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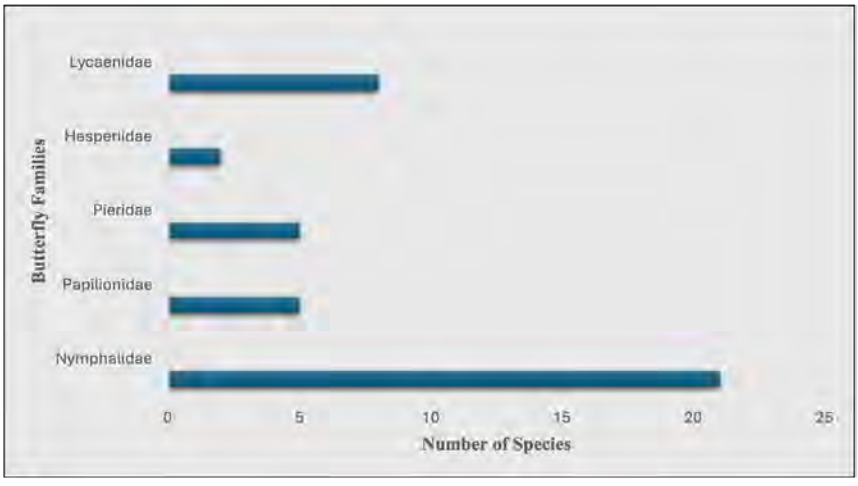
Diversity of butterflies in Horticulture Research Station of Assam Agriculture University, Guwahati, India

The northeastern region of India, south of the Brahmaputra River hosts remarkable biodiversity that includes a high proportion of endemic, rare, and endangered species (Modak et al. 2018). A total of 962 species and subspecies of butterflies have been reported from Assam, of which five are endemic (Bishaya et al. 2021). The main reason for this phenomenal diversity is the region's unique bio-geographic location at the junction of Indian and Indo-Chinese sub-regions (Saikia 2014).

Assam in northeastern India is ecologically very important as it is a part of the Indo-Burma global biodiversity hotspot and over the years, numerous workers have studied the butterfly fauna in different parts of the state. However, very little data is available on the diversity of butterflies inhabiting human-managed farms and gardens. Therefore, the present study attempts to fill in this research gap by documenting the diversity of butterflies in the Horticulture Research Station of Assam Agriculture University, Guwahati, Assam, from March 2022 to August 2023. The research station is situated in the Kamrup Metropolitan district of Assam, at the western end of Guwahati City by the side of the National Highway 37. It lies at 26.1058 N, 91.6099 E and is spread over an area of 32 ha. Different varieties of fruits, vegetables, flowers, spices, and medicinal and aromatic plants are cultivated in the horticulture research station. This plantation provides a better opportunity for butterflies in terms of nectarine and host plants.

During the study, butterflies were documented using the Pollard Walk survey method (Pollard 1982), which involved walking on trails at a speed of approximately 100 m per 20 minutes. The common



Distribution of species across the butterfly families observed.

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Table 1. List of butterfly species recorded in Horticulture Research Station, Guwahati, Assam.

	Family	Common Name	Scientific Name
1.	Nymphalidae	Clear Sailer	*Neptis nata* Moore [1858]
2.		Knight	*Lebadea martha* (Fabricius 1787)
3.		White-line Bush Brown	*Telinga malsaraperseus* (Moore [1858])
4.		Northern Common Jester	*Symbrenthia lilaea* (Hewitson 1864)
5.		Common Baron	*Euthalia aconthea* (Cramer [1777])
6.		Common Five-ring	*Ypthima baldus* (Fabricius 1775)
7.		Common Four-ring	*Ypthima huebneri* Kirby 1871
8.		Plain Tiger	*Danaus chrysippus* (Linnaeus 1758)
9.		Tawny Coster	*Acraea terpsicore* (Linnaeus 1758)
10.		Grey Pansy	*Junonia atlites* (Linnaeus 1763)
11.		Yellow Pansy	*Junonia hierta* (Fabricius 1798)
12.		Lemon Pansy	*Junonia lemonias* (Linnaeus 1758)
13.		Peacock Pansy	*Junonia almana* (Linnaeus 1758)
14.		Common Palmfly	*Elymnias hypermnestra* (Linnaeus 1762)
15.		Spotted Palmfly	*Elymnias malelas* (Hewitson 1863)
16.		Long-branded Bush Brown	*Mycalesis visala* Moore [1858]
17.		Common Evening Brown	*Melanitis leda* (Linnaeus 1758)
18.		Great Eggfly	*Hypolimnas bolina* (Linnaeus 1758)
19.		Common Castor	*Ariadne merione* (Cramer [1777])
20.		Common Sailer	*Neptis hylas* (Linnaeus 1758)
21.		Medus Brown	*Orsotriaena medus* (Fabricius 1775)
22.	Papilionidae	Common Jay	*Graphium doson* (C. & R. Felder 1864)
23.		Common Bluebottle	*Graphium sarpedon* (Linnaeus 1758)
24.		Lime Butterfly	*Papilio demoleus* Linnaeus 1758
25.		Red Helen	*Papilio helenus* Linnaeus 1758
26.		Common Mormon	*Papilio polytes* Linnaeus 1758
27.	Lycaenidae	Common Ciliate Blue	*Anthene emolus* (Godart [1824])
28.		Centaur Oakblue	*Arhopala centaurus* (Fabricius 1775)
29.		Common Pierrot	*Castalius rosimon* (Fabricius 1775)
30.		Lime Blue	*Chilades lajus* (Stoll [1780])
31.		Pale Grass Blue	*Pseudozizeeria maha* (Kollar [1844])
32.		Purple Sapphire	*Heliophorus epicles* (Godart [1824])
33.		Yamfly	*Loxura atymnnus* (Stoll 1780)
34.		Dark Grass Blue	*Zizeeria karsandra* (Moore 1865)
35.	Hesperiidae	Small Branded Swift	*Pelopidas mathias* (Fabricius 1798)
36.		Chocolate Demon	*Ancistroides nigrita* (Latreille [1824])

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	Family	Common Name	Scientific Name
37.	Pieridae	Common Grass Yellow	*Eurema hecabe* (Linnaeus 1758)
38.		Psyche	*Leptosia nina* (Fabricius 1793)
39.		Asian Cabbage White	*Pieris canidia* (Linnaeus 1768)
40.		Lemon Emigrant	*Catopsilia pomona* (Fabricius 1775)
41.		Red-base Jezebel	*Delias pasithoe* (Linnaeus 1767)

butterflies observed during the study were identified on the spot during sampling while others were identified from photographs using existing literature (Evans 1932; Kehimkar 2008).

A total of 41 species of butterflies belonging to five families and 32 genera were recorded during the present study (Table 1). Out of the recorded families, Nymphalidae was found to be dominant with 21 species followed by Lycaenidae (8), Papilionidae (5), Pieridae (5), and Hesperiidae (2).

The geographical location of any area, its climatic conditions, and vegetative composition are essential requisites for supporting a rich diversity of butterflies. Among the five families observed the family Nymphalidae was found to be the most dominant. Twenty-one out of 41 species were from Nymphalidae, which accounts for approximately 43% of the total finding. Similar records of the dominance of the Nymphalidae family were found in studies conducted on the Dibrugarh University campus, Assam University campus, RRL campus, and Maliata Reserved Forest of Assam (Bhuyan et al. 2005; Bora & Meiti 2014; Dutta et al. 2020; Basfore & Buragohain 2024).
The comprehensive documentation and analysis of butterfly diversity in an area helps in understanding the potential roles played by the species (Gogoi et al. 2023) and provides valuable insights into species composition and distribution, emphasizing the necessity for targeted conservation strategies. Understanding these patterns is crucial for preserving butterfly populations, which serve as important biological indicators of environmental health and biodiversity. Thus, continued monitoring and conservation efforts are essential to protect these vital components of our ecosystem.

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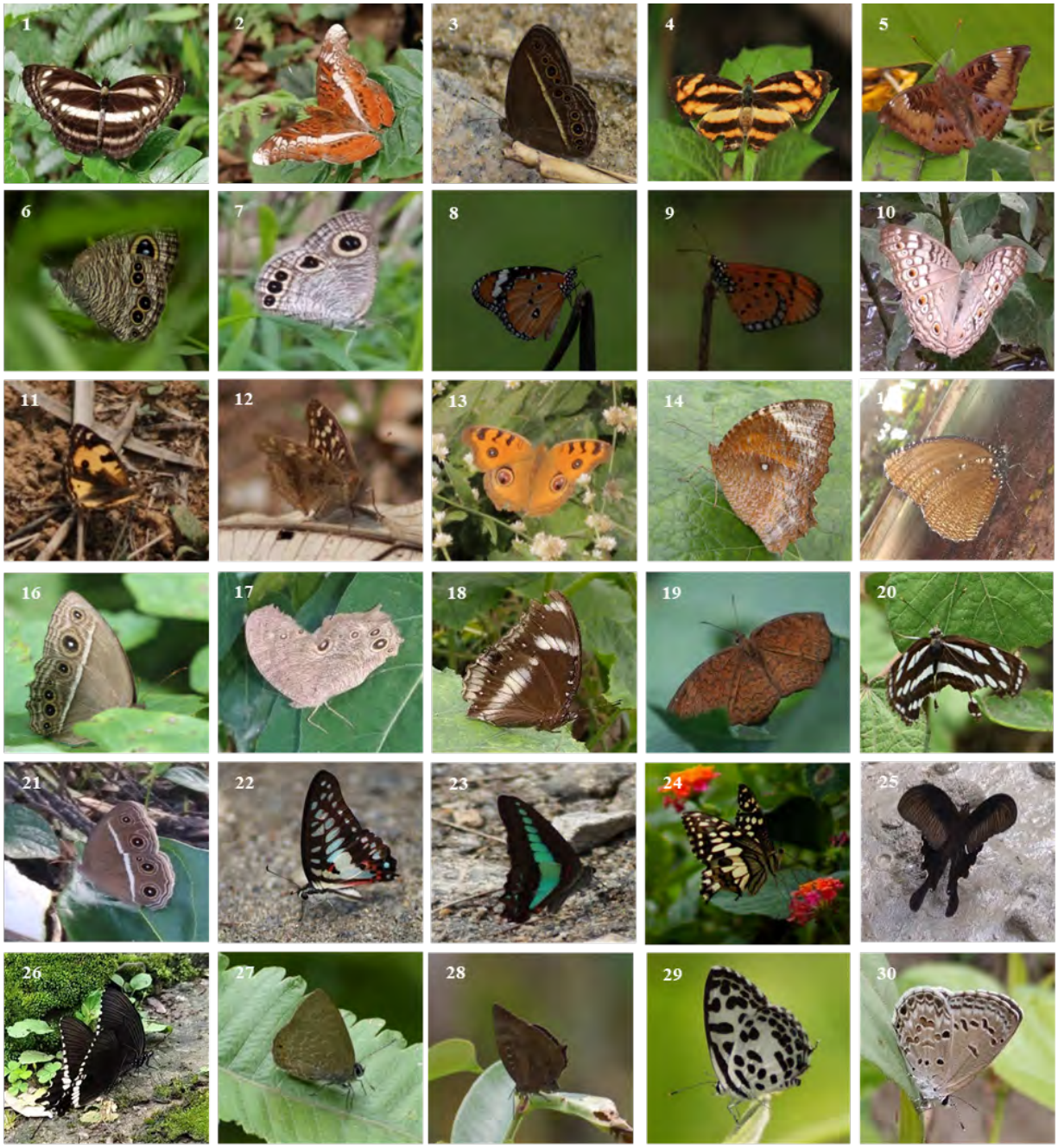

1. *Neptis nata* Moore [1858], 2. *Lebadea martha* (Fabricius 1787), 3. *Telinga malsaraperseus* (Moore [1858], 4. *Symbrenthia lilaea* (Hewitson 1864), 5. *Euthalia aconthea* (Cramer [1777]), 6. *Ypthima baldus* (Fabricius 1775), 7. *Ypthima huebneri* Kirby 1871, 8. *Danaus chrysippus* (Linnaeus 1758), 9. *Acraea terpsicore* (Linnaeus 1758), 10. *Junonia atlites* (Linnaeus 1763), 11. *Junonia hierta* (Fabricius 1798), 12. *Junonia lemonias* (Linnaeus 1758), 13. *Junonia almana* (Linnaeus 1758), 14. *Elymnias hypermnestra* (Linnaeus 1762), 15. *Elymnias malelas* (Hewitson 1863), 16. *Mycalesis visala* Moore [1858], 17. *Melanitis leda* (Linnaeus 1758), 18. *Hypolimnas bolina* (Linnaeus 1758), 19. *Ariadne merione* (Cramer [1777]), 20. *Neptis hylas* (Linnaeus 1758), 21. *Orsotriaena medus* (Fabricius 1775), 22. *Graphium doson* (C. & R. Felder 1864), 23. *Graphium sarpedon* (Linnaeus 1758), 24. *Papilio demoleus* Linnaeus 1758, 25. *Papilio helenus* Linnaeus 1758, 26. *Papilio polytes* Linnaeus 1758, 27. *Anthene emolus* (Godart [1824]), 28. *Arhopala centaurus* (Fabricius 1775), 29. *Castalius rosimon* (Fabricius 1775), 30. *Chilades lajus* (Stoll [1780]).

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31. *Pseudozizeeria maha* (Kollar [1844]), 32. *Heliophorus epicles* (Godart [1824]), 33. *Loxura atymnnus* (Stoll 1780), 34. *Zizeeria karsandra* (Moore 1865), Family: Hesperiidae 35. *Pelopidas mathias* (Fabricius 1798), 36. *Ancistroides nigrita* (Latreille [1824]), Family: Pieridae 37. *Eurema hecabe* (Linnaeus 1758), 38. *Leptosia nina* (Fabricius 1793), 39. *Pieris canidia* (Linnaeus 1768), 40. *Catopsilia pomona* (Fabricius 1775), 41. *Delias pasithoe* (Linnaeus 1767).

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Bijay Basfore[1], Mallika Gogoi[2], Nisha Gupta[3] & Renu Gogoi[4]

[1-3] Department of Zoology, Pandu College, Guwahati, Assam 781012, India.
[4] Department of Zoology, Cotton University, Guwahati, Assam 781001, India.
Email: [2]gogoimallika914@gmail.com (corresponding author)

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