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Butterfly Diversity and Host Plant Dynamics in a Semi-Urban Ecosystem: Insights from the Nesamony Memorial Christian College Campus, Marthandam, Tamil Nadu, India

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

This study investigates butterfly diversity and host plant interactions within a semi-urban ecosystem on the Nesamony Memorial Christian College (NMCC) campus in Marthandam, Tamil Nadu, India. A total of 1204 butterflies, comprising 81 species from 56 genera and five families, were recorded. Butterfly surveys were carried out using transect walks and visual encounter methods. Host plant utilisation was assessed through direct field observations and a review of relevant literature. The

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family Nymphalidae was the most diverse, with 26 species, followed by Lycaenidae, which accounted for 20 species. Fabaceae was identified as the primary host plant family, supporting 15 butterfly species. The findings highlight the significance of preserving and enhancing plant diversity in urban and peri-urban environments to sustain butterfly populations and promote ecosystem health. These results have important implications for urban planning and green space management, advocating for the incorporation of native and diverse plant species in urban landscapes to support biodiversity.

Keywords: Butterfly diversity; host plant preferences; semi-urban ecosystem; Nymphalidae; floral assemblage.

1. INTRODUCTION

Ecosystems rely on biodiversity, and consequently, the protection of biodiversity is fundamental to the development and resilience of ecosystems. Butterflies serve as valuable indicator species, responding quickly to environmental changes and reflecting the overall health of an ecosystem. As such, butterfly diversity is a crucial metric for assessing habitat quality in green spaces (Lin et al., 2024). The mutualistic interactions between plants and pollinators form intricate and dynamic networks that vary across local and regional scales, often along environmental gradients (Devoto et al. 2005; Pellissier et al. 2018). Given the profound impact of global changes, including climate and land-use alterations, on pollinator populations (Settele et al. 2016; Outhwaite et al. 2022), there is an urgent need to deepen our understanding of pollination networks and the ecological processes that drive shifts in pollinator assemblages across environmental gradients (Sánchez-Dávila et al., 2024).

In extreme climate gradients, such as those found in Mediterranean mountain systems, specialization in pollination networks is influenced by altitudinal changes and vegetation types (e.g., grasslands, shrubs, forests) (Schleuning et al., 2012; Minachilis et al., 2020). While the abundance and diversity of flowering plants can enhance pollinator diversity (Potts et al., 2003; Ebeling et al., 2008), the relationship between plant resource diversity and pollinator specialization is complex and may be influenced by local habitat heterogeneity and interactions between topoclimate and food resources (Sánchez-Dávila et al., 2024).

In India, butterflies are among the most studied invertebrate groups, with the Western Ghats being home to 336 butterfly species, approximately 12% of which are endemic. The Western Ghats is recognized as one of the world's biodiversity hotspots, marked by exceptionally high levels of endemism. Although the region has been the focus of numerous studies spanning several centuries, significant gaps in critical information remain, especially concerning the host-plant relationships of butterflies (Richard et al., 2024). The first comprehensive overview of India's butterfly fauna was published by Marshall and De Nicéville (1890), followed by subsequent faunistic reports by Bingham (1907), Pocock et al. (1912), and others. While studies on the butterfly fauna of South India have continued over the years (e.g., Holloway 1974; Arora and Nandy 1979; Anto et al. 2021; Sadasivan et al. 2023), most of these works have not adequately addressed the crucial host-plant relationships that underpin butterfly ecology. This gap in the literature has provided the impetus for the current study, which aims to compile a comprehensive checklist of butterfly species in the semi-urban environment of Kanniyakumari District, located in southern India, and to investigate the host-plant relationships of these butterflies. This study is particularly noteworthy as it represents the first systematic attempt to examine these relationships in this specific region, thereby contributing to a better understanding of local biodiversity and providing crucial insights into the dynamics of butterfly-pollinator networks in this biodiversity hotspot.

2. METHODOLOGY

2.1 Campus Biodiversity

The NMCC campus supports diverse habitats, including coconut groves, tropical dry evergreen forests, and an arboretum with rare and endemic species from the Western Ghats. The campus also features a medicinal garden, contributing to its plant diversity. Favorable agro-climatic conditions, moderate rainfall, and varied topography enhance species richness, with a total of 533 plant species recorded, comprising 524 angiosperms and 9 gymnosperms across

369 genera and 108 families. Exotic species such as *Acacia nilotica*, *Ageratum conyzoides*, *Annonasquamosa*, *Asparagus racemosus*, *Bauhinia purpurea*, *Cassia occidentalis*, and *Clitoriaternatea* were also noted. The campus's artificial ponds and pools support aquatic plants, including *Nymphaea alba*, *Nymphaea stellata*, *Nelumbonucifera*, *Limnophilaheterophylla*, *Pistiastratiotes*, *Eichhorniacrassipes*, *Hydrillaverticillata*, *Vallisneriaspiralis*, and *Monochoriavaginalis*. Additionally, several endemic species are present (Sukumaran and Jeeva, 2017).

2.2 Butterfly Diversity and Host Plants

A faunistic survey of butterfly diversity was conducted at the Nesamony Memorial Christian College (NMCC) campus (Plate 1), spanning approximately 32 acres, from July 2022 to April 2024.The survey focused on documenting butterfly species across a variety of habitats within the campus, including native and semi-natural areas, ornamental plants in department gardens, and those in the botanical garden of the Department of Botany. Host plants of butterflies, both wild and cultivated, were identified using regional floras (Gamble, 1921-1935; Mathew, 1991; Nair & Henry, 1983; Henry et al., 1987, 1989). Binomial names and author citations were cross-verified with the International Plant Names Index (IPNI). Specimens were preserved and deposited in the Herbarium of the Department of Botany, NMCC.

Butterfly diversity was assessed using the "Pollard Walk" method (Pollard, 1977; Pollard and Yates 1993), with modifications. Sampling was conducted monthly, covering different seasonal conditions. Transects were randomly selected and stratified based on site area, with three transects of 1000 m each sampled once per month and thrice per season. In areas where 1000 m transects were impractical due to topography, shorter 500 m transects were used. Transects were covered within 1 hour, with observations made during different time slots (10:00 am–12:00 noon, 12:00 noon–2:00 pm, 2:00 pm–4:00 pm). Butterfly species were recorded on both sides of the transect path (within a 5 m wide band), with short pauses for identification and photography (Canon IXUS 170). Identification was carried out using field guides (Kehimkar, 2013; Singh, 2017; Smetacek, 2017), and butterflies were photographed rather than collected.

Plate 1. Map of the study area

3. RESULTS

A total of 1204 butterflies, representing 81 species across 56 genera and 5 families, were recorded during the study (Table 1 and Plate 2). The family Nymphalidae emerged as the most dominant, with 26 species, followed by Lycaenidae (18 species), Papilionidae (16 species), Pieridae(14 species), and Hesperiidae (7 species). The relative abundance and species richness of these families in the study area are illustrated in Fig. 1. These patterns of species richness align with findings from previous studies. For example, Ravivarma et al. (2023) reported Nymphalidaeas the most diverse family, with 23 species, at the Forest Research Centre in Siddipet, Telangana. Similarly, Kumar et al. (2017) identified 57 species in Tamil Nadu, with Nymphalidae being the most prevalent, followed by Lycaenidae, Pieridae, Papilionidae, andHesperiidae. Ponmanickam et al. (2022) also found Nymphalidae to be dominant in Sivakasi, Tamil Nadu, constituting 45% of the species, with Lycaenidae at 30% and other families less represented. However, Nagarajan and Theivaprakasham (2020) conducted a study in Tamil Nadu's Chennai, Kancheepuram, Chengalpet, and Thiruvallur districts, where Lycaenidae was found to be the dominant family, with 41 species, closely followed by Nymphalidae with 39 species.

Common butterfly species observed at high frequencies in the present study area included *Papilio polytes* (Common Mormon), *Pachliopta hector* (Crimson Rose), *Papilio demoleus* (Lime Butterfly), and *Leptosianina* (Psyche). The high butterfly diversity in the area, particularly within the families Papilionidae and Nymphalidae, is likely linked to the rich floral assemblage present in the region. Sukumaran and Jeeva (2017) documented 533 plant species across 369 genera and 108 families in the study area, including both wild and cultivated species. The diverse plant community likely supports a wide array of butterfly species, contributing to the observed richness.

The host plant preferences of butterflies were investigated, revealing that butterflies utilized plants from 81 species across 76 genera and 31 families (Table 1; Fig. 2). The results showed that the majority of butterfly species (23%) preferentially used plants from the *Fabaceae* family, followed by *Malvaceae* (16%), *Capparaceae* (12%), *Acanthaceae* (11%), and *Poaceae* (8%). Butterfly species composition at a given site is often shaped by factors such as vegetation structure and diversity, as well as the availability of nectar resources. Increased vegetation complexity, which includes the presence of trees, shrubs, and climbing plants, is positively correlated with higher butterfly diversity. The surrounding agroecosystem likely played a key role in supporting butterfly populations by providing shelter and suitable foraging habitats. Additionally, the home gardens near the study site contributed to this diversity by offering a variety of food and nectar sources, as well as an array of flowering plants, further

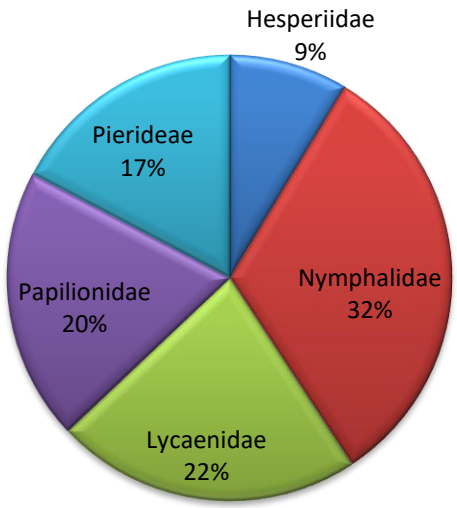

Fig. 1. Family-wise abundance of butterfies percentage from the study area.

Table 1.A checklist of butterfies and its host plants recorded from NMCC campus, Marthandam, Tamil Nadu, India

Binomial	Family	Common Name	Host Plant	Family	Common Name
Acraea terpsicore (Linnaeus, 1758)	Nymphalidae	Tawny Coster	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Asteraceae	Christmas Bush
Acytolepis puspa (Horsfield, 1828)	Lycaenidae	Common Hedge Blue	*Peltophorum pterocarpum* (DC.) Backer ex K.Heyne	Fabaceae	Yellow Flame Tree
Appias albino (Boisduval, 1836)	Pierideae	Common Albatross	*Drypetes sepiaria* (Wight & Arn.) Pax & K.Hoffm.	Putranjivaceae	Hedge Boxwood
Appias libythea (Fabricius, 1775)	Pierideae	Striped albatross	*Cleome rutidosperma* DC.	Cleomaceae	Fringed Spider Flower
Arhopala centaurus (Fabricius,1775)	Lycaenidae	Dull Oakblue	*Schleichera oleosa* (Lour.) Oken	Sapindaceae	Ceylon Oak
Ariadne ariadne (Linnaeus, 1763)	Nymphalidae	Angled castor	*Ricinus communis* L.	Euphorbiaceae	Castor Oil Plant
Ariadne merione (Cramer,1777)	Nymphalidae	Common castor	*Tragia involucrata* L.	Euphorbiaceae	Indian Stinging Nettle
Belenois aurota (Fabricius, 1793)	Pierideae	Pioneer White	*Capparis zeylanica* L.	Capparaceae	Ceylon Caper
Borbo cinnara (Wallace, 1866)	Hesperiidae	Rice Swift	*Setaria barbata* (Lam.) Kunth	Poaceae	Corn Grass,
Castalius rosimon (Fabricius, 1775)	Lycaenidae	Common Pierrot	*Spigelia anthelmia* L.	Loganiaceae	West Indian Pinkroot
Catopsilia pomona (Fabricius, 1775)	Pierideae	Oriental Lemon Emigrant	*Jatropha glandulifera* Roxb.	Euphorbiaceae	Purging Nut
Catopsilia pyranthe (Linnaeus, 1758)	Pierideae	Mottled Emigrant	*Lantana camara* L.	Verbenaceae	Shrub Verbena
Cepora nerissa (Fabricius, 1775)	Pierideae	Common Gull	*Capparis divaricata* Lam.	Capparaceae	Spreading Caper.
Charaxes solon (Fabricius, 1793)	Nymphalidae	Black Rajah	*Indigofera tinctoria* L.	Fabaceae	Dye Indigo
Chilades laius (Cramer, 1782)	Lycaenidae	Lime Blue	*Citrus* × *aurantiifolia* (Christm.) Swingle	Rutaceae	Key Lime
Chilades parrhasius (Fabricius, 1793)	Lycaenidae	Indian Cupid	*Vachellia nilotica* (L.) P.J.H.Hurter & Mabb.	Fabaceae	Gum Arabic Tree,
Colotis etrida (Boistuval, 1836)	Pierideae	Small Orange Tip	*Maerua oblongifolia* (Forssk.) A.Rich.	Capparaceae	Desert Caper
Cupido argiades (Pallas, 1771)	Lycaenidae	Tailed Cupid	*Tephrosia maxima* (L.) Pers.	Fabaceae	Hoary Pea
Danaus chrysippus (Linnaeus, 1758)	Nymphalidae	Plain Tiger	*Trachys muricata* (L.) Pers. ex Trin.	Poaceae	Indian Rough-Grass
Danaus genutia (Cramer, 1779)	Nymphalidae	Striped Tiger	*Tridax procumbens* L.	Asteraceae	Coat buttons
Delias eucharis (Drury, 1773)	Pierideae	Common Jezebel	*Dendrophthoe falcata* (L.f.) Ettingsh.	Loranthaceae	Long-leaved Mistletoe
Virachola isocrates (Fabricius,1793)	Lycaenidae	Common guava blue	*Naringi crenulata* (Roxb.) Nicolson	Rutaceae	Elephant Nettle
Discolampa ethion (Fabbricius, 1775)	Lycaenidae	Oriental Banded Blue Pierrot	*Ziziphus jujuba* Mill.	Rhamnaceae	Common Jujube
Euchrysops cnejus (Fabricius, 1798)	Lycaenidae	Oriental Gram Blue	*Urochloa ramosa* (L.) T.Q.Nguyen	Poaceae	Browntop Millet
Euploea core (Cramer, 1780)	Nymphalidae	Common Indian Crow	*Nerium oleander* L.	Apocynaceae	Oleander
Euploea klugii Moore, 1858	Nymphalidae	King crow	*Ficus hispida* L.f.	Moraceae	Hairy Fig
Eurema blanda (Boisduval, 1836)	Pierideae	Three-spot grass yellow	*Pithecellobium dulce* (Roxb.) Benth.	Fabaceae	Madras Thorn,
Eurema hecabe (Linnaeus, 1758)	Pierideae	Common Grass Yellow	*Abrus precatorius* L.	Fabaceae	Jequirity Bean
Euthalia aconthea (Cramer, 1777)	Nymphalidae	Common Baron	*Anacardium occidentale* L.	Anacardiaceae	Cashew Tree.

Binomial	Family	Common Name	Host Plant	Family	Common Name
Freyeria putli (Kollar, 1844)	Lycaenidae	Black-spotted Grass Jewel	*Trichodesma indicum* (L.) Sm.	Boraginaceae	Indian Borage
Freyeria trochylus (Freyer, 1845)	Lycaenidae	Grass Jewel	*Rhynchosia minima* (L.) DC.	Fabaceae	Least snout-bean
Graphium agamemnon (Linnaeus, 1758)	Papilionidae	Tailed Jay	*Annona muricata* L.	Annonaceae	Soursop, Graviola
Graphium doson (C. & R. Felder, 1864)	Papilionidae	Common jay	*Uvaria narum* (Dunal) Blume	Annonaceae	Pulikkan
Graphium nomius (Esper, 1799)	Papilionidae	Spot sword tail	*Monoon longifolium* (Sonn.) B.Xue & R.M.K.Saunders	Annonaceae	Ashoka
Graphium teredon (C. & R. Felder, 1865)	Papilionidae	Narrow banded blue bottle	*Cinnamomum malabatrum* (Burm.f.)J .Presl	Lauraceae	Wild Cinnamon
Hasora chromus (Cramer, 1782)	Hesperiidae	Common Banded Awl	*Brachypterum scandens* (Roxb.) Wight & Arn. ex Miq.	Fabaceae	Hog Creeper
Hebomoia glaucippe (Linnaeus, 1758)	Pierideae	Great Organge Tip	*Crateva religiosa* G.Forst.	Capparaceae	Sacred Garlic Pear
Hypolimnas bolina (Linnaeus, 1758)	Nymphalidae	Great Eggfly	*Ziziphus oenopolia* (L.) Mill.	Rhamnaceae	Jackal Jujube
Hypolimnas misippus (Linnaeus,1764)	Nymphalidae	Danaid Egg Fly	*Sida cordifolia* L.	Malvaceae	Country Mallow
Ixias marianne (Cramer, 1779)	Pierideae	White Orange Tip	*Capparis sepiaria* L.	Capparaceae	Hedge Caper-bush
Ixias pyrene (Linnaeus, 1764)	Pierideae	Yellow Orange Tip	*Cadaba fruticosa* (L.) Druce	Capparaceae	Indian Cadaba
Jamides celeno (Cramer, 1775)	Lycaenidae	Common cerulean	*Asystasia gangetica* (L.) T.Anderson	Acanthaceae	Coromandel
Junonia almana (Linnaeus, 1758)	Papilionidae	Peacock Pansy	*Hygrophila auriculata* (Schumach.) Heine	Acanthaceae	Kokilaksha
Junonia hierta (Fabricius, 1798)	Nymphalidae	Yellow Pancy	*Mimosa pudica* L.	Fabaceae	Touch-me not
Junonia iphita (Cramer, 1779)	Papilionidae	Chocolate Pancy	*Ruellia tuberosa* L.	Acanthaceae	Fever Root,
Junonia lemonias (Linnaeus, 1758)	Nymphalidae	Lemon Pansy	*Passiflora foetida* L.	Passifloraceae	Stinking Passion Flower
Junonia orithya (Linnaeus,1758)	Nymphalidae	Brush-footed Butterflies	*Barleria mysorensis* Roth	Acanthaceae	Hairy Barleria
Leptosia nina (Fabricius, 1793)	Nymphalidae	Psyche	*Cyanthillium cinereum* (L.) H.Rob.	Asteraceae	Ash Fleabane
Leptotes plinius (Fabricius, 1793)	Lycaenidae	Zebra blue	*Plumbago zeylanica* L.	Plumbaginaceae	Ceylon Leadwort
Melanitis leda (Linnaeus, 1758)	Nymphalidae	Common Evening Brown	*Bambusa bambos* (L.) Voss	Poaceae	Giant Thorny Bamboo
Moduza procris (Cramer, 1777)	Nymphalidae	Commander	*Alpinia galanga* (L.) Willd.	Zingiberaceae	Blue Ginger
Mycalesis perseus (Fabricius, 1775)	Nymphalidae	Dingy Bush Brown	*Oplismenus compositus* (L.) P.Beauv.	Poaceae	Running Mountaingrass
Mycalesis visala (Moore, 1858)	Nymphalidae	Long-branded Bushbrown	*Apluda mutica* L.	Poaceae	Mauritian Grass
Neptis hylas (Linnaeus, 1758)	Nymphalidae	Common Sailer	*Canavalia ensiformis* (L.) DC.	Fabaceae	Jack Bean, Sword Bean
*Neptis jumbah (*Moore, 1858)	Nymphalidae	Chestnut-Streaked Sailor	*Leucaena leucocephala* (Lam.) de Wit	Fabaceae	IPIL-ipil, White Leadtree
Orsotriaena medus (Fabricius, 1775)	Nymphalidae	Sahyadri Medus Brown	*Oryza sativa* L.	Poaceae	Paddy
Pachliopta aristolochiae (Fabricius,	Papilionidae	Common Rose	*Ixora coccinea* L.	Rubiaceae	Jungle Geranium

Binomial	Family	Common Name	Host Plant	Family	Common Name
1775)					
Pachliopta hector (Linnaeus, 1758)	Papilionidae	Crimson rose	*Aristolochia indica* L.	Aristolochiaceae	Indian Birthwort
Pachliopta pandiyana (Moore, 1881)	Papilionidae	Malabar Rose	*Stachytarpheta jamaicensis* (L.) Vahl	Verbenaceae	Blue Snake Weed
Papilio clytia (Linnaeus, 1758)	Papilionidae	Oriental Common Mime	*Cinnamomum verum* J.Presl	Lauraceae	Cinnamon Tree
Papilio demoleus (Linnaeus, 1758)	Papilionidae	Common lime butterfly	*Zanthoxylum asiaticum* (L.) Appelhans, Groppo & J.Wen	Rutaceae	Orange Climber
Papilio helenus (Linnaeus, 1758)	Papilionidae	Red Helen	*Zanthoxylum rhetsa* (Roxb.) DC.	Rutaceae	Indian Prickly Ash
Papilio polymnestor (Cramer, 1775)	Papilionidae	Blue Mormon	*Glycosmis pentaphylla* (Retz.) DC.	Rutaceae	Orangeberry
Papilio polytes (Linnaeus, 1758)	Papilionidae	Common Mormon	*Bergera koenigii* L.	Rutaceae	Curry Leaf Tree
Parantica aglea (Stoll, 1782)	Nymphalidae	Glassy Tiger	*Vincetoxicum indicum* (Burm.f.) Mabb.	Apocynaceae	Indian Ipecac
Pelopidas mathias (Fabricius, 1798)	Hesperiidae	Small branded swift	*Crotalaria juncea* L.	Fabaceae	Sun Hemp
Pieris rapae (Limmaeus,1758)	Pierideae	Small Cabbage White	*Mesosphaerum suaveolens* (L.) Kuntze	Lamiaceae	Curry Leaf
Sarangesa purendra (Moore, 1882)	Hesperiidae	Spotted Small Flat	*Blepharis maderaspatensis* (L.) B.Heyne ex Roth	Acanthaceae	Creeping Blepharis
Spialia galba (Fabricius, 1793)	Hesperiidae	Indian Skipper	*Waltheria indica* L.	Malvaceae	Sleepy Morning
Spindasis vulcanus (Fabricius, 1775)	Lycaenidae	Common Silver Line	*Dioscorea alata* L.	Dioscoreaceae	Purple Yam
Suastus gremius (Fabricius, 1798)	Hesperiidae	Indian Palm Bob	*Phoenix sylvestris* (L.) Roxb.	Arecaceae	Wild Date Palm
Symphaedra nais (Forster, 1771)	Nymphalidae	Baronet	*Mangifera indica* L.	Anacardiaceae	Mango
*Tagiades litigiosa (*Möschler, 1878)	Hesperiidae	Water Snow Flat	*Bidens pilosa* L.	Asteraceae	Farmer's Friend
Talicada nyseus (Guérin-Méneville, 1843)	Lycaenidae	Indian Red Pierrot	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Good Luck Leaf
Tirumala limniace (Cramer,1775)	Nymphalidae	Blue Tiger	*Stephanotis volubilis* (L.f.) S.Reuss, Liede & Meve	Apocynaceae	Green Milkweed Climber
Tirumala septentrionis (Butler, 1874)	Papilionidae	Dark Blue Tiger	*Calotropis gigantea* (L.) W.T.Aiton	Apocynaceae	Crown Flower
Troides minos (Cramer, 1779)	Papilionidae	Southern Birdwing	*Thottea siliquosa* (Lam.) Ding Hou	Aristolochiaceae	Common Rose
Ypthima asterope (Klug, 1832)	Nymphalidae	Common three-ring	*Axonopus compressus* (Sw.) P.Beauv	Poaceae	Blanket Grass
Zizeeria karsandra (Moore, 1865)	Lycaenidae	Dark Grass Blue	*Stylosanthes scabra* Vogel	Fabaceae	Pencil Flower
Zizeeria knysna (Trimen, 1862)	Lycaenidae	Tiny Grass Blue	*Oxalis corniculata* L.	Oxalidaceae	Sleeping Beauty
Zizina otis (Fabricius, 1787)	Lycaenidae	Lesser Grass Blue	*Alysicarpus vaginalis* (L.) DC.	Fabaceae	Buffalo-bur

enhancing the butterfly community in the area. These findings are consistent with those of Tiple et al. (2011), who noted that butterflies tend to exhibit host specificity, predominantly favoring plants from the Fabaceae and Poaceae families. Furthermore, they reported that the population size of butterflies is influenced by the number of host plants available to them. The butterflies in the present study were observed to visit flowers with tubular corollas more frequently than those with non-tubular corollas, preferring flowers from herbs and shrubs over trees, and favoring flowers of red, yellow, blue, and purple hues compared to those of white and pink. Butterflies were also more likely to visit flowers that were available for longer periods during the year.

This study reinforces the findings of Daniel et al. (2018), who examined butterfly diversity on the Tamil Nadu Agricultural University campus in Coimbatore, Tamil Nadu. They noted the host plant preferences of butterflies in association with native vegetation and ornamental plants. The diversity of flowering plants in both natural and semi-natural habitats, alongside cultivated species in gardens, provides an abundant resource base for butterfly species. The variety of flowering plants supports the specialization of butterfly species, with some species exhibiting a preference for specific host plants found in different ecological niches, such as tropical semi-evergreen forests and anthropogenic habitats. These results highlight the critical role of plant diversity, both native and cultivated, in sustaining butterfly populations and maintaining high species diversity in the study area. This research also makes a valuable contribution to our understanding of butterfly ecology in semi-urban environments. The findings have important implications for conservation efforts and urban planning, highlighting the crucial role of plant diversity in supporting biodiversity within human-dominated landscapes (Gómez-Martínez et al., 2022).

Acraea terpsicore(Linnaeus, 1758)

*Neptisjumbah (*Moore, 1858)

Euploea core (Cramer, 1780)

Castaliusrosimon (Fabricius, 1775)

Zizeeriakarsandra (Moore, 1865)

Hypolimnasbolina (Linnaeus, 1758)

Junonialemonias (Linnaeus, 1758)

Danaus chrysippus (Linnaeus, 1758)

Plate 2. Select butterflies of the study area

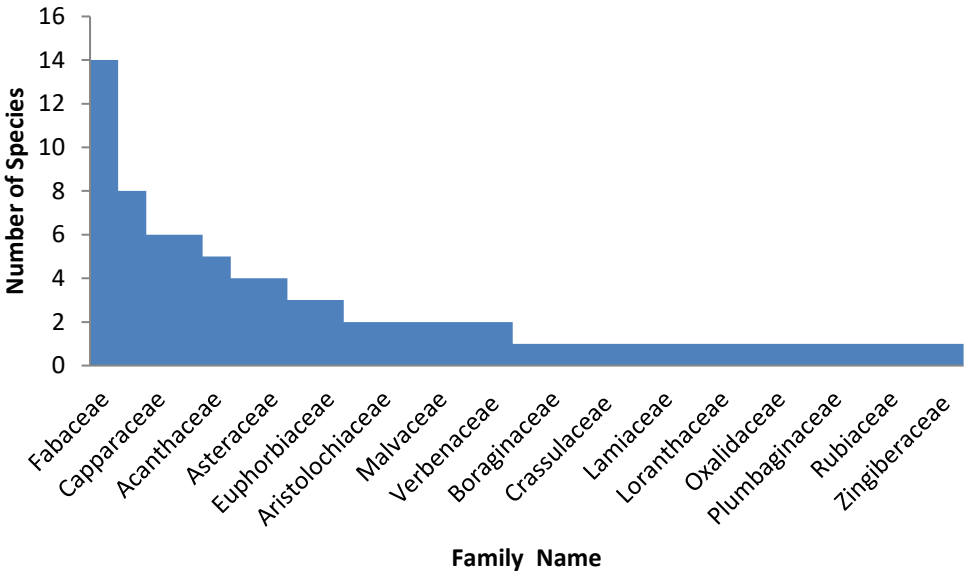

Fig. 2. Family wise distribution of host plants of butterflies in the study area

4. CONCLUSION

In conclusion, the study recorded a highdiversity of butterflies, with 1204 individuals representing 81 species across 56 genera and 5 families. The family Nymphalidaewas the most dominant, reflecting similar patterns observed in other regional studies, which have also identified Nymphalidae as the most species-rich family. The observed butterfly diversity is likely influenced by the rich floral assemblage in the study area, which includes both wild and cultivated plant species, providing essential resources for various butterfly species. The preference for specific host plants, particularly those from the Fabaceae, Malvaceae, and Capparaceae families, highlights the importance of plant diversity in supporting butterfly populations. Furthermore, the complex vegetation structure and varied agroecosystem around the study site, including the presence of home gardens, appear to provide optimal foraging and shelter conditions, which contribute to the high species richness and abundance of butterflies. The findings align with previous studies, emphasizing the critical role of vegetation complexity, nectar resource availability, and host plant diversity in maintaining and enhancing butterfly biodiversity. These results underscore the need for conservation strategies that prioritize plant diversity, both native and cultivated, to support butterfly populations and preserve ecosystem services in the region.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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