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Journal of Threatened Taxa

10.11609/jott.2024.16.5.25119-25282

www.threatenedtaxa.org

26 May 2024 (Online & Print)

16(5): 25119-25282

ISSN 0974-7907 (Online)

ISSN 0974-7893 (Print)



Open Access





ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher
Wildlife Information Liaison Development Society
www.wild.zooreach.org

Host
Zoo Outreach Organization
www.zooreach.org

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Cover: Rose-breasted Grosbeak *Pheucticus ludovicianus*, pen & ink with colour pencil. © Lucille Betti-Nash.



Diversity and status of butterfly fauna at Kurukshetra University campus, Haryana, India

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Abstract: Campuses of educational institutions in India serve as important reservoirs for different faunal components, including ecologically sensitive species like butterflies. To record the diversity, status, and occurrence of butterfly fauna in Kurukshetra University Campus, Haryana, a year-long survey was done from July 2021 to June 2022. A total of 710 individuals of butterflies belonging to 39 species, 32 genera, and five families were recorded. Nymphalidae represented the highest diversity with 13 species followed by Lycaenidae (11 species), Pieridae (10 species), Papilionidae (3 species), and Hesperidae (2 species). The number of individuals encountered was maximum in family Pieridae ($n = 158$) while the minimum was in family Hesperidae ($n = 4$). Species richness, abundance, and diversity differed significantly ($P < 0.05$) across the different seasons. Species richness was recorded to be the highest in summer season (35 species) followed by monsoon, post monsoon, and winter. Among the recorded species, one species, i.e., Common Baron *Euthelia aconthea* is protected under Schedule II of the Wildlife (Protection) Amendment Act (2022). The findings of the present study support the importance of the higher educational institution campuses in providing valuable habitat and resources for butterflies.

Keywords: Abundance, community composition, conservation, cluster analysis, ecosystem, Nymphalidae, Pieridae, Pollard Walk, seasonal variation, species richness.

Editor: Soumyajit Chowdhury, M.U.C Women's College, Burdwan, India.

Date of publication: 26 May 2024 (online & print)

Citation: Gupta, V. & P. Kumar (2024). Diversity and status of butterfly fauna at Kurukshetra University campus, Haryana, India. *Journal of Threatened Taxa* 16(5): 25209–25219. <https://doi.org/10.11609/jott.8626.16.5.25209-25219>

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Funding: University Grants Commission (UGC).

Competing interests: The authors declare no competing interests.

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Author contributions: PK conceived and designed the study as well as wrote the final draft of the manuscript. VG performed the field surveys, analysed the data and prepared rough draft of the manuscript. Both authors read and approved the final manuscript.

Acknowledgements: We are highly thankful to the Department of Zoology Kurukshetra University, Kurukshetra for providing requisite research facilities. One of the authors, Vidisha Gupta is thankful to University Grants Commission (UGC), New Delhi, India for providing financial support in the form of SRF for this research work.



INTRODUCTION

Being ecologically sensitive insects, butterflies respond to the disturbances in their habitat including changes in the microclimate, temperature, sun radiation, and the availability of host plants by changing their ovipositioning site, flight patterns, and egg laying rates (Aneesh et al. 2013; Chowdhury et al. 2023).

Due to their species richness, abundance, diverse ecological needs, and dependency on various plants for nectaring and larva development butterflies serve as the umbrella species in nature conservation (New 1997). The protection of butterflies in a region indirectly leads to the protection of a number of plants, trees, and other flora, therefore, research on their population ecology offers crucial insights on the status of other taxa in a particular terrestrial ecosystem (Weber et al. 2008). India being one of the 12 mega biodiversity countries of the world, harbours 1,800 species of butterflies including both endemic as well as globally threatened species (Harisha & Hosetti 2021). However, in the state of Haryana, only scanty information is available and most of it is from protected areas and the butterfly diversity in urban, rural, and various other habitats of Haryana still remains unexplored. Uniyal & Bhargav (2007) documented 24 species of butterflies belonging to four families from Bir Shikargah Wildlife Sanctuary. Sethy & Ray (2010) recorded 35 species of butterflies under 24 genera and five families from Kalesar Wildlife Sanctuary.

Since both adult butterflies and caterpillars are reliant on plants for leaf, nectar, and pollen as a source of food, therefore, their distribution is largely dependent on the presence of the host plants (Majumder et al. 2012)). The anthropogenic pressure such as habitat degradation due to construction activities, excessive use of pesticides and weedicides, removal of nectar, and host plants are some of the major threats to the butterfly fauna in India (Narayana et al. 2017). To comprehend the impact of anthropocentric development on the integrity and sustainability of ecosystems, studies on species diversity in various ecosystems are of utmost importance (Harsh 2014). The educational institutions being endowed with natural flora and a wide range of seasonal flowering plants and favourable environmental conditions can provide flourishing habitat to butterfly populations. Despite their common occurrence, little is known about the butterfly assemblages in educational institutions in India and particularly in Haryana. Information on species composition and seasonal assemblages of butterflies in a particular habitat is essential to understand the habitat conditions to design suitable conservation and

management strategies. In this context, the present study is an attempt to document the diversity of butterfly fauna in the Kurukshetra University campus.

MATERIAL AND METHODS

Study area

Kurukshetra University (29.969°N, 76.878°E) is located in district Kurukshetra of Haryana state at an altitude of 206 m (Figure 1A). Spread over an area of about 179 ha, the university campus is a conglomerate of a variety of habitats including undisturbed areas with endemic plants and canopies of tall trees, afforestation zone, grasses, plain lush green lawns, gardens of fruit trees, bushes, and varied natural habitat covering over 40 acres of the area. The prominent shrubs of the campus include *Cassia javanica*, *Murraya exotica*, *Bougainvillea* sp., *Hibiscus rosa*, *Zizyphus jujuba*, *Zizyphus nummularia*, *Jasminum* sp., *Lantana camara*, *Jasminum* sp., and *Amaranthus spinosus*. This mosaic of habitats in the university campus provides a broad niche to the butterfly fauna. The study area experiences subtropical climate, having three major seasons: rainy (July–September), a cool dry (October–February), and the hot dry season (March–June). Temperature is as high as 45° C in summer and as low as 3° C during the winter whereas, annual rainfall of the area ranges from 582–808 mm.

METHODS

The butterfly surveys were conducted at fortnightly intervals from July 2021 to June 2022 in the university campus. Pollard Walk method was adopted to record the butterfly species (Pollard 1977). Fixed transect routes ranging between 500 m–1 km were established and followed for surveying the entire campus. The butterfly species were observed at 2.5 m on both sides of the transects by moving at a slow and steady pace. Butterflies were counted directly, aided by a pair of field binoculars (Nikon 10 x 50) during the peak hours of activity 0700–1100 h or 1400–1600 h. Field visits were carried out only on days with suitable weather conditions (i.e., in absence of rain and strong wind). In addition to regular surveys, opportunistic observations of butterflies at other times were also recorded to prepare a comprehensive checklist of the study area.

Whenever possible photographs of butterflies were taken with a digital camera (Nikon D5200) from

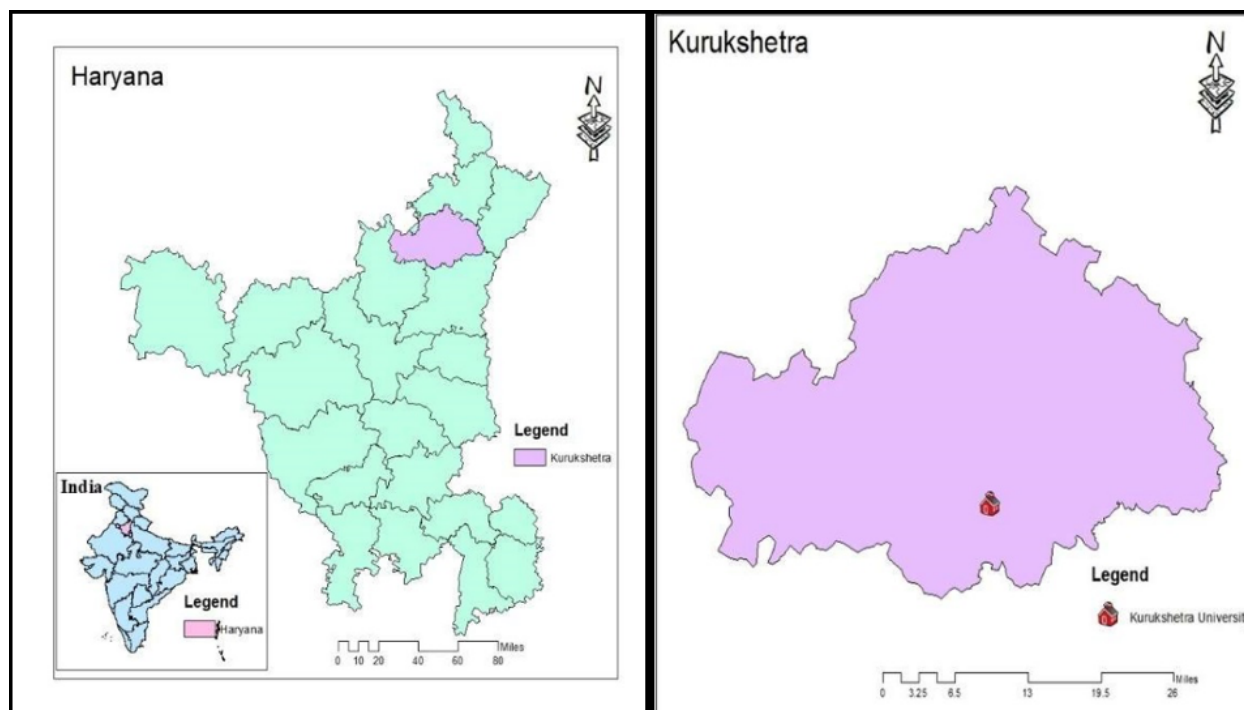


Figure 1. The location of study area.

different angles to obtain sufficient pictures for accurate identification of species. Only visual documentation was done and no specimen was collected. Butterflies were identified with the help of standard field guide (Smetacek 2017). The names (common and scientific names) and taxonomic position (family and sub family) of recorded butterfly species were accorded following Bhakare & Ogale (2018). We also assigned a local status to each recorded species based on the frequency of sightings following Samanta et al. (2017) as abundant (A)—sighted on 75–100 % of survey days; common (C)—sighted on 50–74.99 % of survey days; occasional (O)—sighted on 25–49.99 % of survey days; and rare (R)—sighted on less than 25% of survey days. For analysis of seasonal variations in species richness of butterfly assemblages, we pooled the recorded field data corresponding to four seasons, i.e., summer (March–May), monsoon (June–August), post-monsoon (September–November), and winter (December–February).

Species richness was calculated as total number of butterfly species observed in the study area. To test whether the sampling efforts were enough to detect all the butterfly species that occurred in the study area, a species accumulation curve was produced, by plotting the cumulative number of species recorded against the sampling efforts. Species similarity between any two seasons was measured by using Jaccard's

similarity index as $(C_j) = a / (a + b + c)$ where a is the number of species common to both the seasons, b is the number of species unique to the first season and c is the number of species unique to the second season. A cluster analysis was performed using Jaccard's similarity measure and a paired group method (UPGMA) by PAST version 3.26 software. Shannon-Wiener's diversity and species evenness indices of butterfly species were also estimated using PAST version 3.26 software. Differences in the various diversity indices among the different seasons were compared using one-way analysis of variance (ANOVA) with Tukey HSD test at 5% level of significance (SPSS 24.0 version). The conservation status of the recorded butterfly species was assessed according to the Wildlife (Protection) Amendment Act (2022).

RESULTS

A total of 710 individuals of butterflies belonging to 39 species, 32 genera, and five families were recorded during the study period (Table 1, Image 1–24). A checklist of the recorded butterfly fauna with their common and scientific names, season of occurrence, local abundance status, and activity are presented in Table 1. Nymphalidae was found to be the most diverse family comprising 13 species (34%) followed by

Table 1. List of butterfly species recorded from campus of Kurukshetra University, Kurukshetra, Haryana, India.

	Common name	Scientific name	Season				Local status	Activity observed
			S	M	PM	W		
Family: Nymphalidae								
Subfamily: Nymphalinae								
1.	Peacock Pansy	<i>Junonia almana</i>	12	3	2	6	Abundant	Basking
2.	Blue Pansy	<i>Junonia orithya</i>	5	4	5	5	Common	Basking, sucking nectar
3.	Chocolate Pansy	<i>Junonia iphita</i>	5	3	1	1	Common	Basking
4.	Common Castor	<i>Ariadne merione</i>	2	3	2	1	Common	Basking
5.	Great Eggfly	<i>Hypolimnas bolina</i>	2		2	1	Occasional	Basking
6.	Painted Lady	<i>Vanessa cardui</i>	11	9	0	0	Common	Basking, sucking nectar
7.	Common Leopard	<i>Phalanta phalantha</i>	2	3	2	1	Occasional	Basking
Subfamily: Danainae								
8.	Plain Tiger	<i>Danaus chrysippus</i>	7	6	8	0	Abundant	Basking, sucking nectar, mud puddling
9.	Striped Tiger*	<i>Danaus genutia</i>	2	1	1	0	Occasional	Resting, sucking nectar
Subfamily: Satyrinae								
10.	Common Palmfly	<i>Elymnias hypermnestra</i>	3	0	0	0	Rare	Resting
11.	Dark Evening Brown	<i>Melanitis phedima</i>	0	0	1	1	Occasional	Resting
Subfamily: Limenitidinae								
12.	Common Baron	<i>Euthalia aconthea</i>	2	2	1	1	Common	Basking
13.	Common Sailer	<i>Neptis hylas</i>	2	1	1	1	Occasional	Resting, basking, mud puddling
Family: Pieridae								
Subfamily: Pierinae								
14.	Indian Cabbage White	<i>Pieris canidia</i>	26	0	3	6	Abundant	Resting, basking, sucking nectar
15.	Large Cabbage White	<i>Pieris brassicae</i>	10	0	0	12	Abundant	Resting, basking, sucking nectar
16.	Yellow Orange Tip	<i>Ixias pyrene</i>	4	1	1	1	Common	Resting, sucking nectar
17.	Common Gull	<i>Cepora nerissa</i>	10	3	2	3	Occasional	Basking
18.	Pioneer	<i>Belenois aurota</i>	15	5	5	7	Abundant	Basking, resting, patrolling.
Subfamily: Coliadinae								
19.	Common Grass Yellow	<i>Eurema hecabe</i>	8	4	10	8	Abundant	Mud puddling
20.	Small Grass Yellow	<i>Eurema brigitta</i>	3	4	2	2	Abundant	Mud puddling, resting, sucking nectar.
21.	Common Emigrant	<i>Catopsilia pomona</i>	13	4	6	6	Abundant	Mud puddling, resting, sucking nectar, patrolling
22.	Mottled Emigrant	<i>Catopsilia pyranthe</i>	4	4	2	3	Abundant	Mud puddling, resting, sucking nectar, patrolling
23.	Dark Clouded Yellow	<i>Colias feldii</i>	8	0	0	0	Occasional	Resting, sucking nectar
Family: Lycaenidae								
Subfamily: Polyommatinae								
24.	Pale Grass Blue	<i>Pseudozizeeria maha</i>	13	24	12	4	Abundant	Resting, basking, patrolling
25.	Lesser Grass Blue	<i>Zizina otis</i>	20	18	17	10	Abundant	Resting, basking, patrolling, mating.
26.	Dark Grass Blue	<i>Zizeeria karsandra</i>	39	45	23	0	Common	Resting, basking
27.	Zebra Blue	<i>Leptotes plinius</i>	4	4	6	0	Occasional	Resting, basking
28.	Pea Blue*	<i>Lampidesboeticus</i>	4	6	0	0	Rare	Resting, basking
29.	Gram Blue*	<i>Euchrysops cnejus</i>	6	5	3	0	Common	Resting, basking, patrolling
30.	Striped Pierrot	<i>Tarucus nara</i>	2	2	1	0	Occasional	Resting, basking
31.	Red Pierrot	<i>Talicauda nyseus</i>	2	2	4	0	Occasional	Resting

32.	Black Spotted Grass Jewel	<i>Freyeria putli</i>	3	4	5	0	Occasional	Resting
33.	Plain Cupid	<i>Chilades pandava</i>	6	5	3	0	Occasional	Resting
Subfamily: Theclinae								
34.	Common Silverline	<i>Spindasis vulcanus</i>	4	1	1	1	Occasional	Resting
Family: Papilionidae Subfamily: Papilioninae								
35.	Common Jay	<i>Graphium doson</i>	9	5	4	0	Abundant	Mud puddling, sucking nectar
36.	Lime Swallowtail	<i>Papilio demoleus</i>	7	7	3	3	Abundant	Resting, basking, sucking nectar
37.	Common Mormon	<i>Papilio polytes</i>	8	4	5	0	Abundant	Nectar sucking, mud puddling.
Family: Hesperidae Subfamily: Hesperinae								
38.	Small Branded Swift	<i>Pelopidas mathias</i>	0	3	2	1	Occasional	Resting, sucking nectar
39.	Common Banded Awl	<i>Hasora chromus</i>	0	0	2	1	Occasional	Resting

S—Summer | M—Monsoon | PM—Post monsoon | W—Winter.

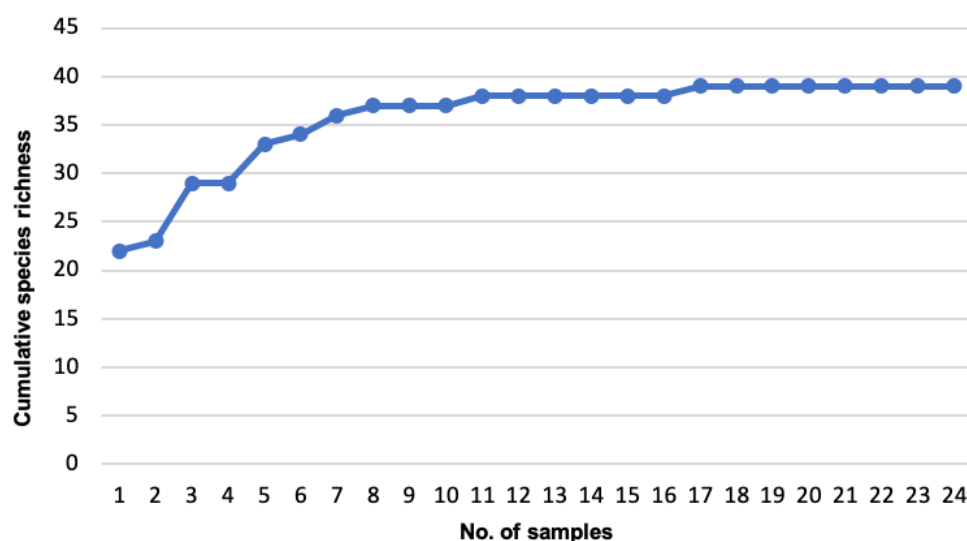


Figure 2. Species accumulation curve of butterflies recorded in Kurukshetra University campus.

Lycaenidae (11, 29%), Pieridae (10, 26%), Papilionidae (3, 8%), and Hesperidae (2, 3%). In terms of the number of individuals sighted, family Lycaenidae was the most abundant (308 individuals) followed by Pieridae (205), Nymphalidae (133), Papilionidae (55), and Hesperidae (09).

The most diverse genus was *Junonia* represented by three species whereas five genera (*Danaus*, *Pieris*, *Catopsilia*, *Eurema*, and *Papilio*) were represented by two species each and the remaining 26 genera were represented in the study area with a single species each. The ratio of species to genus of recorded butterfly fauna was estimated to be 1.21 (Figure 2).

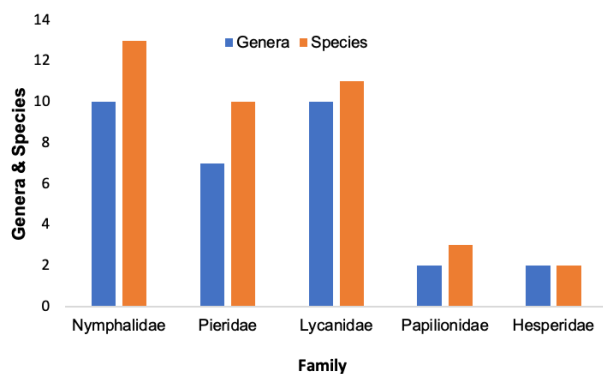
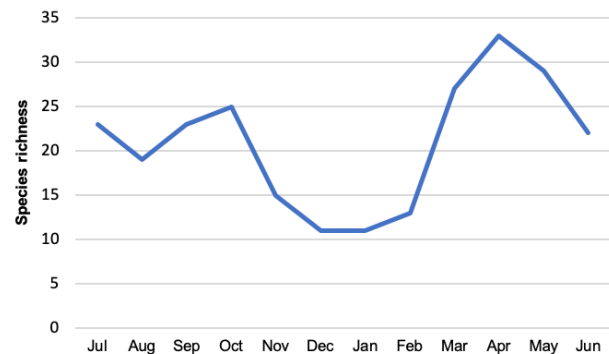
The species accumulation curve based on observed species richness in the university campus showed that

the richness initially was lesser, then increased gradually and later on approached to an asymptote. It reached stable values of 38 species after the 11th sampling while the observed curve stabilized at 39 species after the 17th sampling (Figure 2). Monthly variations in species richness of butterfly in the study area are depicted in Figure 3. A bi-annual peak in species richness was recorded during the study period, first in the month of October (25 species) and second in the month of April (33 species). Maximum species richness of butterfly fauna ($n = 35$) was recorded in summer followed by post monsoon ($n = 33$), monsoon ($n = 32$), and winter season ($n = 22$). Species richness of butterflies differed significantly across the four seasons in the study area ($F = 15.098$, $P < 0.05$, Table 3). Average species richness

Table 2. Species richness, abundance, species diversity and species evenness of butterfly fauna in university campus of Kurukshetra.

Season	Diversity indices (Mean $\pm$ S.E)			
	Species richness	Population abundance	Species diversity	Species evenness
Summer	29.66 $\pm$ 1.76 ^a	93.66 $\pm$ 8.35 ^a	3.16 $\pm$ 0.80 ^a	0.75 $\pm$ 0.67
Monsoon	21.34 $\pm$ 1.20 ^b	64.66 $\pm$ 4.91 ^b	2.80 $\pm$ 0.94 ^b	0.75 $\pm$ 0.25
Post monsoon	21.00 $\pm$ 3.0 ^{bc}	50.00 $\pm$ 4.93 ^{bc}	2.80 $\pm$ 0.14 ^{bc}	0.76 $\pm$ 0.06
Winter	11.67 $\pm$ 0.66 ^d	28.33 $\pm$ 5.89 ^d	2.25 $\pm$ 0.14 ^d	0.83 $\pm$ 0.06
F value	15.098	19.653	9.863	0.413
P value	0.001	0.000	0.005	0.749

Significant differences were found at 5% level of significance. Results in a column under various indices followed by different letters indicate significant differences among different seasons at $P < 0.05$. Results in a column followed by same letters indicate non-significant differences among different seasons at $P > 0.05$ (one-way ANOVA and Tukey's HSD post-hoc test).

**Figure 3.** Distribution of genera and species in different families of butterflies in the study area.**Figure 4.** Monthly variations in overall species richness of butterflies in Kurukshetra University Campus.

in summer (29.66 $\pm$ 1.76) was significantly higher than that of the remaining three seasons (Tukey's HSD test, all $P < 0.05$). Population abundance of butterfly fauna also varied significantly among all the four seasons ($F = 22.98$, $P < 0.05$). Mean population abundance was highest in summer (46.83 $\pm$ 2.74), and lowest in winter (14.16 $\pm$ 2.88). The species diversity of butterflies varied significantly among the seasons ($F = 9.863$, $P < 0.05$). However, species diversity of summer (3.16 $\pm$ 0.80) did not differ significantly ($P > 0.05$) than that of monsoon (2.80 $\pm$ 0.94), and post monsoon (2.80 $\pm$ 0.14). The species evenness was found to be almost similar across all the seasons (Table 2).

As far as seasonal distribution of butterfly families is concerned, four families (Nymphalidae, Pieridae, Lycaenidae, and Papilionidae) were recorded in all four seasons whereas family Hesperidae was encountered only during three seasons (monsoon, post monsoon, and winter) (Table 3).

Of the total detected species, 16 species were recorded across all four seasons whereas the remaining

23 species were recorded only during certain seasons (Table 1). Jaccard's similarity index was calculated from the record of occurrence of the butterfly species across the four seasons (Table 4). Monsoon & post monsoon season and monsoon & summer showed the maximum similarity in species composition of butterfly community (0.81), while species similarity was found to be minimum between monsoon and winter season (0.46). Detailed cluster analysis paired (UPGMA) of Jaccard's similarity index of each season showed that butterfly communities harboured by summer, monsoon and post monsoon were fairly distinct from winter (Figure 5).

Assessment of local abundance status revealed that 14 species were abundant, eight species were common, 14 species were occasional, and two species (Common Palmfly *Elymnias hypermnestra* and Pea Blue *Lampides boeticus*) were rare in the study area (Table 1). Two species namely, Common Baron *Euthalia aconthea* and Common Silverline *Spindasis vulcanus* were found to be very static and the rest of species were very active and swift in their recorded seasons in the study area. Among

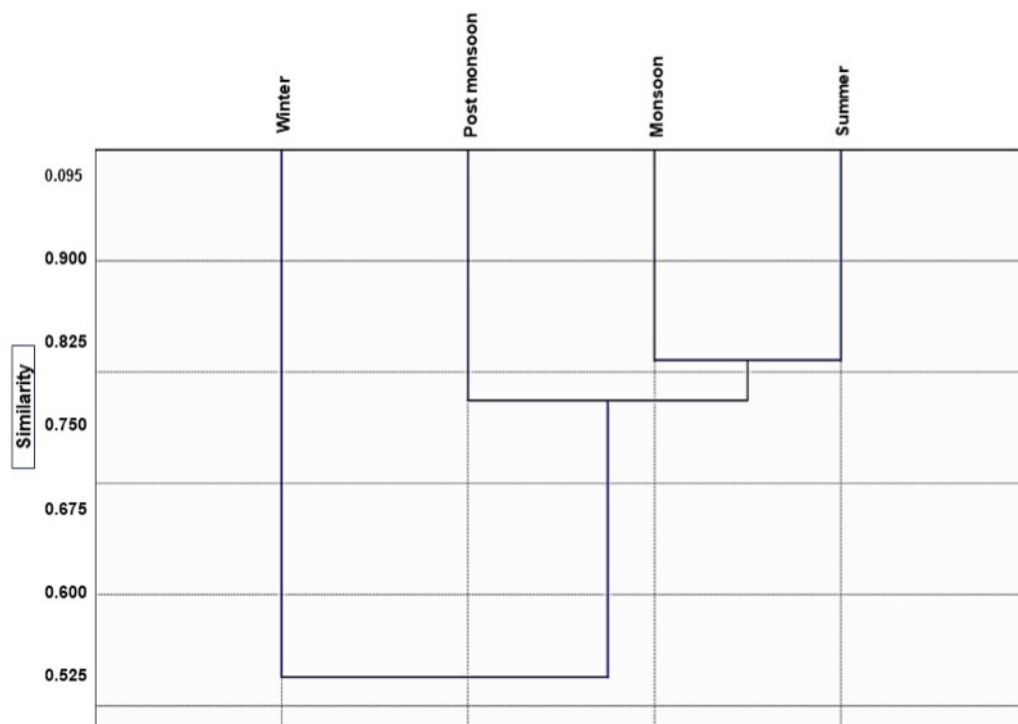


Figure 5. Cluster analysis based on Jaccard's similarity index using unweighted pair group method with arithmetic mean (UPGMA) showing similarity of butterfly species composition in different season.

Table 3. Seasonal distribution of butterfly families in the study area.

Family	Species richness					Abundance				
	S	M	PM	W	Overall species richness	S	M	PM	W	Total
Nymphalidae	11	9	11	9	13	53	32	29	19	133
Lycaenidae	11	11	9	2	11	103	116	75	14	308
Pieridae	10	7	8	9	10	101	25	31	48	205
Papilionidae	3	3	3	1	3	24	16	12	3	55
Hesperiidae	0	2	2	1	2	0	5	3	1	9
Total	35	32	33	22	39	281	194	150	85	710

S—Summer | M—Monsoon | PM—Post monsoon | W—Winter.

the recorded butterfly fauna Common Baron *Euthelia aconthea* was found to be protected under Schedule II of the Wildlife (Protection) Amendment Act, 2022.

DISCUSSION

The observed richness of butterfly fauna is comparable with reports of earlier studies carried out on the campuses of educational institutions in some adjoining eco-regions. For instance, Pathania et al.

(2018) reported 33 species of butterflies belonging to 24 genera and five families from Punjab Agricultural University Campus, Ludhiana, Punjab. Singh et al. (2016) recorded a total of 23 butterfly species belonging to five families and 18 genera from Khalsa College Amritsar, Punjab.

Nymphalidae is the most dominant family of butterflies in India (Kunte 2000). In the present study area also, Nymphalidae emerged as the most diverse family. Members of the family Nymphalidae are dominant in the tropical region because of their polyphagous nature

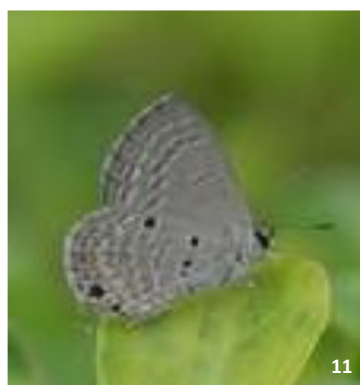
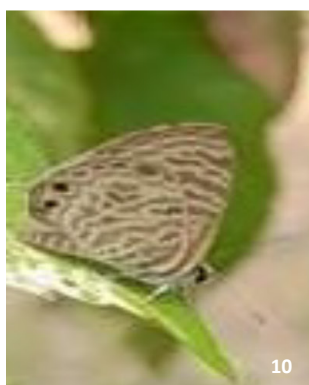
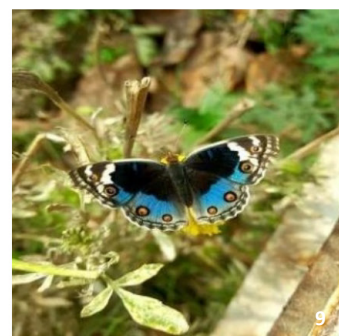
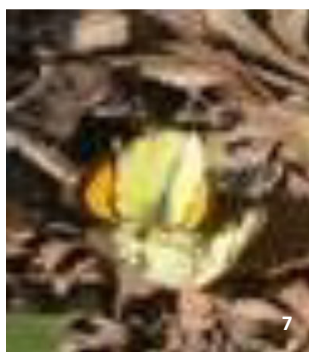
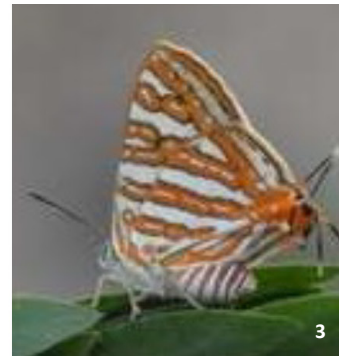
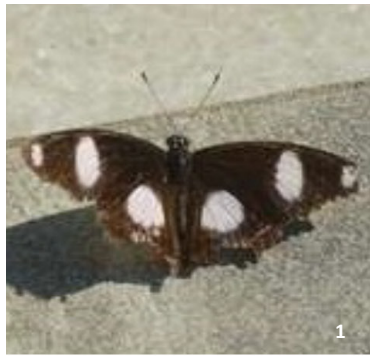


Image 1–12. 1—Great Eggfly *Hypolimnas bolina* | 2—Grass Jewel *Freyeria putli* | 3—Common Silverline *Spindasis vulcanus* | 4—Common Castor *Ariadne merione* | 5—Common Grass Yellow *Eurema hecabe* | 6—Common Baron *Euthalia aconthea* | 7—Yellow Orange Tip *Ixias pyrene* | 8—Common Palmfly *Elymnias hypermnestra* | 9—Blue Pansy *Junonia orithya* | 10—Zebra Blue *Leptotes plinius* | Image 11—Gram Blue *Euchrysops cnejus* | 12—Striped Pierrot *Tarucus nara*. © Vidisha Gupta.

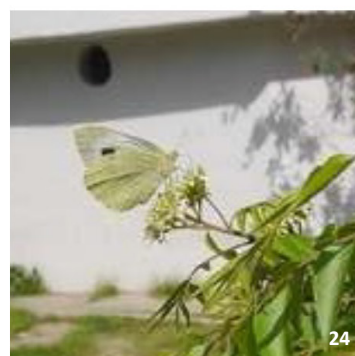
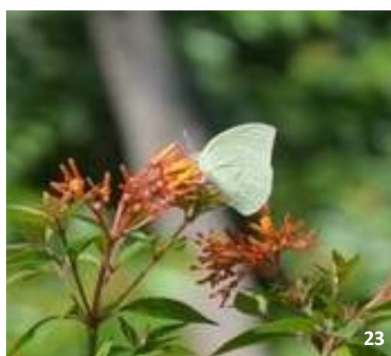
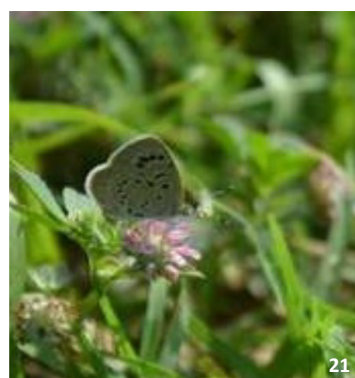
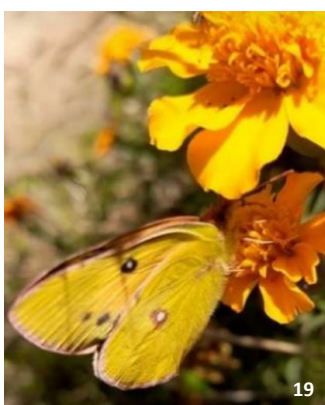
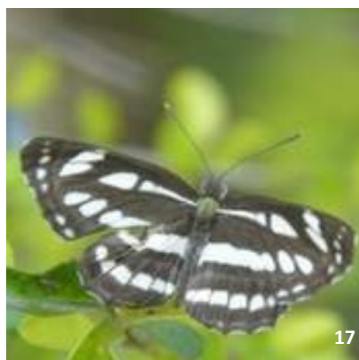
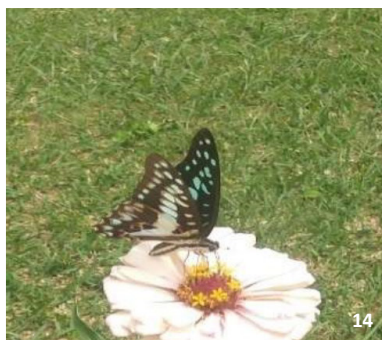


Image 13–24. 13—Common Gull *Cepora nerissa* | 14—Common Jay *Graphium doson* | 15—Common Leopard *Phalanta phalantha* | 16—Common Mormon *Papilio polytes* | 17—Common Sailor *Neptis hyla* | 18—Small Branded Swift *Pelopidas mathias* | 19—Dark Clouded Yellow *Colias feldii* | 20—Striped Tiger *Danaus genutia* | 21—Dark Grass Blue *Zizeeria karsandra* | 22—Indian Cabbage White *Pieris canidia* | 23—Lemon Emigrant *Catopsilia pomona* | 24—Large Cabbage White *Pieris brassicae*. © Vidisha Gupta.

Table 4. Jaccard's similarity index (Cj) of butterfly species between seasons in the study area.

	Summer	Monsoon	Post monsoon
Summer			
Monsoon	0.81		
Post monsoon	0.74	0.81	
Winter	0.5	0.46	0.56

and active flight that helps them survive in various habitats. The attributed reasons for the variation in butterfly diversity might be the climatic and ecological conditions such as ambient temperature, light intensity, precipitation, humidity, presence of natural enemies, availability of a number of host plants and vegetation cover of herbs, shrubs, and trees for nectaring & egg laying (Sharmila et al. 2020; Sharma & Sharma 2021). The results of the present study are consistent with the previous records that Nymphalidae is the most common family in the campuses of educational institutions in different parts of the India (Deb et al. 2015).

In terms of individuals recorded Lycaenidae was abundant in the study area with an occurrence of 308 individuals. The species richness, abundance and diversity of butterfly fauna varied significantly ($P < 0.05$) across the four seasons. Two peaks of species richness in the study area, one in the post monsoon season with an occurrence of 32 species and an additional peak during the summer season with 35 species were recorded. These results are consistent with the observation of Gupta et al. (2019) who recorded a bi-annual peak of species richness in butterfly assemblages in a sub-tropical urban landscape of Delhi. The tropical insect communities tend to remain stable throughout the year and the seasonal peaks are not well defined as in the case of subtropical insect communities (Gupta et al. 2019). This seasonal variation in butterfly species in the communities reveals that the diversity of butterflies in the study area (in sub-tropical regions) could be different from the tropics due to marked dry and wet seasons and greater climatic variability such as temperature, photoperiod, precipitation, and humidity.

The seasonal distribution of butterfly fauna in the study area revealed that families Nymphalidae and Lycaenidae were equally dominant in summer whereas, in winter Nymphalidae and Pieridae showed equal dominance. In monsoon again Lycaenidae was observed as the most dominant family, however, in winter it showed a sharp decline. The months of December and January witnessed the minimum species richness (11 species) at

an average lowest temperature of 12.7° C. Because of the lower temperature and ectothermic nature of the butterflies, they prefer to undergo diapause. As far as Pieridae is concerned it showed a decline in monsoon and escalated again in winter. Whereas Papilionidae showed equal distribution in summer, monsoon, and post monsoon and declined in winter. However, a record of Hesperidae was only made in monsoon, post monsoon, and winter season but not in summer season. The attributed reason for the absence of the latter in summer season might be the non-availability of specific host /nectar plants and the low dispersal ability due to its shade loving nature.

Among the recorded 39 species, one species is protected under the Schedule II of Wildlife (Protection) Amendment Act, 2022. The results of the current study underscore the importance of institutional campuses in the urban landscapes as a preferred habitat for butterflies. However, habitat alterations due to developmental activities, use of pesticides, herbicides, and insecticides in gardens, plucking of flowers, cutting of host plants, litter deposition are some of the threat factors prevailing in the campus which could affect the population of the butterflies.

CONCLUSION

The present primary study on the butterfly fauna of Kurukshetra University campus provides a baseline data for future studies, emphasizing the temporal pattern in the butterfly community. If the landscaping is carefully planned in the university campus and campus gardens are well maintained with lush green grasses and floral beds with a variety of seasonal plants, plantation of a wide range of nectaring & larval host plants along roadside pavements, establishment of a butterfly park, conservation of habitats with a high cover of natural & semi natural vegetations, minimal use of herbicides and insecticides, and reduced anthropogenic stress these measures can help in increasing the diversity of butterfly fauna in the university campus as well as at the local biodiversity level. Long term monitoring programmes should be carried out to manage and conserve the butterfly diversity of the university campuses. Under the current scenario of habitat fragmentation and degradation in urban areas of the country, the results of the present study underline the importance of institutional campuses in the urban landscapes as a preferred habitat for butterflies and other associated floral and faunal components.

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Journal of Threatened Taxa is indexed/abstracted in Bibliography of Systematic Mycology, Biological Abstracts, BIOSIS Previews, CAB Abstracts, EBSCO, Google Scholar, Index Copernicus, Index Fungorum, JournalSeek, National Academy of Agricultural Sciences, NewJour, OCLC WorldCat, SCOPUS, Stanford University Libraries, Virtual Library of Biology, Zoological Records.

NAAS rating (India) 5.64



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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

May 2024 | Vol. 16 | No. 5 | Pages: 25119–25282

Date of Publication: 26 May 2024 (Online & Print)

DOI: 10.11609/jott.2024.16.5.25119-25282

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