

Checklist of Rhopalocera fauna of District Srinagar in Jammu and Kashmir Union Territory, India (Lepidoptera: Papilionoidea)

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Abstract

The survey carried out in March - December 2021 has revealed the presence of Forty-seven Rhopalocera species under the families: HesperIIDae, Lycaenidae, Nymphalidae, Papilionidae and Pieridae, belonging to 37 genera and five families from district Srinagar.

Keywords: Lepidoptera, Papilionoidea, Rhopalocera, Srinagar, Dachigam National Park, diversity index, India.

Lista de la fauna de Rhopalocera del distrito de Srinagar en el territorio de la Unión de Jammu y Cachemira, India (Lepidoptera: Papilionoidea)

Resumen

El estudio realizado entre marzo y diciembre de 2021 ha revelado la presencia de cuarenta y siete especies de Rhopalocera de las familias HesperIIDae, Lycaenidae, Nymphalidae, Papilionidae y Pieridae, pertenecientes a 37 géneros y cinco familias del distrito de Srinagar.

Palabras clave: Lepidoptera, Papilionoidea, Rhopalocera, Srinagar, Parque Nacional de Dachigam, índice de diversidad, India.

Introduction

Rhopalocera are members of the order Lepidoptera (which also includes moths) of the class Insecta, which means “scale wings” in Greek, as coined by Linnaeus (1758). They have long been considered as a symbol of enchantment and attractiveness since the dawn of time and are commonly referred to as “insects of the sun” due to their diurnal nature. They were a favorite for hundreds of years for bodily splendor and behavioral display. These polychromatic insects play a key function in nature and reveal outstanding diversity. The coloration of Rhopalocera wing scales is formed by minute overlapped chitin pieces pigmented with melanin, which gives them the names blacks and browns. However, blues, greens, reds, and iridescence are frequently created by the microstructure of the scales rather than pigments. The photonic crystal structure of the scales causes coherent scattering of light, resulting in this structural coloration, Prum et al. (2006), Vukusic et al. (2000).

According to Hoskins (2017), roughly 17,698 Rhopalocera species are found in all zoogeographical areas except Antarctica, including the Holarctic, Neotropical, Afrotropical, Oriental, and Australian regions. Currently, 1439 species have been identified in India, Kunte (2000), India with 308 species from Jammu and Kashmir, Sheikh et al. (2021).

Material and Methods

District Srinagar including Dachigam National Park was surveyed. Data were collected by random survey fortnightly from various fields covering almost the entire area of Srinagar. Thirty-nine specimens were photographed. The Rhopalocera species were identified by the keys given by Evans (1932), Wynter-Blyth (1957) and Kehimkar (2016). The author checked the known distribution of the species in question by consulting three available authoritative books Evans (1932), Wynter-Blyth (1957), Varshney & Smetacek (2015) as well as published papers by Qureshi et al. (2014) and Sheikh et al. (2021) to verify various new records presented in this study for the entire district of Srinagar including Dachigam National Park. The Rhopalocera diversity was studied using Simpson's diversity index. This standard diversity index lists the number of species present at a given location along with their relative abundance. The butterflies were identified with the help of available literature i.e., Evans (1932), Talbot (1947), Wynter-Blyth (1957), Kehimkar (2016) and Smetacek (2018) also cross-checked with current publications of Jammu and Kashmir Himalaya i.e., Parey & Sheikh (2021), Sheikh & Parey (2019a, 2019b) Sheikh et al. (2021), Singh & Sheikh (2021), Gupta & Sheikh (2021), Sheikh (2021), Sheikh & Gupta (2022), Khan & Sheikh (2022), Sheikh & Mishra (2022), Dar et al. (2022a, 2022b), Sheikh & Mishra (2023a, 2023b).

Table 1. Rhopalocera of District Srinagar

S. No.	Scientific Name	Authority and year
	HESPERIIDAE	
1	<i>Celaenorrhinus leucocera</i>	(Kollar, 1844)
2	<i>Carcharodus alceae</i>	(Esper, 1780)
3	<i>Parnara guttatus</i>	(Bremer & Grey, 1852)
4	<i>Pelopidas mathias</i>	(Fabricius, 1798)
	LYCAENIDAE	
5	<i>Aricia agestis</i>	([Denis & Schiffermüller], 1775)
6	<i>Calastrina argiolus</i>	(Linnaeus, 1758)
7	<i>Everes hugelli</i>	(Gistel, 1857)
8	<i>Heliophorus sena</i>	(Kollar, 1844)
9	<i>Lampides boeticus</i>	(Linnaeus, 1767)
10	<i>Lycaena phlaeas</i>	(Linnaeus, 1761)
11	<i>Pseudozizeeria maha</i>	(Kollar, 1848)
12	<i>Polymmatous ariana</i>	Moore, 1865
13	<i>Tarucus indica</i>	Evans, 1932
14	<i>Tarucus venosus</i>	Moore, 1882
	NYPHALIDAE	
15	<i>Aglais caschmirensis</i>	(Kollar, [1844], in Hügel)
16	<i>Argynnis childreni</i>	Gray, 1831
17	<i>Argynnis hyperbius</i>	(Linnaeus, 1763)
18	<i>Argynnis jainadeva</i>	Moore, 1864
19	<i>Aulocera saraswati</i>	(Kollar, [1844], in Hügel)
20	<i>Callerebia nirmala</i>	(Moore, 1865)
21	<i>Danaus chrysippus</i>	(Linnaeus, 1758)
22	<i>Hipparchia parisatis</i>	(Kollar, [1849])
23	<i>Hypolimnas missippus</i>	(Linnaeus, 1764)
24	<i>Hyponphele cheena</i>	(Moore, 1865)
25	<i>Issoria lathonia</i>	(Linnaeus, 1758)
26	<i>Junonia iphita</i>	(Cramer, 1779)

27	<i>Junonia orithya</i>	(Linnaeus, 1758)
28	<i>Kaniska canace</i>	(Linnaeus, 1763)
29	<i>Lasiommata schakra</i>	(Kollar, [1844], in Hügel)
30	<i>Libythea lepita</i>	(Moore, 1858)
31	<i>Limenitis ligyes</i>	Hewitson, 1864
32	<i>Neptis mahendra</i>	Moore, 1872
33	<i>Neptis sappho</i>	(Pallas, 1771)
34	<i>Phalanta phalanta</i>	(Drury, 1773)
35	<i>Vanessa cardui</i>	(Linnaeus, 1758)
36	<i>Vanessa indica</i>	(Herbst, 1794)
37	<i>Ypthima nareda</i>	(Kollar, [1844], in Hügel)
38	<i>Ypthima nikaia</i>	Moore, [1875]
	PAPILIONIDAE	
39	<i>Papilio machaon</i>	(Linnaeus, 1758)
40	<i>Parnassius charltonius</i>	Gray, [1853]
	PIERIDAE	
41	<i>Catopsilia pomona</i>	(Fabricius, 1775)
42	<i>Colias erate</i>	(Esper, 1805)
43	<i>Colias fieldii</i>	Ménétriés, 1855
44	<i>Pieris ajaka</i>	Moore, 1865
45	<i>Pieris brassicae</i>	(Linnaeus, 1758)
46	<i>Pieris canidia</i>	(Sparman, 1768)
47	<i>Pontia daplidice</i>	(Linnaeus, 1758)

Results and Discussion

The detailed systematic description and record of forty-seven Rhopalocera species under the families: Hesperidae, Lycaenidae, Nymphalidae, Papilionidae, and Pieridae families, belonging to 37 genera and five families are presented in the tabulated form below (Table 1). The Simpsons diversity index was used to construct the diversity index for district Srinagar with 47 species, Nymphalidae was the most well-represented family, followed by Lycaenidae (10), Pieridae (7) and Hesperidae (4). Previous studies on Srinagar district in the form of literature was consulted and a list was compiled to make checklist of 47 species. Among 47 species only 41 species were photographed.

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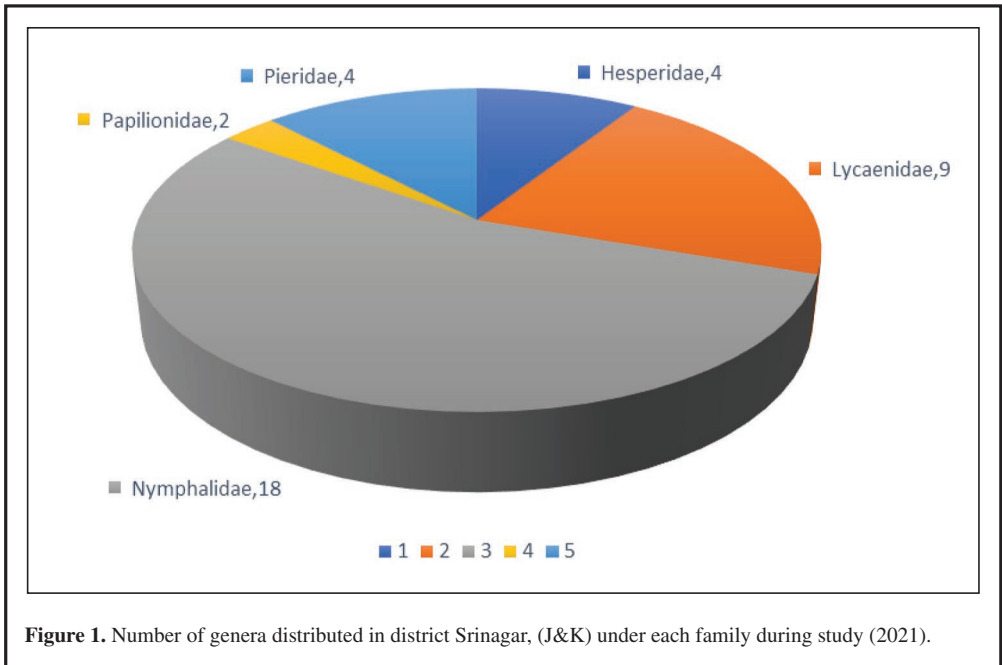


Figure 1. Number of genera distributed in district Srinagar, (J&K) under each family during study (2021).

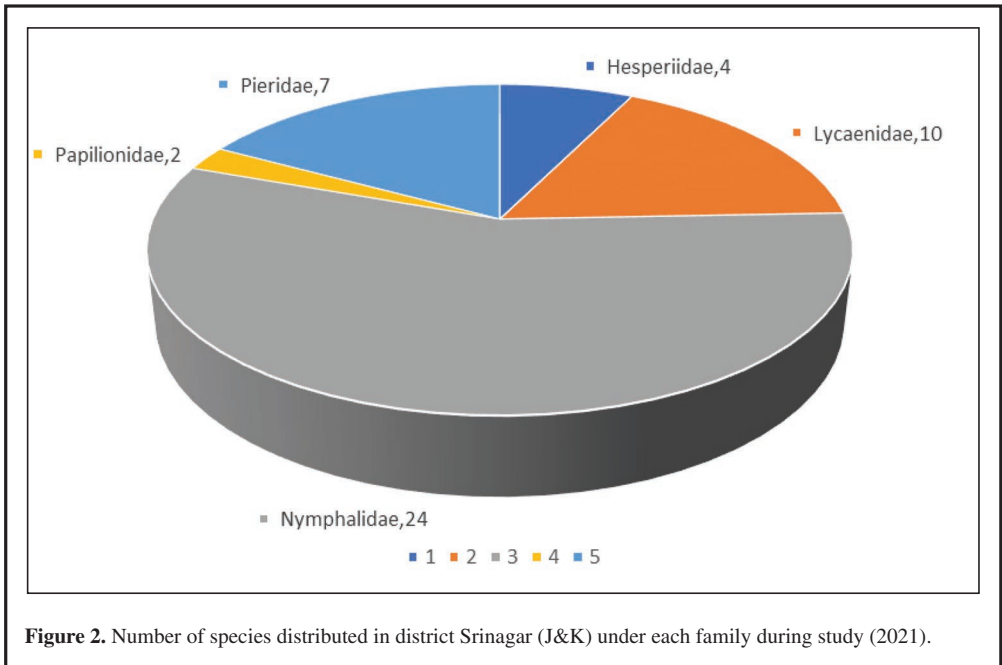
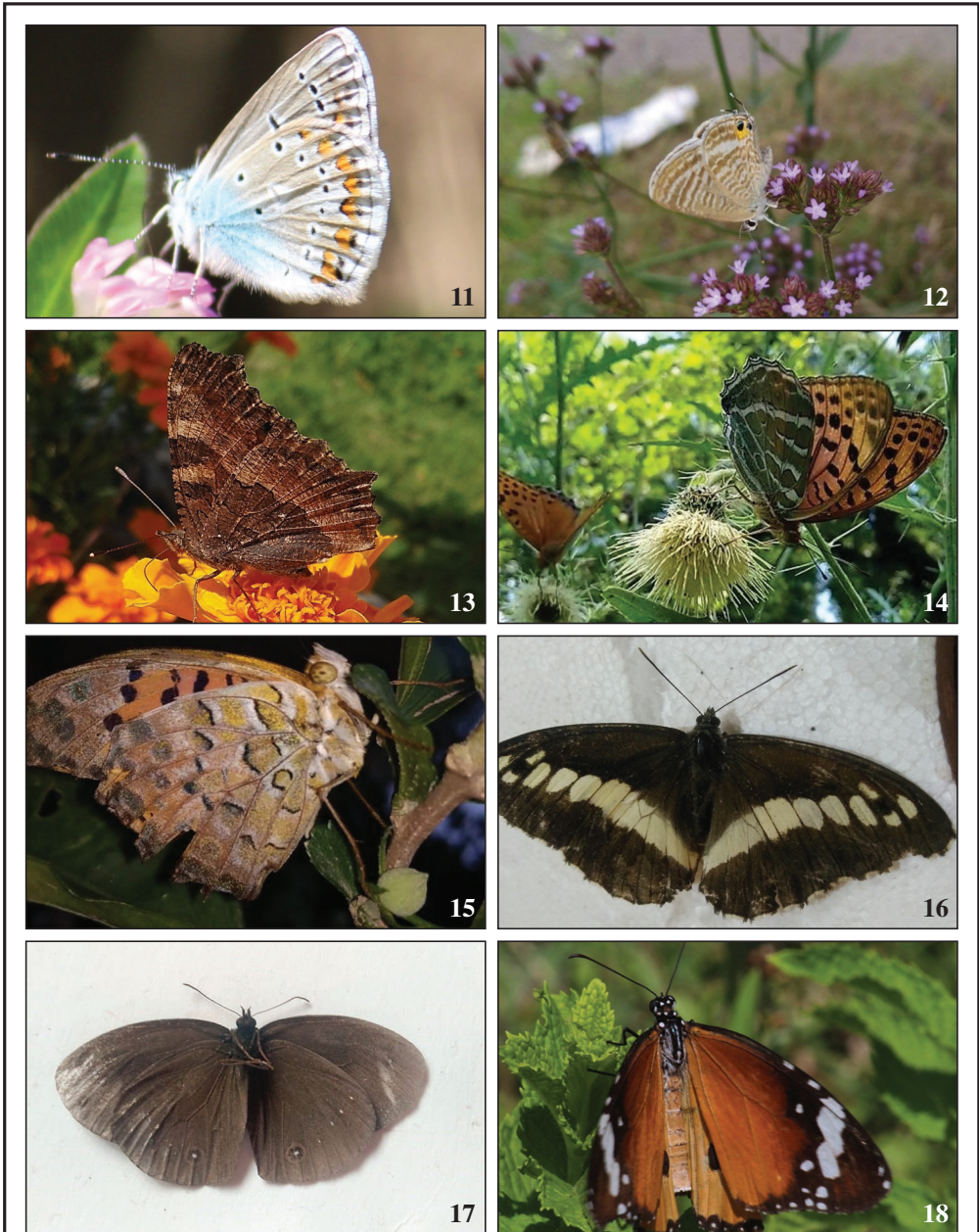


Figure 2. Number of species distributed in district Srinagar (J&K) under each family during study (2021).

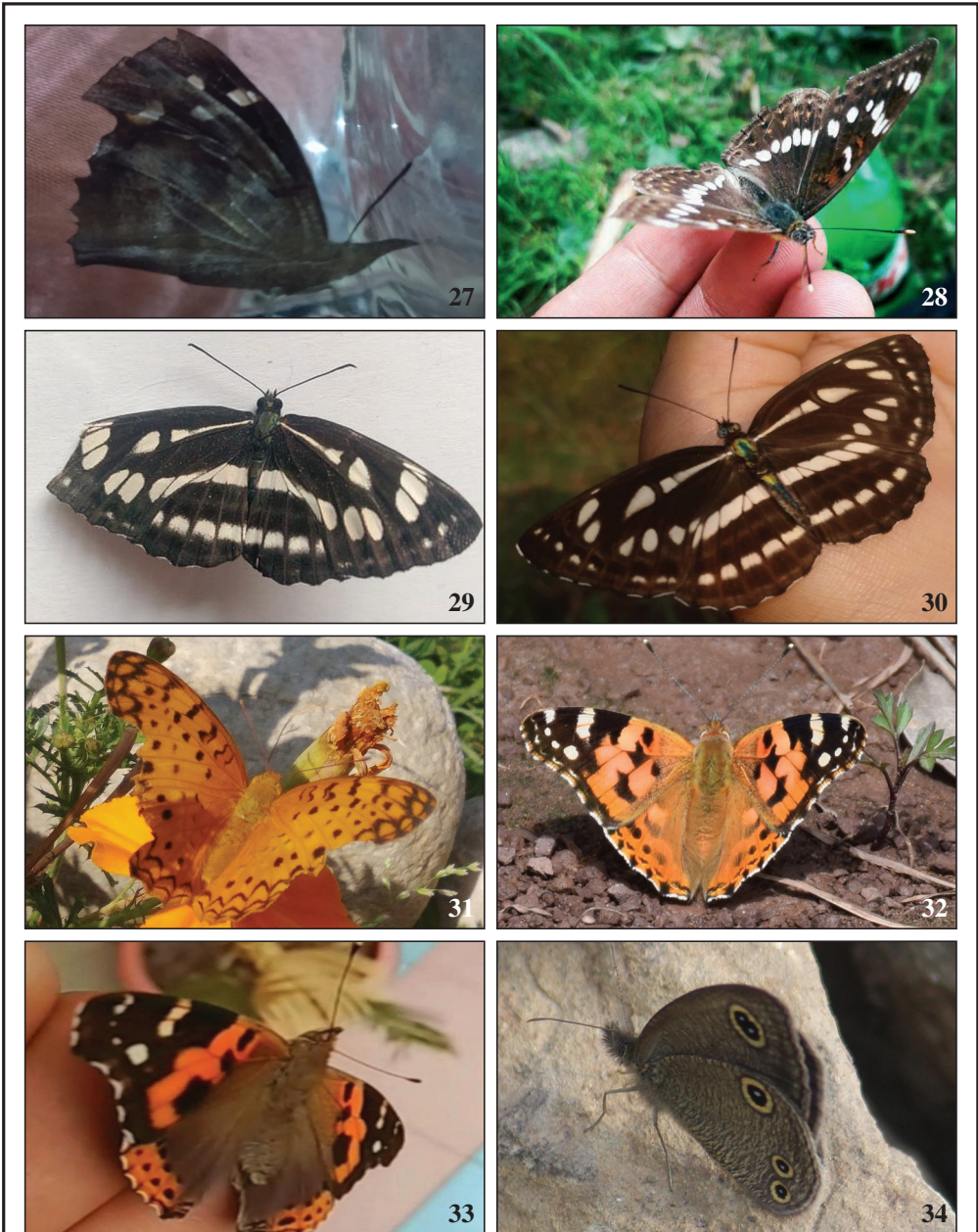


Figures 3-10. Figures 3-10. Hesperidae 1-4. 3. *Parnara gutta* (Bremer & Grey, 1852). 4. *Pelopidas mathias* (Fabricius, 1798). Lycaenidae 5. *Aricia agestis* ([Denis & Schiffermüller], 1775). 6. *Calastrina argiolus* (Linnaeus, 1758). 7. *Everes hugelli* (Gistel, 1857). 8. *Celaenorrhinus leucocera* (Kollar, 1844). 9. *Lycaena phlaeas* (Linnaeus, 1761). 10. *Pseudozizeeria maha* (Kollar, 1848).



Figures 11-18. Figures 11-18. Lycaenidae 9-14. **11.** *Polymnatus ariana* (Moore, 1865). **12.** *Lampides boeticus* (Linnaeus, 1767). Nymphalidae 13-17. **13.** *Aglais caschmirensis* (Kollar, [1844], in Hügel). **14.** *Argynnis childreni* (Gray, 1831). **15.** *Argynnis hyperbius* (Linnaeus, 1763). **16.** *Aulocera saraswati* (Kollar, [1844]). **17.** *Callerebia nirmala* (Moore, 1865). **18.** *Danaus chrysippus* (Linnaeus, 1758).





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