour.) Sojak	Bishkatali	Polygonaceae	M	Herb
261.	*Phaseolus vulgaris* L.	Felon-dail	Fabaceae	M	Herb
262.	*Phlogacanthus thyrsiflorus* Nees	Agnibasak	Acanthaceae	M	Shrub
263.	*Phoenix sylvestris* (L.) Roxb.	Khejur	Arecaceae	L	Palm
264.	*Phyla nodiflora* (L.) Greene	Bhuiokra	Verbenaceae	M	Herb
265.	*Phyllanthus acidus* (L.) Skeels	Orboroi	Euphorbiaceae	M	Tree
266.	*Phyllanthus emblica* L.	Bahera	Euphorbiaceae	M	Tree
267.	*Phyllanthus reticulatus* Poir.	Chitki	Euphorbiaceae	M	Shrub
268.	*Physalis angulata* L.	Phutki	Solanaceae	M	Herb
269.	*Physalis minima* L.	Phutka	Soalanaceae	M	Herb
270.	*Pinus roxburghii* Sarg	Pine gach	Pinaceae	G	Tree
271.	*Piper nigrum* L.	Golmorich	Piperaceae	M	Climber
272.	*Piper retrofractum* Vahl	Choi	Piperaceae	M	Climber
273.	*Pistia stratiotes* L.	Topapana	Araceae	L	Aquatic herb

274.	*Pithecellobium dulce* (Roxb.) Benth.	Jilapi	Fabaceae	M	Tree
275.	*Pluchea indica* (L.) Less.	Mundorokha	Asteraceae	M	Herb
276.	*Polygonum effusum* Meissn.	Raniphul	Polygonaceae	M	Herb
277.	*Polygonum hydropiper* L.	Biskatali	Polygonaceae	M	Shrub
278.	*Polygonum orientale* L.	Bara Panimarich	Polygonaceae	M	Shrub
279.	*Polygonum plebeium* R.Br.	Chinaduli ghas	Polygonaceae	M	Herb
280.	*Pongamia pinnata* (L.) Pierre	Karanja	Fabaceae	M	Tree
281.	*Portulaca oleracea* L.	Nune shak	Portulacaceae	M	Herb
282.	*Pothos chinensis* (Raf.) Merr.	Chinalata	Araceae	L	Climber
283.	*Pothos scandens* L.	Batilata	Araceae	L	Climber
284.	*Pouzolzia zeylanica* (L.) Benn.	Kullaruki	Urticaceae	M	Herb
285.	*Psidium guajava* (L.) Bat.	Piyara	Myrtaceae	M	Tree
286.	*Punica granatum* L.	Dalim	Lythraceae	M	Tree
287.	*Quisqualis indica* L.	Basantilata	Combretaceae	M	Climber
288.	*Randia aculeata* L.	Beiykanda	Rubiaceae	M	Shrub
289.	*Randia dumetorum* (Retz.) Lam.	Mon kata	Rubiaceae	M	Shrub
290.	*Raphanus sativus* L.	Mula	Brassicaceae	M	Herb
291.	*Rhynchostylis retusa* (L.) Blume	Shial leza orchid	Orchidaceae	L	Epiphyte
292.	*Ricinus communis* L.	Bherenda	Euphorbiaceae	M	Shrub
293.	*Rorippa indica* (L.) Hiern	Ban Sharisha	Brassicaceae	M	Herb
294.	*Rorippa palustris* (L.) Besser	Panisharisha	Brassicaceae	M	Herb
295.	*Rosa chinensis* Jacq.	Kanta Golap	Rosaceae	M	Shrub
296.	*Ruellia tuberosa* L.	Potpoty	Acanthaceae	M	Herb
297.	*Rumex dentatus* L.	Bon-palong	Polygonaceae	M	Herb
298.	*Rumex maritimus* L.	Datipalong	Polygonaceae	M	Herb
299.	*Rungia pectinata* (L.) Nees	Pindi	Acanthaceae	M	Herb
300.	*Saccharum officinarum* L.	Akh	Poaceae	L	Herb
301.	*Salvinia cucullata* Roxb. ex Bory	Indur Kani	Salviniaceae	P	Herb
302.	*Samanea saman* (Jacq.) Merr.	Raintree	Fabaceae	M	Tree
303.	*Sansevieria aubrytiana* Carrière	Shorporaj	Asparagaceae	L	Herb
304.	*Sansevieria roxburghiana* Schult. & Schult. f.	Gorachaka	Asparagaceae	L	Herb
305.	*Sansevieria trifasciata* Prain	Sutahara	Asparagaceae	L	Herb
306.	*Saraca asoca* (Roxb.) De Wilde.	Asok	Fabaceae	M	Tree
307.	*Saraca indica* L.	Ashok	Fabaceae	M	Tree
308.	*Schumannianthus dichotomus* (Roxb.) Gagnep.	Pati-pata	Marantaceae	L	Herb
309.	*Scoparia dulcis* L.	Bandhane	Plantaginaceae	M	Shrub
310.	*Selaginella delicatula* (Desv. ex Poir.) Alston	Lataginella	Selaginellaceae	P	Herb
311.	*Senna alata* (L.) Roxb.	Dadmardan	Fabaceae	M	Shrub
312.	*Senna obtusifolia* (L.) H.S.Irwin &	Bhotasenna	Fabaceae	M	Herb

	Barneby				
313.	*Senna occidentalis* Roxb.	Boro Kalkasunda	Fabaceae	M	Shrub
314.	*Senna siamea* (Lam.) H.S.Irwin & Barneby	Minjiri	Fabaceae	M	Tree
315.	*Sesbania sesban* (L.) Merr.	Dhaincha	Fabaceae	M	Shrub
316.	*Setaria italica* (L.) P.Beauv.	Kaon	Poaceae	L	Herb
317.	*Shorea robusta* Gaertn. F.	Shal	Dipterocarpaceae	M	Tree
318.	*Smilax perfoliata* Lour.	Kumarika	Smilacaceae	L	Climber
319.	*Smilax zeylanica* L.	Kumarilata	Smilacaceae	L	Climber
320.	*Solanum capsicoides* All.	Loma Begun	Solanaceae	M	Herb
321.	*Solanum melongena* L.	Begun	Solanaceae	M	Shrub
322.	*Solanum nigrum* L.	Kakmachi	Solanaceae	M	Herb
323.	*Solanum torvum* Sw.	Gota Begun	Solanaceae	M	Shrub
324.	*Solanum tuberosum* L.	Alu	Solanaceae	M	Herb
325.	*Solanum violaceum* Ortega	Phutki	Solanaceae	M	Shrub
326.	*Sonchus wightianus* DC.	Ban palang	Asteraceae	M	Herb
327.	*Spermacoce exilis* (L.O.Williams) C.D.Adams ex W.C.Burger & C.M.Taylor	Choto ghuijil	Rubiaceae	M	Herb
328.	*Sphagneticola trilobata* (L.) Pruski	Mahavringaraj	Asteraceae	M	Herb
329.	*Spilanthes calva* DC.	Marhatitiga	Asteraceae	M	Herb
330.	*Spinacia oleracea* L.	Palong Shak	Amaranthaceae	M	Herb
331.	*Spondias pinnata* (L.f.) Kurz.	Amra	Anacardiaceae	M	Tree
332.	*Stellaria wallichiana* Haines	Sada fulki	Caryophyllaceae	M	Herb
333.	*Stenochlaena palustris* (Burm.f.) Bedd.	Pani lata dheki	Aspleniaceae	P	Climber
334.	*Streblus asper* Lour.	Shaora	Moraceae	M	Tree
335.	*Swietenia macrophylla* King	Boro Mehagani	Meliaceae	M	Tree
336.	*Swietenia mahagoni* (L.) Jacq.	Mahogany	Meliaceae	M	Tree
337.	*Synedrella nodiflora* (L.) Gaertn.	Synedrella	Asteraceae	M	Shrub
338.	*Syzygium cumini* (L.) Skeel.	Jam	Myrtaceae	M	Tree
339.	*Syzygium fruticosum* (Roxb.) DC.	Buti Jam	Myrtaceae	M	Tree
340.	*Syzygium samarangense* (Blume) Merr. & L.M.Perry	Jamrul	Myrtaceae	M	Tree
341.	*Tagetes erecta* L.	Gandaphul	Asteraceae	M	Herb
342.	*Tectona grandis* L.f.	Shegun	Verbenaceae	M	Tree
343.	*Terminalia arjuna* (Roxb.) W. & A	Arjun	Combretaceae	M	Tree
344.	*Terminalia catappa* L.	Kath Badam	Combretaceae	M	Tree
345.	*Terminalia chebula* (Gaertn.) Retz.	Haritaki	Combretaceae	M	Tree
346.	*Tinospora crispa* Miers.	Gulancha	Menispermaceae	M	Climber
347.	*Tradescantia spathacea* Sw.	Chamapindo	Commelinaceae	L	Herb
348.	*Trewia polycarpa* Benth. & Hook.f.	Latim	Euphorbiaceae	M	Tree
349.	*Trichosanthes anguina* L.	Chichinga	Cucurbitaceae	M	Climber
350.	*Trichosanthes tricuspidata* Lour.	Makal	Cucurbitaceae	M	Climber

351.	*Tridax procumbens* L.	Tridhara	Asteraceae	M	Herb
352.	*Urena lobata* L.	Jangli Ghagra	Malvaceae	M	Shrub
353.	*Vernonia patula* (Dryand.) Merr.	Kukshim	Asteraceae	M	Herb
354.	*Vigna mungo* (L.) Hepper	Mashkalaiy	Fabaceae	M	Herb
355.	*Vigna unguiculata* (L.) Walp.	Barbati	Fabaceae	M	Climber
356.	*Wedelia chinensis* (Osbeck) Merr.	Bhimraj	Asteraceae	M	Herb
357.	*Xanthium indicum* Koen. ex Roxb.	Ghagra	Asteraceae	M	Shrub
358.	*Xanthosoma sagittifolium* (L.) Schott	Dudhkachu	Araceae	L	Herb
359.	*Zea mays* L.	Bhutta	Poaceae	L	Herb
360.	*Ziziphus mauritiana* Lamk.	Boroi	Rhamnaceae	M	Tree

Legend: M= Magnoliopsida; L= Liliopsida; P= Pteridophyte; G= Gymnosperm

A total of 360 species of this flora and most of the Magnoliopsida comprise 292 species, Liliopsida 57 species, Pteridophyte 9 species, and Gymnosperm 2 species, respectively (Figure 2). These taxa include 168 species of herbs, 53 species of shrubs, 102 species of trees, 32 species of climbers, and 5 species of epiphytes (Figure 3).

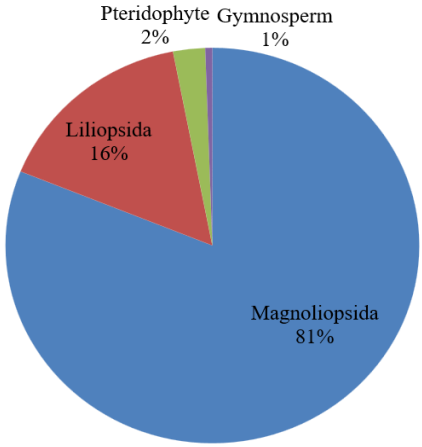

Figure 2 Percentage of vascular plant species of plant group.

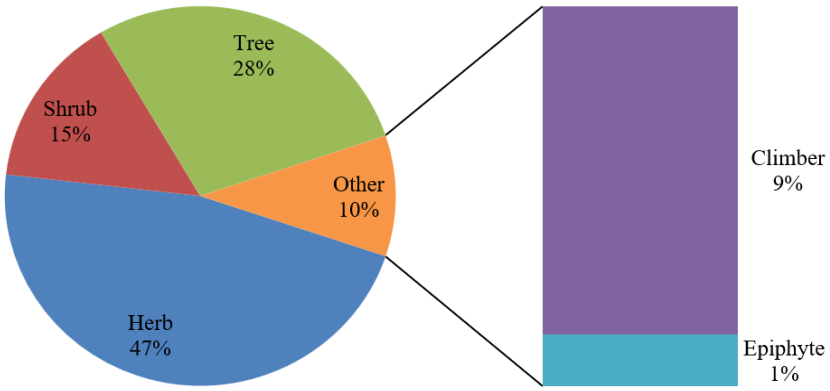

Figure 3 Pie diagram showing the habit diversity of the vascular flora of Sonaimuri.

The dominant families with the highest number of species were Fabaceae, Asteraceae, Poaceae, and Euphorbiaceae, respectively (Figure 4). In the flora of Bangladesh, Fabaceae is the largest family, followed by Poaceae, Orchidaceae, and Rubiaceae respectively. The ten dominant genera recorded from the Sonaimuri indicated Ficus and Solanum are the largest, containing six species, followed by Polygonum (5 sp.), respectively (Table 2). But in Bangladesh Flora, it is Cyperus, Ficus, Syzygium, and Fimbristylis (Table 2).

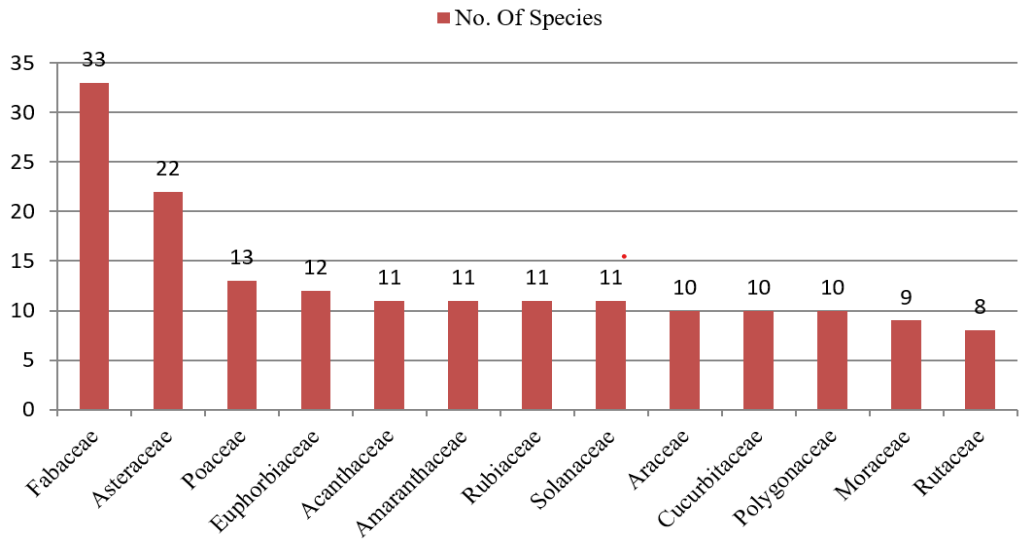

Figure 4 Dominant vascular plant families of Sonaimuri upazila.

Table 2 List of ten dominant genera of Sonaimuri Upazila and Bangladesh's flora.

Sonaimuri Upazila		Flora of Bangladesh	
Genera	No. of Species	Genera	No. of Species
Ficus	6	*Cyperus*	72
Solanum	6	*Ficus*	55
Polygonum	5	*Syzygium*	36
Amaranthus	4	*Fimbristylis*	36
Citrus	4	*Dendrobium*	32
Ipomoea	4	*Ipomoea*	30
Lindernia	4	*Crotalaria*	27
Ludwigia	4	*Persicaria*	27
Persicaria	4	*Euphorbia*	26
Senna	4	*Strobilanthes*	25

The number of species per square kilometer found in the study area is nearly comparable to that of the Teknaf Wildlife Sanctuary Uddin et al., (2013) (Figure 5). Sonaimuri is a semi-urban region where natural, planted, and cultivated plant populations coexist. Numerous anthropogenic activities, such as diverse plantation and agriculture programs implemented after recurrent vegetation clearing and habitat degradation, have significantly disrupted a significant portion of the study region.

Nonetheless, as this study lists, a number of plant species have been established in this region as a result of the introduction of numerous exotic species, mostly in semi-urban areas like gardens, campuses, roadsides, tourist destinations, etc., as well as the introduction of diaspores of various plant species from across the nation using a variety of biotic and abiotic agents. Dense vegetation covers some of the area, which is made up of roadside, agricultural fields, fallow lands, homesteads, woodlands, and gardens. The study area's biodiversity is under threat from a variety of anthropogenic activities, the most common of which are land grabs, agricultural expansion after vegetation clearance, infrastructure development, settlement, the collection of fuel wood and leaf litter, huge visits, and other anthropogenic activities.

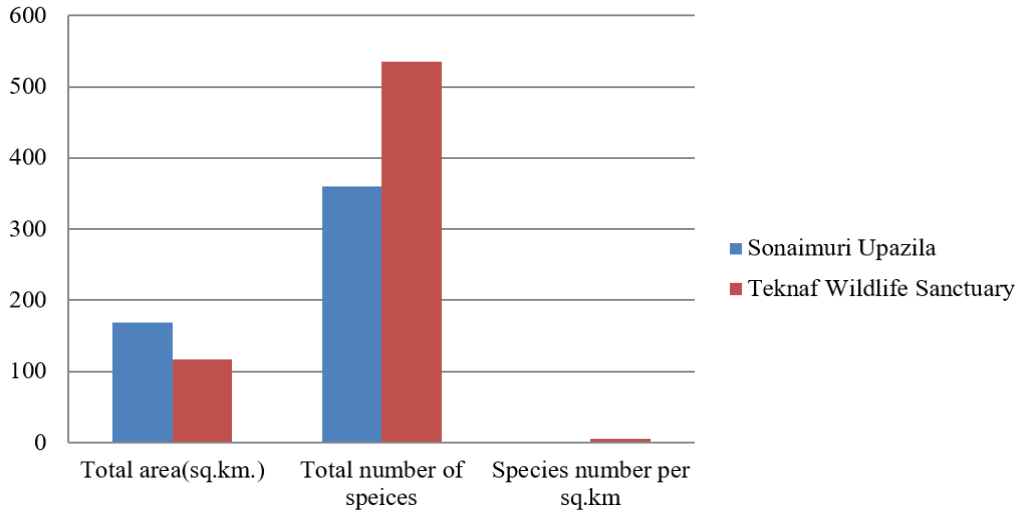

Figure 5 Comparison of plant species composition in the Sonaimuri area with the Teknaf Wildlife Sanctuary.

4. CONCLUSION

Thus, we heartily urge the creation of a master plan aimed at reducing any significant risks to the area's vegetation and habitats as well as promoting sustainable growth, use, and preservation of its plant resources. This region's sustainable socioeconomic and ecological services will be enhanced by proper protection, conservation, and development of its dwindling natural resources, especially its biodiversity.

Acknowledgements

The writer conveys his sincere appreciation to the local informants for all of their assistance during the fieldwork.

Author Contributions

Md Salah Uddin only contributed to the successful completion of the research work. Data collection and processing were done by him and he did the final correction.

Informed consent

Not applicable.

Ethical approval

The ethical guidelines for plants & plant materials are followed in the study for species collection & identification.

Conflicts of interests

The authors declare that there are no conflicts of interests.

Funding

The study has not received any external funding.

Data and materials availability

All data associated with this study are present in the paper.

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