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Article

Checklist of butterfly larval host plants and their spatial distribution on the campus of Jahangirnagar University, Bangladesh

Shraboni Das, Muntahena Ruhi, Muhammad Sohel Abedin and Md Monwar Hossain*

DNA Barcoding Laboratory, Department of Zoology, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh

*Corresponding author: Md. Monwar Hossain, DNA Barcoding Laboratory, Department of Zoology, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh. E-mail: monwar@juniv.edu

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Abstract: Adult butterflies lay their eggs on specific larval host plants, which serve as food for caterpillars after hatching. This study, conducted between January 2023 and June 2024, aimed to compile a checklist and assess the spatial distribution of butterfly larval host plants within the semi-natural campus of Jahangirnagar University (JU), Bangladesh. The research identified 107 plant species from 37 families as larval hosts for 72 butterfly species. The study area was divided into 10 sites, focusing mainly on the distribution of 12 key larval host plants due to their ecological significance and extensive use by butterflies. These key plants included *Capparis zeylanica*, *Citrus aurantiifolia*, *Butea monosperma*, *Oryza sativa*, *Cassia fistula*, *Glycosmis pentaphylla*, *Calotropis gigantea*, *Ziziphus oenopolia*, *Senna tora*, *Polyalthia longifolia*, *Mimosa pudica*, and *Delonix regia*. The findings revealed that butterflies predominantly utilized plants from the Caesalpiniaceae, Poaceae, Rutaceae, Fabaceae, and Apocynaceae families as larval hosts. These results are crucial for developing effective conservation strategies for butterflies in Bangladesh, including on the JU campus. By identifying key host plants and their distribution, the study underscores the importance of habitat restoration and the protection of native species to support butterfly populations in both natural and urban areas.

Keywords: butterfly; larval host plants; habitat loss; plant diversity; conservation strategies

1. Introduction

Butterflies are not only among the most captivating and ecologically significant groups of insects, but they also serve as important bioindicators of environmental health (Sharma and Sharma, 2017; Pallottini *et al*., 2023). They play a vital role in pollination, contributing to the maintenance of plant biodiversity, and serve as a food source for various other organisms, making them integral to the ecosystem (Ghazanfar *et al*., 2016). However, their survival is critically dependent on the availability of larval host plants, which provide nourishment to butterfly larvae during their early developmental stages. Without an adequate supply of these host plants, butterfly populations decline, leading to disruptions in local ecosystems (Flockhart *et al*., 2014).

Jahangirnagar University (JU), located in Bangladesh, has long been recognized as a biodiversity hotspot, supporting a wide range of flora and fauna (Aziz *et al*., 2013; Akter *et al*., 2015; Das *et al*., 2021; Khan *et al*., 2021). In the past, more than 110 butterfly species thrived on the JU campus, out of 421 recorded in the country, benefiting from its rich vegetation and diverse microhabitats (Chowdhury and Hossain, 2013; IUCN-Bangladesh, 2015; Hossain, 2023). However, rapid urbanization, deforestation, and habitat destruction have significantly altered the campus landscape. The clearing of natural vegetation, expansion of infrastructure, and

reduction of host plant diversity have directly contributed to the decline of butterfly populations. Consequently, the number of butterfly species on the JU campus has dwindled to only 72, raising serious concerns about the long-term survival of these ecologically important insects (Tonmoy *et al*., 2023).

To address this alarming decline, it is essential to identify, document, and conserve the larval host plants that are critical for butterfly reproduction and survival. A systematic checklist of butterfly larval host plants and an analysis of their spatial distribution within the JU campus will provide vital information for conservation efforts. While significant research has been conducted in neighboring countries, studies in Bangladesh remain sporadic and less comprehensive (Chowdhury and Hossain, 2013; Shihan, 2016; Nitin *et al*., 2018; Shihan, 2018; Suthar *et al*., 2019; Mukherjee *et al*., 2019; Jayasinghe *et al*., 2021; Biswas *et al*., 2022; Mukherjee and Mondal, 2023). Identifying and documenting the larval host plants and their distribution on the JU campus is crucial for implementing effective conservation strategies, maintaining ecological balance, and ensuring the long-term survival of butterfly populations. By understanding which plants are essential for different butterfly species and their distribution, we can develop conservation strategies to restore suitable habitats and increase butterfly populations (Forister *et al*., 2021).

This study aims to investigate the diversity and spatial distribution of butterfly larval host plants on the Jahangirnagar University (JU) campus, focusing on identifying key plant species essential for butterfly survival. The primary research questions are: (1) what larval host plant species are utilized by butterflies on the JU campus? (2) How are these host plants distributed across different sites? (3) Which host plant families are most commonly associated with butterfly species? The hypothesis is that specific plant families, particularly Caesalpiniaceae, Poaceae, Rutaceae, Fabaceae, and Apocynaceae, are more frequently utilized as larval host plants due to their non-toxic nature and adaptability for butterfly caterpillars. The main objective of this study is to create a comprehensive checklist of larval host plants, analyze their spatial distribution, and identify ecologically significant species that support butterfly populations, thereby contributing to effective conservation and habitat restoration strategies.

Furthermore, butterflies enhance the aesthetic appeal of the JU campus, creating a vibrant and ecologically rich environment. Their presence not only beautifies the university but also attracts researchers and nature enthusiasts. Therefore, conserving butterflies by protecting their larval host plants is both an ecological necessity and a way to preserve the unique natural heritage of Jahangirnagar University. This research will serve as a foundation for future conservation initiatives, helping to restore butterfly diversity and ensure the sustainability of this vital ecosystem amid the pressures of urbanization.

2. Materials and Methods

2.1. Ethical approval

No ethical approval was necessary for the conduct of this study.

2.2. Study area

The campus is located in Savar, Dhaka, Bangladesh, between the coordinates 23.8671°-23.8977°N and 90.2588°-90.2731°E (Figure 1). We divided the studied area into ten different sites: Bishmile (Site 1), JU School (Site 2), VC Lake (Site 3), Old Arts Building (Site 4), Adjoining Statistics Department (Site 5), Adjoining Chemistry Department (Site 6), Butterfly Park and Research Center (Site 7), Adjoining Swimming Pool (Site 8), Adjoining Mir Mosharraf Hossain Hall (Site 9), and JU Botanical Garden (Site 10).

2.3. Data collection and validation

The study was based on representative plant specimens collected and photographed on the JU campus over several months, from January 2023 to June 2024. The specimens were captured using a 24-105 mm lens on a Canon EOS 5D Mark IV DSLR camera. Plant identification was carried out through expert determination, consultation of relevant taxonomic literature (Prain, 1903; Siddiqui *et al*., 2007; Ahmed *et al*., 2009), and examination of type images available on the websites of various international organizations, including Pl@ntNet (2025) (https://identify.plantnet.org/k-world-flora/identify), Flowers of India (2025) (http://www.flowersofindia.net), and Larval Host Plants and Other Hosts of Indian Butterflies (2025) (https://www.ifoundbutterflies.org/larval-hosts).

Additionally, we collected caterpillars from various butterfly species on different host plants throughout the JU campus. We carefully selected the specimens directly from their respective host plants. The butterfly caterpillars were initially identified by consulting relevant literature (Karmakar and Baidya, 2018; Shahroni *et al*., 2022) and utilizing the web resource Butterfly of India (2025) (https://www.ifoundbutterflies.org/).

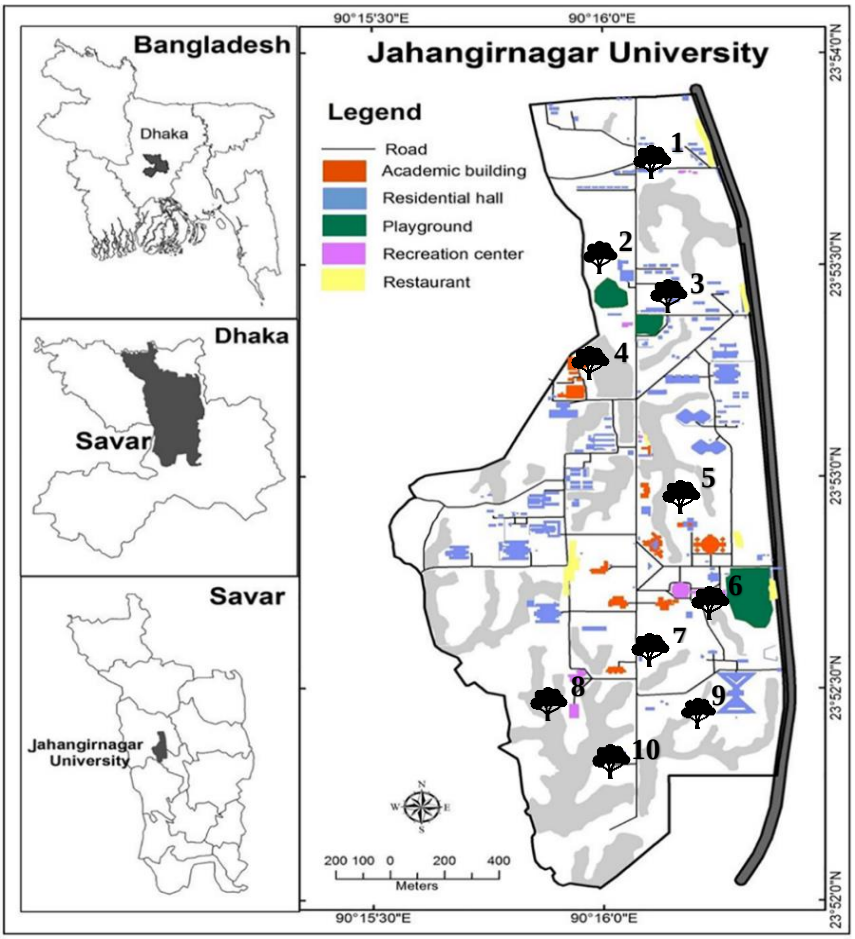

Figure 1. The ten study sites (site 1-10) at Jahangirnagar University campus, Bangladesh.

2.4. Statistical analysis

Data analysis and graph preparation on plant families, species, and their associations with butterflies were carried out using Microsoft Excel 2019. Specimen photographs were processed and edited with Photoshop 7.0. The study area map was created using satellite imagery and QGIS software version 3.28, with final adjustments made in Photoshop 7.0.

3. Results and Discussion

This study identified 107 plant species from 37 families that serve as larval host plants for 72 butterfly species on the JU campus. Among these, the Caesalpiniaceae family had the highest representation, with 11 species. The Poaceae and Rutaceae families followed with 10 and 9 species, respectively. The Apocynaceae and Fabaceae families each contributed 8 species, while the Arecaceae family included 6 species. The Moraceae family contained 5 species, and the Annonaceae, Mimosaceae, and Rubiaceae families each had 4 species. The Lauraceae family was represented by 3 species, while the remaining 26 families had only 1 to 2 species each (Table 1, Figure 2).

Table 1. Checklist of larval host plants of butterfly species on the campus of Jahangirnagar University.

No	Butterflies		Butterfly larval host plants		
	Scientific name	English name	Scientific name	Local name	Family name
	Family: Papilionidae				
1	*Graphium doson*	Common Jay	*Polyalthia longifolia*	Debdaru	Annonaceae
			Artabotrys hexapetalus	Kathali Champa	
			Annona reticulata	Atta	
			Annona squamosa	Shorifa	
			Magnolia champaca	Champa	Magnoliaceae

Table 1. Contd.

No	Butterflies		Butterfly larval host plants		
	Scientific name	English name	Scientific name	Local name	Family name
	Family: Papilionidae				
2	*Graphium agamemnon*	Tailed Jay	*Polyalthia longifolia*	Debdaru	Annonaceae
			Annona reticulata	Atta	
			Annona squamosa	Shorifa	
			Artabotrys hexapetalus	Kathali Champa	
			Magnolia champaca	Champa	Magnoliaceae
3	*Papilio memnon*	Great Mormon	*Citrus aurantiifolia*	Lebu	Rutaceae
			Citrus maxima	Batabi Lebu	
			Magnolia champaca	Champa	Magnoliaceae
4	*Papilio polytes*	Common Mormon	*Glycosmis pentaphylla*	Matkila	Rutaceae
			Citrus aurantiifolia	Lebu	
			Citrus limon	Gora Lebu	
			Citrus maxima	Batabi Lebu	
			Aegle marmelos	Bel	
			Feronia limonia	Kadbel	
			Murraya koenigii	Curry Pata	
			Murraya paniculata	Kamini	
			Zanthoxylum rhetsa	Bajna	
5	*Papilio polymnestor*	Blue Mormon	*Glycosmis pentaphylla*	Matkila	Rutaceae
			Citrus limon	Gora Lebu	
			Citrus aurantiifolia	Lebu	
			Citrus maxima	Batabi Lebu	
6	*Graphium sarpedon*	Common Bluebottle	*Annona reticulata*	Atta	Annonaceae
			Polyalthia longifolia	Debdaru	
			Magnolia champaca	Champa	Magnoliaceae
7	*Papilio clytia*	Common Mime	*Cinnamomum tamala*	Tejpata	Lauraceae
			Cinnamomum verum	Darchini	
			Litsea glutinosa	Kukurchita	
8	*Papilio demoleus*	Lime Swallowtail	*Glycosmis pentaphylla*	Matkila	Rutaceae
			Citrus limon	Gora Lebu	
			Citrus maxima	Batabi Lebu	
			Citrus aurantiifolia	Lebu	
			Murraya koenigii	Curry Pata	
			Aegle marmelos	Bel	
			Ziziphus oenopolia	Ban Boroi	Rhamnaceae
			Magnolia champaca	Champa	Magnoliaceae
9	*Pachliopta aristolochiae*	Common Rose	*Aristolochia indica*	Ishwarmul	Aristolochiaceae
	Family: Nymphalidae				
10	*Cethosia cyane*	Leopard Lacewing	*Passiflora foetida*	Jhumko Lata	Passifloraceae
11	*Charaxes solon*	Black Rajah	*Tamarindus indica*	Tetul	Caesalpiniaceae
			Caesalpinia pulcherrima	Choto Krishnachura	
			Bauhinia acuminata	Shadakanchon	Fabaceae
			Dalbergia sissoo	Sishoo	
12	*Charaxes psaphon*	Plain Tawny Rajah	*Tamarindus indica*	Tetul	Caesalpiniaceae
13	*Charaxes bernardus*	Tawny Rajah	*Adenanthera pavonina*	Rakta Chandan	Mimosaceae
14	*Polyura athamas*	Common Nawab	*Delonix regia*	Krishnachura	Caesalpiniaceae
15	*Moduza procris*	Commander	*Mussaenda philippica*	Mussenda	Rubiaceae
			Mussaenda erythrophylla	Lal Mussenda	
			Neolamarckia cadamba	Kadom	
16	*Hypolimnas bolina*	Great Eggfly	*Laportea interrupta*	Chotrapatta	Urticaceae
			Sida rhombifolia	Lal-berela	Malvaceae
			Asystasia gangetica	Gangatara	Acanthaceae
			Portulaca oleracea	Baranunia	Portulacaceae

Table 1. Contd.

No	Butterflies		Butterfly larval host plants		
	Scientific name	**English name**	**Scientific name**	**Local name**	**Family name**
	Family: Nymphalidae				
17	*Athyma perius*	Common Sergeant	*Abelmoschus esculentus*	Dherosh	Malvaceae
			Glochidion ellipticum	Assami Kach	Phyllanthaceae
18	*Euthalia aconthea*	Common Baron	*Mangifera indica*	Aam	Anacardiaceae
			Anacardium occidentale	Kaju Badam	
			Streblus asper	Sheora	Moraceae
19	*Euthalia lubentina*	Gaudy Baron	*Scurrula parasitica*	Porgacha	Loranthaceae
			Dendrophthoe falcata	Bajrangi	
20	*Phalanta phalantha*	Common Leopard	*Smilax perfoliata*	Kumari Lata	Smilacaceae
			Flacourtia indica	Bauchi	Salicaceae
21	*Ariadne merione*	Common Castor	*Ricinus communis*	Bherenda	Euphorbiaceae
			Tragia hispida	Bichuti	
22	*Ariadne ariadne*	Angled Castor	*Ricinus communis*	Bherenda	Euphorbiaceae
			Tragia hispida	Bichuti	
23	*Cyrestis thyodamas*	Common Map	*Ficus religiosa*	Ashwath	Moraceae
			Ficus racemosa	Jagdumur	
			Ficus benghalensis	Bot	
24	*Vanessa cardui*	Painted Lady	*Lablab purpureus*	Shim	Fabaceae
25	*Junonia orithya*	Blue Pansy	*Ruellia tuberosa*	Chotpotey	Acanthaceae
			Mimosa pudica	Lajjaboti	Mimosaceae
26	*Junonia almana*	Peacock Pansy	*Oryza sativa*	Dhan	Poaceae
27	*Junonia hierta*	Yellow Pansy	*Mimosa pudica*	Lajjaboti	Mimosaceae
28	*Neptis jumbah*	Chestnut-streaked Sailer	*Ziziphus oenopolia*	Ban Boroi	Rhamnaceae
			Bombax ceiba	Shimul	Bombacaceae
29	*Neptis hylas*	Common Sailer	*Lablab purpureus*	Shim	Fabaceae
			Bombax ceiba	Shimul	Bombacaceae
Family: Pieridae					
30	*Catopsilia pomona*	Common Emigrant	*Butea monosperma*	Palash	Fabaceae
			Bauhinia acuminata	Shada Kanchon	
			Sesbania grandiflora	Bak Phul	
			Senna occidentalis	Bara Kalkesunda	Caesalpiniaceae
			Senna alata	Dadmardan	
			Senna siamea	Minjiri	
			Senna tora	Chakunda	
			Cassia fistula	Shonalu	
			Cassia renigera	Burmese Pink Shonalu	
			Cassia javanica	Bon shonalu	
31	*Catopsilia pyranthe*	Mottled Emigrant	*Sesbania grandiflora*	Bakphul	Fabaceae
			Senna tora	Chakunda	Caesalpiniaceae
			Senna occidentalis	Bara Kalkesunda	
			Senna sophera	Kalkashunda	
			Cassia fistula	Shonalu	
			Cassia renigera	Burmese Pink Shonalu	
			Cassia javanica	Bon Shonalu	
32	*Eurema hecabe*	Common Grass Yellow	*Mimosa pudica*	Lajjaboti	Mimosaceae
			Albizia procera	Shada Koroi	
			Albizia saman	Shirish	
			Cassia fistula	Shonalu	Caesalpiniaceae
			Senna tora	Chakunda	
			Caesalpinia pulcherrima	Choto Krishnachura	
			Delonix regia	Krishnachura	

Table 1. Contd.

No	Butterflies		Butterfly larval host plants		
	Scientific name	English name	Scientific name	Local name	Family name
	Family: Pieridae				
33	*Eurema blanda*	Three-spot Grass Yellow	*Camellia japonica*	Camellia	Theaceae
			Bauhinia purpurea	Rakto Kanchon	Fabaceae
			Sesbania grandiflora	Bakphul	
			Cassia fistula	Shonalu	Caesalpiniaceae
			Cassia javanica	Bon Shonalu	
			Delonix regia	Krishnachura	
34	*Leptosia nina*	Psyche	*Cleome viscosa*	Halud Hurhurey	Cleomaceae
			Cleome rutidosperma	Nil Hurhurey	
			Capparis zeylanica	Ashari Lata	Capparaceae
35	*Hebomoia glaucippe*	Great Orange- tip	*Capparis zeylanica*	Ashari Lata	Capparaceae
36	*Pieris canidia*	Indian Cabbage White	*Rorippa indica*	Ban Sarisha	Brassicaceae
37	*Pareronia hippia*	Common Wanderer	*Capparis zeylanica*	Ashari Lata	Capparaceae
38	*Cepora nerissa*	Common Gull	*Capparis zeylanica*	Ashari Lata	Capparaceae
39	*Appias libythea*	Striped Albatross	*Cleome rutidosperma*	Nil Hurhurey	Cleomaceae
			Capparis zeylanica	Ashari Lata	Capparaceae
40	*Appias lyncida*	Chocolate Albatross	*Bombax ceiba*	Shimul	Bombacaceae
			Capparis zeylanica	Ashari Lata	Capparaceae
41	*Belenois aurota*	Pioneer	*Capparis zeylanica*	Ashari Lata	Capparaceae
42	*Delias hyparete*	Painted Jezebel	*Averrhoa bilimbi*	Bilimbi	Oxalidaceae
			Scurrula parasitica	Porgacha	Loranthaceae
			Dendrophthoe falcata	Bajrangi	
43	*Delias eucharis*	Common Jezebel	*Azadirachta indica*	Neem	Meliaceae
			Scurrula parasitica	Porgacha	Loranthaceae
			Dendrophthoe falcata	Bajrangi	
			Butea monosperma	Palash	Fabaceae
	Family: Lycaenidae				
44	*Remelana jangala*	Chocolate Royal	*Lagerstroemia speciosa*	Jarul	Lythraceae
			Averrhoa carambola	Kamranga	Oxalidaceae
45	*Rathinda amor*	Monkey Puzzle	*Litchi chinensis*	Lichu	Sapindaceae
			Ixora coccinea	Rangon	Rubiaceae
46	*Curetis thetis*	Indian Sunbeam	*Abrus precatorius*	Kunch	Fabaceae
			Butea monosperma	Polash	
47	*Cigaritis vulcanus*	Common Silverline	*Volkameria inermis*	Shita Vat	Lamiaceae
			Ziziphus oenopolia	Ban Boroi	Rhamnaceae
			Carissa carandas	Karamcha	Apocynaceae
			Clerodendrum indicum	Bamunhati	Lamiaceae
			Cassia fistula	Shonalu	Caesalpiniaceae
48	*Tajuria cippus*	Peacock Royal	*Dendrophthoe falcata*	Bajrangi	Loranthaceae
49	*Jamides celeno*	Common Cerulean	*Saraca asoca*	Ashok	Fabaceae
			Butea monosperma	Polash	
			Abrus precatorius	Kunch	
50	*Lampides boeticus*	Pea Blue	*Butea monosperma*	Polash	Fabaceae
			Lablab purpureus	Shim	
51	*Zizula hylax*	Tiny Grass Blue	*Ruellia tuberosa*	Chotpotey	Acanthaceae
52	*Chilades lajus*	Lime Blue	*Citrus limon*	Gora Lebu	Rutaceae
			Citrus aurantiifolia	Lebu	
			Citrus maxima	Batabi Lebu	
			Glycosmis pentaphylla	Matkila	
			Murraya paniculata	Kamini	
53	*Loxura atymnus*	Yamfly	*Smilax perfoliata*	Kumari Lata	Smilacaceae
			Dioscorea pentaphylla	Jhum Alu	Dioscoreaceae

Table 1. Contd.

No	Butterflies		Butterfly larval host plants		
	Scientific name	English name	Scientific name	Local name	Family name
	Family: Lycaenidae				
54	*Castalius rosimon*	Common Pierrot	*Ziziphus oenopolia*	Ban Boroi	Rhamnaceae
	Family: Hesperiidae				
55	*Gangara thyrsis*	Giant Redeye	*Phoenix sylvestris*	Khejur	Arecaceae
56	*Hasora chromus*	Common Banded Awl	*Ricinus communis*	Bherenda	Euphorbiaceae
			Oryza sativa	Dhan	Poaceae
57	*Tagiades japetus*	Common Snow Flat	*Dioscorea alata*	Chupri Alu	Dioscoreaceae
58	*Parnara guttatus*	Straight Swift	*Zea mays*	Bhutta	Poaceae
			Oryza sativa	Dhan	
	Family: Danaidae				
59	*Euploea core*	Common Crow	*Holarrhena pubescens*	Kurchi	Apocynaceae
			Asclepias curassavica	Rakto Phul	
			Carissa carandas	Karamcha	
			Cascabela thevetia	Kolkey Phul	
			Hemidesmus indicus	Ananto Mul	
			Ichnocarpus frutescens	Parallia Lata	
			Ficus benghalensis	Bot	Moraceae
			Streblus asper	Sheora	
			Ficus racemosa	Jagdumur	
			Ficus religiosa	Ashwath	
60	*Danaus chrysippus*	Plain Tiger	*Asclepias curassavica*	Rakto Phul	Apocynaceae
			Calotropis gigantea	Akand	
61	*Tirumala limniace*	Blue Tiger	*Calotropis gigantea*	Akand	Apocynaceae
			Asclepias curassavica	Rakto Phul	
62	*Parantica aglea*	Glassy Tiger	*Calotropis gigantea*	Akand	Apocynaceae
63	*Euploea klugii*	King Crow	*Ficus hispida*	Kak Dumur	Moraceae
			Streblus asper	Sehora	
64	*Euploea midamus*	Blue-spotted Crow	*Nerium oleander*	Rakta Karabi	Apocynaceae
65	*Danaus genutia*	Striped Tiger	*Calotropis gigantea*	Akand	Apocynaceae
			Asclepias curassavica	Rakto Phul	
	Family: Satyridae				
66	*Elymnias hypermnestra*	Common Palmfly	*Calamus rotang*	Chanch Bet	Arecaceae
			Areca catechu	Supari	
			Cocos nucifera	Narikel	
			Dypsis lutescens	Areca Palm	
			Elaeis guineensis	Oil Palm	
			Phoenix sylvestris	Khejur	
67	*Melanitis leda*	Common Evening Brown	*Oryza sativa*	Dhan	Poaceae
			Cynodon dactylon	Durba Ghas	
			Bambusa bambos	Kanta Bans	
			Pennisetum purpureum	Nepi Ghas	
			Panicum repens	Dhani Ghas	
			Setaria barbata	Bashpata Ghas	
			Zea mays	Bhutta	
			Rottboellia cochinchinensis	Boro Sowati	
			Oplismenus compositus	Gohur	
68	*Mycalesis perseus*	Common Bushbrown	*Oryza sativa*	Dhan	Poaceae
			Oplismenus compositus	Gohur	
69	*Lethe europa*	Bamboo Treebrown	*Bambusa bambos*	Kanta Bans	Poaceae
			Bambusa vulgaris	Baijja Bans	
	Family: Acraeidae				
70	*Acraea violae*	Tawny Coster	*Passiflora foetida*	Jhumko Lata	Passifloraceae

Table 1. Contd.

No	Butterflies		Butterfly larval host plants		
	Scientific name	English name	Scientific name	Local name	Family name
	Family: Amathusiidae				
71	*Discophora sondaica*	Common Duffer	*Bambusa vulgaris*	Baijja Bans	Poaceae
	Family: Riodinidae				
72	*Abisara echerius*	Plum Judy	*Ardisia solanacea*	Banjam	Myrsinaceae

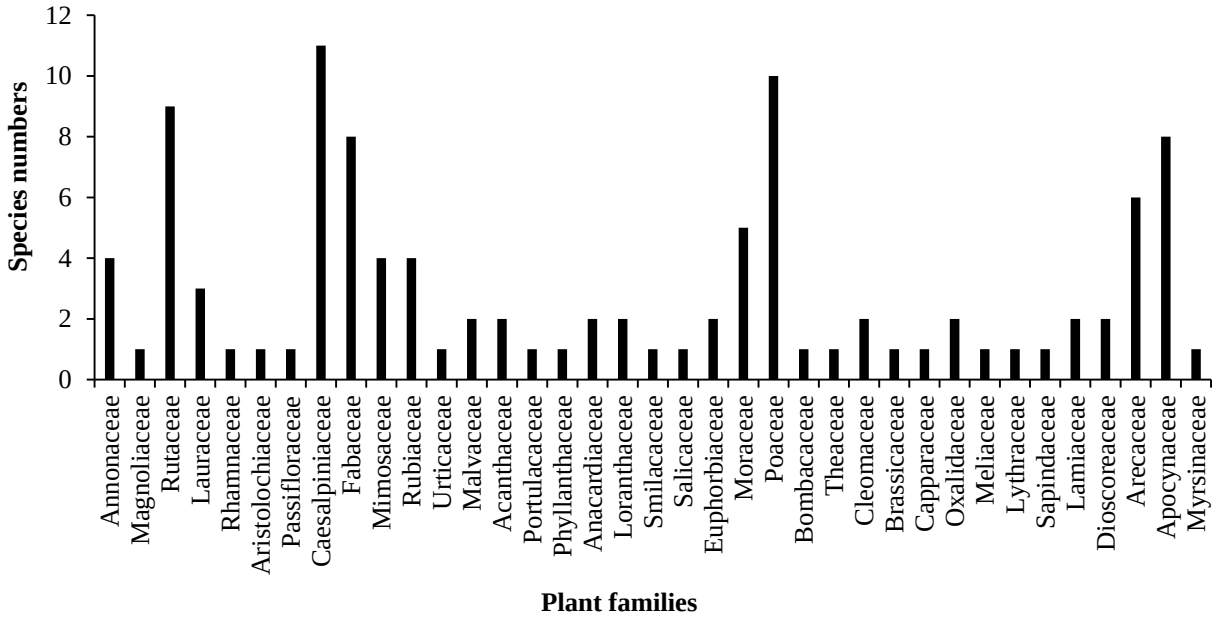

Figure 2. The number of plant species and their associated families on the JU campus.

In this study, we documented the dependency of butterflies on their respective host plant species (families) (Table 1, Figures 2 and 3). The results indicated that 10 butterfly species from three families (Lycaenidae, Pieridae, and Nymphalidae) relied on eight plant species from the Fabaceae family. Similarly, eight butterfly species from the same three families depended on 11 plant species from the Caesalpiniaceae family (Figures 2 and 3). Seven butterfly species from the Amathusiidae, Satyridae, Hesperiidae, and Nymphalidae families relied on 10 species of plants from the Poaceae family. Additionally, seven butterfly species from the Pieridae family depended on a single species from the Capparaceae family, while six Danaidae species relied on eight Apocynaceae species. Five species of Papilionidae depended on a single plant species from the Magnoliaceae family, whereas five species from Lycaenidae and Papilionidae relied on nine species of Rutaceae (Figures 2 and 3). Furthermore, four butterfly species from Pieridae and Nymphalidae depended on four plant species from the Mimosaceae family, while four others from Lycaenidae, Nymphalidae, and Papilionidae relied on a single species from the Rhamnaceae family. Additionally, four butterfly species depended on five plant species from the Moraceae family, and another four relied on two plant species from the Loranthaceae family (Figure 3). Lastly, between one and three butterfly species depended on each of the remaining 26 plant families.

Special emphasis was placed on the distribution of 12 larval host plants among the 107 total identified in the study area. These plants included *Capparis zeylanica*, *Citrus aurantiifolia*, *Butea monosperma*, *Oryza sativa*, *Cassia fistula*, *Glycosmis pentaphylla*, *Calotropis gigantea*, *Ziziphus oenopolia*, *Senna tora*, *Polyalthia longifolia*, *Mimosa pudica*, and *Delonix regia* (Figure 4). Of the 12 larval host plants, 8 species—*C. aurantiifolia*, *B. monosperma*, *C. fistula*, *G. pentaphylla*, *Z. oenopolia*, *S. tora*, *P. longifolia*, and *M. pudica*—were found at all sites. In contrast, *D. regia* and *C. gigantea* were recorded in 8 sites (1, 2, 3, 4, 5, 6, 9, and 10) and 4 sites (1, 7, 9, and 10), respectively. Meanwhile, *O. sativa* was present in only 3 sites (1, 8, and 9), and *C. zeylanica* was recorded in just 2 sites (9 and 10) on the JU campus (Figure 1).

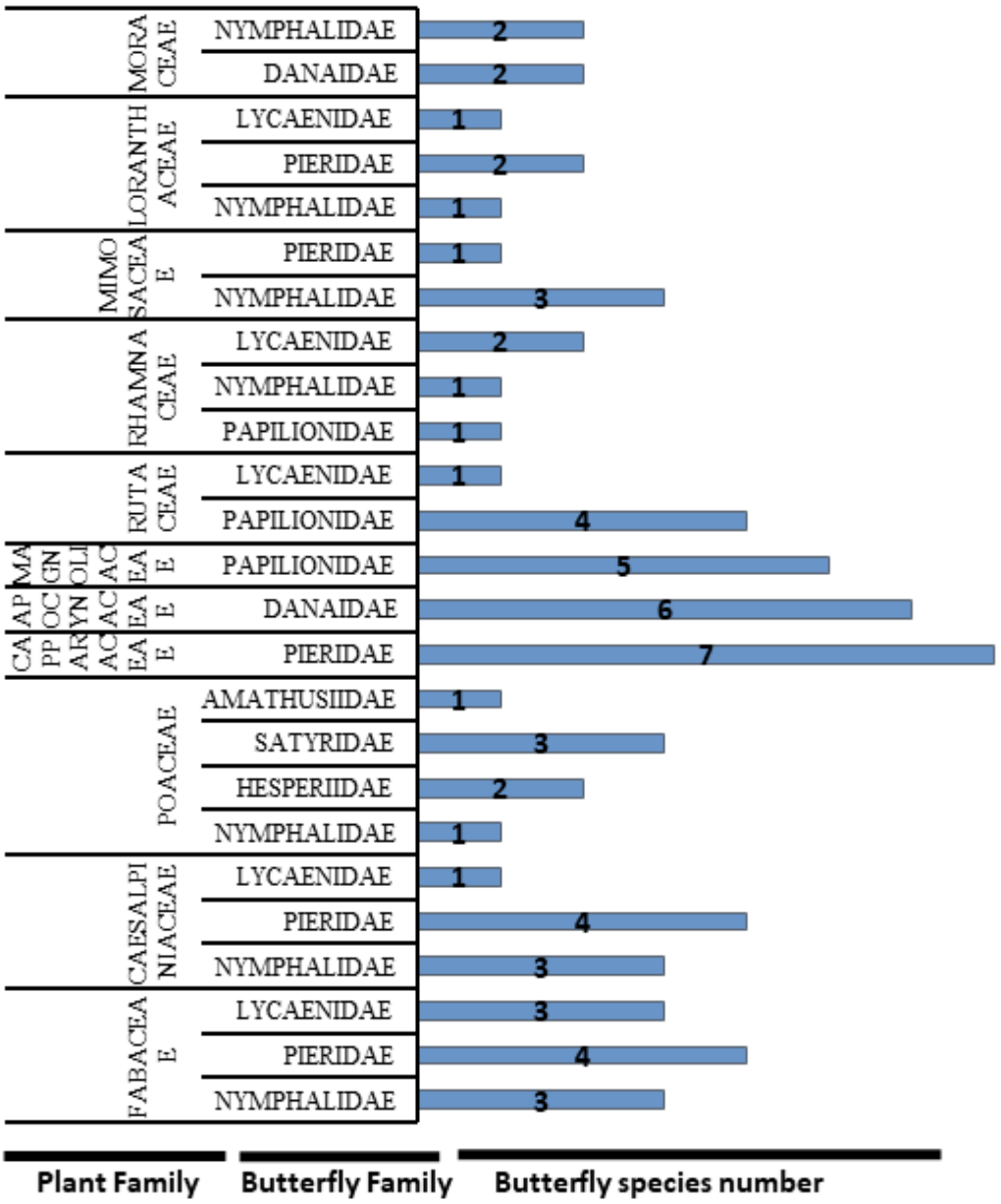

Figure 3. Butterfly species interact with their host plant families on the JU campus.

Khan *et al*. (2021) previously identified 917 vascular plant species on the JU campus, of which the present study recorded 107 species as larval host plants for butterflies. This study provides a comprehensive checklist and spatial distribution analysis of butterfly larval host plants on the JU campus, supporting informed conservation efforts and highlighting intricate ecological relationships. The identified plant species belong to diverse families, offering vital food sources for butterfly caterpillars (Table 1). In this study, families such as Caesalpiniaceae, Poaceae, Rutaceae, Fabaceae, and Apocynaceae dominate the host plants but lack toxic compounds, enabling butterflies to adapt to new host plants using existing detoxification mechanisms (Mukherjee and Mondal, 2023) (Figure 3). Despite significant research in neighboring countries, studies on butterflies and their host plants in Bangladesh have been limited and sporadic, underscoring the need for focused efforts in this area (Chowdhury and Hossain, 2013; Shihan, 2016; Shihan, 2018; Nitin *et al*., 2018; Suthar *et al*., 2019; Mukherjee *et al*., 2019; Biswas *et al*., 2022; Mukherjee and Mondal, 2023). Ultimately, the present findings emphasize the importance of identifying key host plants and their distribution to develop effective conservation strategies, restore habitats, and protect native species, thereby supporting butterfly populations in both natural and urban areas.

Figure 4. Documentation of 12 larval host plants which are extensively utilized by butterflies on the JU campus. **A.** ***Calotropis gigantea,*** **B.** ***Polyalthia longifolia,*** **C.** ***Glycosmis pentaphylla,*** **D.** ***Senna tora,*** **E.** ***Butea monosperma,*** **F.** ***Ziziphus oenopolia,*** **G.** ***Oryza sativa,*** **H.** ***Capparis zeylanica,*** **I.** ***Citrus aurantiifolia,*** **J.** ***Mimosa pudica,*** **K.** ***Delonix regia*** **and L.** ***Cassia fistula.***

4. Conclusions

The JU campus hosts a diverse range of plant species and microhabitats, supporting many butterfly species. However, urbanization and habitat loss, particularly the destruction of larval host plants, threaten their populations. This study provides a comprehensive list of 107 host plants and their distribution across JU's semi-natural environment, which supports 72 butterfly species. Twelve key host plants were identified as essential for caterpillar development and butterfly survival. The study also found that butterflies primarily feed on plants from the Caesalpiniaceae, Poaceae, Rutaceae, Fabaceae, and Apocynaceae families, emphasizing their significance for butterfly survival. These findings highlight the urgent need to conserve and restore natural butterfly habitats to safeguard populations at the JU campus and beyond.

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Data availability

All relevant data and information are included in the manuscript.

Conflict of interest
None to declare.

Authors' contribution
Shraboni Das and Muntahena Ruhi were responsible for collecting the data and sample. Shraboni Das and Muhammad Sohel Abedin performed the data analysis and initial text drafting. Md. Monwar Hossain supervised the process and made several edits to the final manuscript. All authors have reviewed and endorsed the final manuscript.

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