



Faunistic study of butterflies (Lepidoptera, Papilionoidea) of Sulaymaniyah Province, Kurdistan-Iraq

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Abstract

Background

This study investigates the butterfly fauna (Lepidoptera, Papilionoidea) of Sulaymaniyah Province, in Kurdistan Region, Iraq. Investigations were carried out between April 2016 and April 2021, during which butterfly specimens were collected from 34 different localities throughout Sulaymaniyah Province. The collected butterflies belonged to 103 species within five families: five species of Papilionidae, 19 species of Hesperidae, 18 species of Pieridae, 25 species of Lycaenidae and 36 species of Nymphalidae.

New information

Eight species, *Carcharodus stauderi* Reverdin, 1913, *Thymelicus hyrax* Lederer, 1861, *Gonepteryx rhamni* (Linnaeus, 1758) *Pieris krueperi* Staudinger, 1860, *Colias erate* Esper, 1803, *Polyommatus thersites* (Cantener, 1835), *Brenthis mofidii* Wyatt, 1968 and *Pseudochazara mamurra* Herrich-Schäffer, 1852 have been added as new records to the fauna of Iraqi butterflies.

Keywords

butterflies, Papilionoidea, Lepidoptera, Sulaymaniyah, Iraqi fauna

Introduction

Sulaymaniyah Province is a mountainous area located in the northeast of Iraq and the southeast part of the Iraqi Kurdistan Region. As a part of the Iraqi Kurdistan Region biogeographically, Sulaymaniyah is situated in the Irano-Tauranian in the southeast of the western Palearctic realm (Ararat 2009). The Province mostly lies between 34°50' to 36°50' N longitude and 44°70' to 46°00' E latitude, elevation ranges 150-2550 m a.s.l. Sulaymaniyah has a diverse topography of mountains, hills, plains, valleys and lakes, with great biodiversity and many diverse habitats (Ararat 2009, Ahmed 2016).

Butterflies belong to a single superfamily, Papilionoidea (Heikkilä et al. 2011, Wiemers and Verovnik 2016). This superfamily consists of seven families; Papilionidae, Hedyliidae, Hesperidae, Pieridae, Riodinidae, Lycaenidae and Nymphalidae (van Nieuwerkerken et al. 2011, Wiemers and Verovnik 2016). In the past, the Lepidopteran faunal compositions have been rarely studied in Iraq in general and, particularly, in Sulaymaniyah. Butterfly recording in Iraq seemed to begin with Peile (1921), who published his notes on 44 species of the butterfly taken from Mesopotamia and another 44 species collected from adjacent highlands of northwest Persia and South Kurdistan. Scott (1929), in his entomological journey to the Sulaymaniyah Province, failed to record any butterfly species. The first and major contribution to the Lepidoptera fauna of Iraq was published by the British Colonel Wiltshire (1957). This work was a compilation of his intensively published articles (Wiltshire 1937a, Wiltshire 1937b, Wiltshire 1939a, Wiltshire 1939b, Wiltshire 1941, Wiltshire 1944). One year later, Higgins (1958), during his visit to Kurdistan, listed notes about 65 species of butterfly and added several new records to the known butterfly fauna of Iraq. During the 1970s, only a single Nymphalid species was recorded in Iraq (Igarashi 1971). There are several other published works considering Lepidoptera fauna in Iraq, which mostly depend on literature linked to Iraqi butterfly fauna (Kemal and Koçak 2011, Kemal and Koçak 2018, Koçak and Kemal 2001). Colonel Wiltshire's data have been used to map Iraqi butterflies by Tshikolovets et al. (2014) in a book entitled "The butterflies of Iran and Iraq", in which they studied also some fragmentary data from literature linked to Iraqi butterfly fauna and a few museum specimens. Recently in 2018, three articles have been published dealing with the butterfly fauna of Iraqi Kurdistan. These three studies have added several species to the known Iraqi fauna in the form of new records (Othman et al. 2018, Said et al. 2018, Yakovlev 2018), fifty-five species in the Erbil Province (Othman et al. 2018) and fifty species in the Duhok Province (Said et al. 2018, Yakovlev 2018). Lately, two lycaeniid butterfly species of the genus *Polyommatus* have been added to the Iraqi's butterfly fauna (Khudhur 2021). Based on literature data, the total recorded number of butterfly species in Iraq is 154 (Wiltshire 1957, Higgins 1958, Igarashi 1971, Othman et al. 2018, Said et al. 2018, Yakovlev 2018, Khudhur 2021).

The current study aims to investigate the butterfly fauna in the Sulaymaniyah Province and to contribute to the knowledge of Papilionoidea species and their distribution in Iraq.

Materials and methods

All butterflies were collected by F. Khudhur between April 2016 and April 2021. The specimens were collected from 34 different sites throughout the Sulaymaniyah Province (Table 1, Fig. 1). Sweeping nets were used for collecting the specimens. Specimens were euthanised with ethyl acetate vapour and were then put into a paper envelope and brought to the laboratory pinned, mounted, labelled and deposited in the Entomology Laboratory, Department of Biology, College of Science, University of Sulaimani, Sulaymaniyah Province, Kurdistan Region, Iraq. The species were identified according to Wiltshire (1957), Higgins (1958), Baytaş (2007), Eckweiler (2011), Tshikolovets et al. (2014), Tikhonov et al. (2020).

Table 1.

Geographical information of investigated localities.

Loc. No.	Locality	Latitude / Longitude	Elevation (m)	Visiting Date
1	Sarkapkan	36°21'04"N, 44°46'24"E	791	07.05.2016
				20.09.2018
2	Shênê	36°17'00"N, 45°16'01"E	1290	12.08.2020
3	Shanaksê	35°58'37"N, 45°31'11"E	1060	11.07.2020
4	Dukan	35°56'59"N, 44°57'38"E	515	18.11.2016
				15.05.2018
5	Upper Dêrê	35°56'08"N, 44°57'38"E	1600	21.06.2020
				01.07.2020
6	Galala	35°53'58"N, 45°19'51"E	1170	11.06.2020
7	Qamchukha	35°53'51"N, 45°00'51"E	712	06.09.2016
8	Mawat	35°53'10"N, 45°23'59"E	786	30.08.2016
				12.04.2020
				21.08.2020
9	Little Barê	35°53'02"N, 45°40'07"E	1500	06.09.2020
10	Sargalw	35°52'44"N, 45°09'49"E	930	17.05.2020
11	Goptapa	35°51'00"N, 44°50'07"E	376	02.05.2017
12	Sya Gwez	35°48'37"N, 45°47'33"E	1500	24.08.2016

Loc. No.	Locality	Latitude / Longitude	Elevation (m)	Visiting Date
13	Chami Razan	35°48'03"N, 44°58'38"E	586	12.04.2016
				06.09.2016
14	Balkha	35°47'09"N, 45°22'47"E	855	16.08.2017
15	Gollé	35°46'31"N, 45°49'54"E	1117	29.06.2020
16	Zêwê (Pirimagroon Mountain)	35°45'41"N, 45°14'17"E	1720	15.08.2016
				12.09.2018
				06.06.2020
				10.08.2020
				04.05.2021
17	Mokaba	35°45'26"N, 45°25'41"E	841	25.04.2018
				09.04.2021
18	Qaiwan	35°42'01"N, 45°25'03"E	1230	21.05.2016
				13.05.2017
19	Hawary Shar Park	35°36'41"N, 45°25'48"E	919	28.08.2016
				23.10.2016
				21.07.2018
				20.11.2018
				29.05.2020
				06.04.2021
20	Penjwin	35°36'09"N, 45°57'48"E	1400	18.04.2019
21	Goyzha	35°34'57"N, 45°28'09"E	1070	27.09.2016
22	Qlyasan	35°34'41"N, 45°22'01"E	756	24.09.2016
				09.11.2016
				29.03.2017
				09.06.2017
				25.06.2019
				27.06.2020
23	Azady Park	35°34'02"N, 45°25'51"E	845	17.08.2016
				29.10.2016
				14.04.2021

Loc. No.	Locality	Latitude / Longitude	Elevation (m)	Visiting Date
24	Basak	35°33'30"N, 45°42'57"E	1260	05.05.2016
25	Kani Pan	35°33'03"N, 45°18'00"E	714	05.10.2016
				12.10.2016
26	Hazarmerd	35°29'56"N, 45°18'54"E	958	03.05.2016
				21.04.2017
				15.04.2019
				05.05.2020
				14.05.2020
				06.08.2020
				13.10.2020
				15.04.2021
27	Dêlêzha	35°27'36"N, 45°11'26"E	695	26.04.2016
				01.09.2020
28	Nawê	35°24'42"N, 45°57'59"E	656	27.10.2017
29	Zalm	35°18'53"N, 46°05'07"E	843	11.05.2020
30	Sargat	35°17'34"N, 46°06'18"E	1050	16.06.2020
31	Qareh Dagh	35°14'27"N, 45°22'12"E	1310	06.05.2017
				30.05.2020
				01.09.2020
				12.09.2020
32	Byara	35°13'47"N, 46°07'13"E	1120	22.09.2016
				07.07.2017
				14.09.2019
33	Sartak	34°56'45"N, 45°46'32"E	1270	20.05.2017
				19.03.2021
34	Awa Khwery	34°53'30"N, 45°33'29"E	311	16.08.2019

Data resources

A total of 103 species of butterfly, belonging to five families of the superfamily Papilionoidea, order Lepidoptera, were identified. Of which eight species, previously unrecorded, were added as new species to the Iraqi butterfly fauna; these eight species

are marked with an asterisk in the Checklist section. Five species were recorded within Papilionidae, 19 species within Hesperidae including two new records, 18 species within Pieridae including three new records, 25 species within Lycaenidae with one new record and 36 species within Nymphalidae including two new records. The species of the butterflies were listed according to Wiemers and Verovnik (2016).

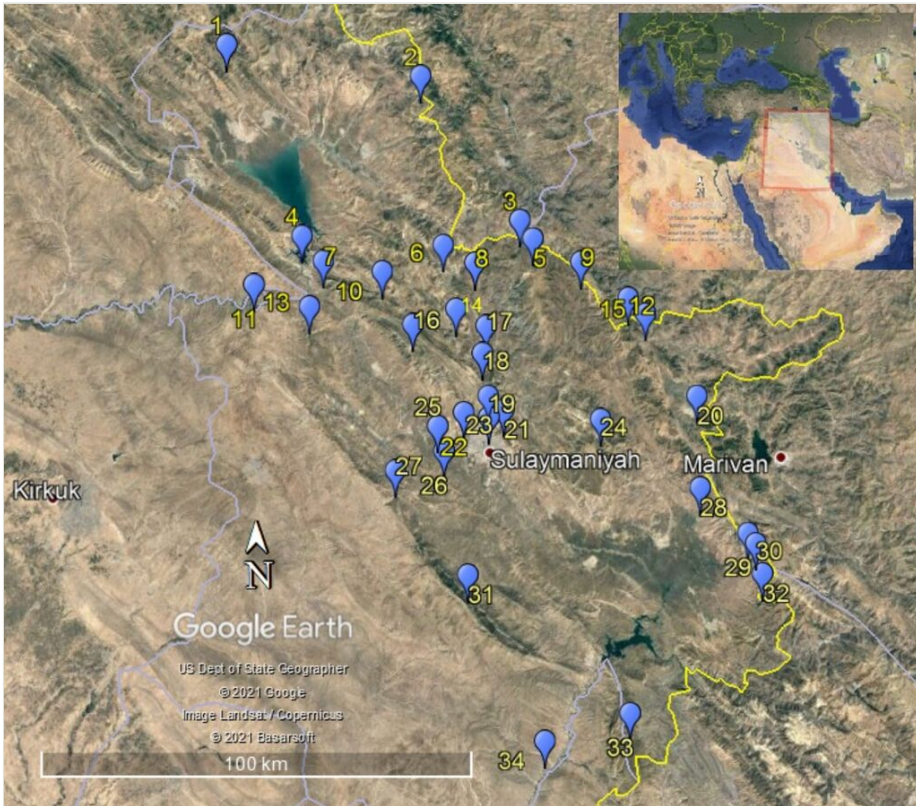


Figure 1. [doi](#)

Map of Sulaymaniyah Province, the sampling localities marked with blue dots.

Checklist of Butterflies of Sulaymaniyah Province, Kurdistan Region, Iraq

Carcharodus alceae (Esper, [1780])

Materials

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- b. county: Dukan; locality: Upper Dukan; verbatimCoordinates: 35°56'59"N, 44°57'38"E

- c. county: Chamchamal; locality: Goptapa Village; verbatimCoordinates: 35°51'00"N, 44°50'07"E
- d. county: Dukan; locality: Chami Razan Valley; verbatimCoordinates: 35°48'03"N, 44°58'38"E
- e. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
- f. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E
- g. county: Bazyan; locality: Dêlêzha; verbatimCoordinates: 35°27'36"N, 45°11'26"E
- h. county: Halabja; locality: Byara; verbatimCoordinates: 35°13'47"N, 46°07'13"E
- i. county: Kalar; locality: Awa Khwery; verbatimCoordinates: 34°53'30"N, 45°33'29"E

***Carcharodus orientalis* Reverdin, 1913**

Materials

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

*** *Carcharodus stauderi* Reverdin, 1913**

Materials

- a. county: Chwarta; municipality: Basnê; locality: Upper Dêrê; verbatimCoordinates: 35°56'08"N, 44°57'38"E; eventDate: 21-Jun-20; identifiedBy: Farhad A. Khudhur; identificationReferences: Tshikolovets et.al. 2014; basisOfRecord: PreservedSpecimen
- b. county: Dukan; locality: Zêwê (Piramağroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E; eventDate: 10-Aug-20; identifiedBy: Farhad A. Khudhur; identificationReferences: Tshikolovets et.al. 2014; basisOfRecord: PreservedSpecimen

Notes: First record for Iraq

***Eogenes alcides* (Herrich-Schäffer, [1852])**

Materials

- a. county: Dukan; locality: Qamchukha Village; verbatimCoordinates: 35°53'51"N, 45°00'51"E
- b. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- c. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
- d. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- e. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E

***Erynnis marloyi* (Boisduval, [1834])**

Materials

- a. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- b. county: Dukan; locality: Zêwê (Piramağroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

Erynnis tages* (Linnaeus, 1758)*Materials**

- a. county: Chuarta; locality: Shanakhsê Village; verbatimCoordinates: 35°58'37"N, 45°31'11"E
- b. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- c. county: Chuarta; locality: Little Barê Village; verbatimCoordinates: 35°53'02"N, 45°40'07"E

Gegenes nostradamus* (Fabricius, 1793)*Materials**

- a. county: Dukan; locality: Qamchukha Village; verbatimCoordinates: 35°53'51"N, 45°00'51"E
- b. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- c. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Gegenes pumilio* (Hoffmannsegg, 1804)*Materials**

- a. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E
- b. county: Halabja; locality: Sargat Village; verbatimCoordinates: 35°17'34"N, 46°06'18"E

Muschampia tessellum* (Hb., 1803)*Material**

- a. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Muschampia nomas* (Lederer, 1855)*Material**

- a. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Ochlodes sylvanus* (Esper, 1777)*Material**

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E

Spialia osthelderi* (Pfeiffer, 1932)*Material**

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E

Spialia doris* (Walker, 1870)*Materials**

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
 b. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E

Spialia geron* (Watson, 1893)*Material**

- a. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E

Spialia orbifer* (Hübner, [1823])*Material**

- a. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E

Thymelicus acteon* (Rottemburg, 1775)*Materials**

- a. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
 b. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Thymelicus hyrax* (Lederer, 1861)*Material**

- a. county: Bakrajo; municipality: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E; eventDate: 14-May-20; sex: 2 males; recordedBy: F. A. Khudhur; identifiedBy: Farhad A. Khudhur; identificationReferences: Tshikolovets et al. 2014 & Baytaş 2007; basisOfRecord: PreservedSpecimen

Notes: First record for Iraq

Thymelicus lineola* (Ochsenheimer, 1808)*Materials**

- a. county: Chuarta; locality: Shanakhsê Village; verbatimCoordinates: 35°58'37"N, 45°31'11"E
- b. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
- c. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Thymelicus sylvestris* (Poda, 1761)*Materials**

- a. county: Sulyamanyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- b. county: Sulyamanyah; locality: Goyzha; verbatimCoordinates: 35°34'57"N, 45°28'09"E
- c. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E
- d. county: Halabja; locality: Zalm Village; verbatimCoordinates: 35°18'53"N, 46°05'07"E

Archon apollinaris* (Staudinger, [1892])*Materials**

- a. county: Dukan; locality: Upper Dukan; verbatimCoordinates: 35°56'59"N, 44°57'38"E
- b. county: Chamchamal; locality: Goptapa Village; verbatimCoordinates: 35°51'00"N, 44°50'07"E
- c. county: Dukan; locality: Chami Razan Valley; verbatimCoordinates: 35°48'03"N, 44°58'38"E
- d. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Zerynthia deyrollei* (Oberthür, 1869)*Materials**

- a. county: Dukan; locality: Upper Dukan; verbatimCoordinates: 35°56'59"N, 44°57'38"E
- b. county: Chamchamal; locality: Goptapa Village; verbatimCoordinates: 35°51'00"N, 44°50'07"E
- c. county: Dukan; locality: Chami Razan Valley; verbatimCoordinates: 35°48'03"N, 44°58'38"E
- d. county: Sulyamanyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
- e. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Iphiclides podalirius* (Linnaeus, 1758)*Materials**

- a. county: Ranya; locality: Sarkapkan; verbatimCoordinates: 36°21'04"N, 44°46'24"E
- b. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- c. county: Chuarta; locality: Shanakhsê Village; verbatimCoordinates: 35°58'37"N, 45°31'11"E

- d. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- e. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- f. county: Penjwen; locality: Sya Gwez Village; verbatimCoordinates: 35°48'37"N, 45°47'33"E
- g. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- h. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E
- i. county: Halabja; locality: Byara; verbatimCoordinates: 35°13'47"N, 46°07'13"E

***Papilio demoleus* Linnaeus, 1758**

Materials

- a. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- b. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
- c. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E
- d. county: Kalar; locality: Awa Khwery; verbatimCoordinates: 34°53'30"N, 45°33'29"E

***Papilio machaon* Linnaeus, 1758**

Materials

- a. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- b. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- c. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E
- d. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

***Anthocharis gruneri* (Herrich-Schaffer, [1851])**

Material

- a. county: Ranya; locality: Sarkapkan; verbatimCoordinates: 36°21'04"N, 44°46'24"E

***Anthocharis cardamines* (Linnaeus, 1758)**

Material

- a. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Aporia crataegi* (Linnaeus, 1758)*Materials**

- a. county: Chamchamal; locality: Goptapa Village; verbatimCoordinates: 35°51'00"N, 44°50'07"E
- b. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E
- c. county: Bazyan; locality: Dêlêzha; verbatimCoordinates: 35°27'36"N, 45°11'26"E

Belenois aurota* (Fabricius, 1793)*Materials**

- a. county: Dukan; locality: Qamchukha Village; verbatimCoordinates: 35°53'51"N, 45°00'51"E
- b. county: Sulyamanyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
- c. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E

Colias croceus* (Geoffroy, 1785)*Materials**

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- b. county: Dukan; locality: Qamchukha Village; verbatimCoordinates: 35°53'51"N, 45°00'51"E
- c. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- d. county: Chuarta; locality: Little Barê Village; verbatimCoordinates: 35°53'02"N, 45°40'07"E
- e. county: Mawat; locality: Mokaba; verbatimCoordinates: 35°45'26"N, 45°25'41"E
- f. county: Sulyamanyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- g. county: Sulyamanyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E
- h. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

*** *Colias erate* (Esper, 1805)****Material**

- a. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E; eventDate: 12-Sep-20; sex: 1 male, 2 females; recordedBy: F. A. Khudhur; identifiedBy: Farhad A. Khudhur; identificationReferences: Tshikolovets et al. 2014; basisOfRecord: PreservedSpecimen

Notes: First record for Iraq

Colias aurorina* Herrich-Schäffer, 1850*Materials**

- a. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- b. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E

Colotis fausta* (Olivier, [1804])*Materials**

- a. county: Dukan; locality: Qamchukha Village; verbatimCoordinates: 35°53'51"N, 45°00'51"E
- b. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
- c. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E
- d. county: Darbandikhan; locality: Sartak; verbatimCoordinates: 34°56'45"N, 45°46'32"E
- e. county: Kalar; locality: Awa Khwery; verbatimCoordinates: 34°53'30"N, 45°33'29"E

Euchloe belemia* (Esper, 1800)*Material**

- a. county: Penjwen; locality: Penjwen; verbatimCoordinates: 35°36'09"N, 45°57'48"E

*** *Gonepteryx rhamnii* (Linnaeus, 1758)****Material**

- a. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E; eventDate: 4-May-21; sex: 2 males; recordedBy: F. A. Khudhur; identifiedBy: Farhad A. Khudhur; identificationReferences: Tshikolovets et al. 2014; basisOfRecord: PreservedSpecimen

Notes: First record for Iraq

Gonepteryx farinosa* (Zeller, 1847)*Materials**

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- c. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Pieris ergane* (Geyer, [1828])*Material**

- a. county: Halabja; locality: Sargat Village; verbatimCoordinates: 35°17'34"N, 46°06'18"E

*** *Pieris krueperi* Staudinger, 1860**

Material

- a. county: Said Sadiq; locality: Nawê Village; verbatimCoordinates: 35°24'42"N, 45°57'59"E; eventDate: 27-Oct-17; sex: 1 male; recordedBy: F. A. Khudhur; identifiedBy: Farhad A. Khudhur; identificationReferences: Tshikolovets et al. 2014; basisOfRecord: PreservedSpecimen

Notes: First record for Iraq

***Pieris napi* (Linnaeus, 1758)**

Materials

- a. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
b. county: Halabja; locality: Byara; verbatimCoordinates: 35°13'47"N, 46°07'13"E

***Pieris rapae* (Linnaeus, 1758)**

Materials

- a. county: Ranya; locality: Sarkapkan; verbatimCoordinates: 36°21'04"N, 44°46'24"E
b. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
c. county: Dukan; locality: Upper Dukan; verbatimCoordinates: 35°56'59"N, 44°57'38"E
d. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
e. county: Chamchamal; locality: Goptapa Village; verbatimCoordinates: 35°51'00"N, 44°50'07"E
f. county: Dukan; locality: Chami Razan Valley; verbatimCoordinates: 35°48'03"N, 44°58'38"E
g. county: Mawat; locality: Mokaba; verbatimCoordinates: 35°45'26"N, 45°25'41"E
h. county: Mawat; locality: Qaiwan Village; verbatimCoordinates: 35°42'01"N, 45°25'03"E
i. county: Penjwen; locality: Penjwen; verbatimCoordinates: 35°36'09"N, 45°57'48"E
j. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
k. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E
l. county: Bazyan; locality: Dêlêzha; verbatimCoordinates: 35°27'36"N, 45°11'26"E
m. county: Halabja; locality: Byara; verbatimCoordinates: 35°13'47"N, 46°07'13"E

***Pontia chloridice* (Hübner, [1808-1813])**

Material

- a. county: Barzinja; locality: Basak Village; verbatimCoordinates: 35°33'30"N, 45°42'57"E

***Pontia glauconome* Klug, 1829**

Materials

- a. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
b. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Pontia daplidice* (Linnaeus, 1758)*Materials**

- a. county: Ranya; locality: Sarkapkan; verbatimCoordinates: 36°21'04"N, 44°46'24"E
- b. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- c. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- d. county: Mawat; locality: Mokaba; verbatimCoordinates: 35°45'26"N, 45°25'41"E
- e. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E
- f. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E
- g. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Aricia agestis* (Denis & Schiffermüller, 1775)*Materials**

- a. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- b. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
- c. county: Barzinja; locality: Basak Village; verbatimCoordinates: 35°33'30"N, 45°42'57"E
- d. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E
- e. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E
- f. county: Bazyan; locality: Dêlêzha; verbatimCoordinates: 35°27'36"N, 45°11'26"E
- g. county: Said Sadiq; locality: Nawê Village; verbatimCoordinates: 35°24'42"N, 45°57'59"E
- h. county: Halabja; locality: Zalm Village; verbatimCoordinates: 35°18'53"N, 46°05'07"E
- i. county: Halabja; locality: Byara; verbatimCoordinates: 35°13'47"N, 46°07'13"E

Celastrina (44) argiolus* (Linnaeus, 1758)*Material**

- a. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

Cigaritis maxima* Staudinger, 1901*Material**

- a. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E

Cigaritis epargyros* (Eversmann, 1854)*Materials**

- a. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- b. county: Mawat; locality: Balkha Village; verbatimCoordinates: 35°47'09"N, 45°22'47"E

Favonius quercus* (Linnaeus, 1758)*Material**

- a. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

Glaucopepsye laetifica* subsp. *safidensis* (Blom, 1979)*Materials**

- a. county: Mawat; locality: Mokaba; verbatimCoordinates: 35°45'26"N, 45°25'41"E
- b. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Lampides boeticus* (Linnaeus, 1767)*Materials**

- a. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- b. county: Penjwen; locality: Gollê Resort; verbatimCoordinates: 35°46'31"N, 45°49'54"E
- c. county: Sulyamaniyah; locality: Goyzha; verbatimCoordinates: 35°34'57"N, 45°28'09"E
- d. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E
- e. county: Bazyan; locality: Dêlêzha; verbatimCoordinates: 35°27'36"N, 45°11'26"E
- f. county: Kalar; locality: Awa Khwery; verbatimCoordinates: 34°53'30"N, 45°33'29"E

Chilades trochylus* (Freyer, 1845)*Materials**

- a. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- b. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E
- c. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Lachides galba* (Lederer, 1855)*Materials**

- a. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- b. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
- c. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E
- d. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E

Lycaena asabinus* (Herrich-Schaffer, [1851])*Materials**

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E

- b. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

***Lycaena phlaeas* (Linnaeus, 1761)**

Materials

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
b. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
c. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
d. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E

***Lycaena thersamon* (Esper, 1784)**

Materials

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
b. county: Sulyamaniyah; locality: Goyzha; verbatimCoordinates: 35°34'57"N, 45°28'09"E

***Lycaena tityrus* (Poda, 1761)**

Materials

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
b. county: Penjwen; locality: Gollê Resort; verbatimCoordinates: 35°46'31"N, 45°49'54"E

***Lycaena thetis* Klug, 1834**

Material

- a. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E

***Plebejus zephyrinus* (Christoph, 1884)**

Materials

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
b. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
c. county: Sulyamaniyah; locality: Goyzha; verbatimCoordinates: 35°34'57"N, 45°28'09"E

Polyommatus (Lysandra) bellargus* von Rottemburg, 1775*Materials**

- a. county: Chuarta; locality: Shanakhsê Village; verbatimCoordinates: 35°58'37"N, 45°31'11"E
- b. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Polyommatus daphnis* (Denis & Schiffermuller, 1775)*Materials**

- a. county: Penjwen; locality: Sya Gwez Village; verbatimCoordinates: 35°48'37"N, 45°47'33"E
- b. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

Polyommatus icarus* (Rottemburg, 1775)*Materials**

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- b. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E

*** *Polyommatus thersites* (Cantener, 1835)****Material**

- a. county: Barzinja; locality: Basak Village; verbatimCoordinates: 35°33'30"N, 45°42'57"E; eventDate: 5-May-16; sex: 1 male; recordedBy: F. A. Khudhur; identifiedBy: Farhad A. Khudhur; identificationReferences: Tshikolovets et al. 2014; basisOfRecord: PreservedSpecimen

Notes: First record for Iraq

Pseudophilotes vicrama* (Moore, 1865)*Material**

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E

Satyrrium acaciae* (Fabricius 1787).*Material**

- a. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

Satyrium marcidus* (Riley, 1921)*Materials**

- a. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- b. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Satyrium abdominalis* (Gerhard, 1850)*Materials**

- a. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
- b. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

Tarucus balkanicus* (Freyer, [1844])*Materials**

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- b. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- c. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
- d. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E
- e. county: Bazyan; locality: Dêlêzha; verbatimCoordinates: 35°27'36"N, 45°11'26"E
- f. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Zizeeria karsandra* (Moore, 1865)*Materials**

- a. county: Dukan; locality: Qamchukha Village; verbatimCoordinates: 35°53'51"N, 45°00'51"E
- b. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E

Argynnis niobe* von Rottemburg, 1775*Material**

- a. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Argynnis pandora* ([Schiffermüller], 1775)*Materials**

- a. county: Ranya; locality: Sarkapkan; verbatimCoordinates: 36°21'04"N, 44°46'24"E
- b. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E

- c. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- d. county: Penjwen; locality: Sya Gwez Village; verbatimCoordinates: 35°48'37"N, 45°47'33"E
- e. county: Dukan; locality: Zêwê (Piramaagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- f. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E
- g. county: Halabja; locality: Byara; verbatimCoordinates: 35°13'47"N, 46°07'13"E

* *Brenthis mofidii* Wyatt, 1969

Material

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 45°57'38"E; eventDate: 21-Jun-20; sex: 1 male; recordedBy: F. A. Khudhur; identifiedBy: Farhad A. Khudhur; identificationReferences: Tshikolovets et al. 2014; basisOfRecord: PreservedSpecimen

Notes: First record for Iraq.

Brintesia circe (Fabricius, 1775)

Materials

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- c. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- d. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Chazara briseis (Linnaeus, 1764)

Materials

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Halabja; locality: Sargat Village; verbatimCoordinates: 35°17'34"N, 46°06'18"E

Coenonympha pamphilus (Linnaeus, 1758)

Materials

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- c. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- d. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E

Coenonympha saadi* Kollar, [1849]*Materials**

- a. county: Chuarta; locality: Little Baré Village; verbatimCoordinates: 35°53'02"N, 45°40'07"E
- b. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
- c. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- d. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E
- e. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Danaus chrysippus* (Linnaeus, 1758)*Material**

- a. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E

Hipparchia fatua* (Freyer, 1845)*Material**

- a. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E

Hipparchia parisatis* (Kollar, [1849])*Materials**

- a. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- b. county: Halabja; locality: Sargat Village; verbatimCoordinates: 35°17'34"N, 46°06'18"E
- c. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Hipparchia pellucida* (Stauder, 1924)*Material**

- a. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E

Hipparchia syriaca* (Staudinger, 1871)*Materials**

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- c. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E

- d. county: Chuarta; locality: Little Barê Village; verbatimCoordinates: 35°53'02"N, 45°40'07"E
- e. county: Dukan; locality: Zêwê (Piramağroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- f. county: Penjwen; locality: Penjwen; verbatimCoordinates: 35°36'09"N, 45°57'48"E
- g. county: Halabja; locality: Sargat Village; verbatimCoordinates: 35°17'34"N, 46°06'18"E
- h. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E
- i. county: Halabja; locality: Byara; verbatimCoordinates: 35°13'47"N, 46°07'13"E

***Hyponephele lupina* (Costa, 1836)**

Material

- a. county: Dukan; locality: Zêwê (Piramağroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

***Hyponephele lycaon* (Rottemburg, 1775)**

Material

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E

***Hyponephele wagneri* (Herrich-Schäffer, [1846])**

Material

- a. county: Dukan; locality: Zêwê (Piramağroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

***Junonia orithya* (Linnaeus, 1758)**

Materials

- a. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- b. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E

***Lasiommata megera* (Linnaeus, 1767)**

Materials

- a. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- b. county: Sulyamaniyah; locality: Qlyasan; verbatimCoordinates: 35°34'41"N, 45°22'01"E
- c. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Limenitis reducta* Staudinger, 1901*Materials**

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- c. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- d. county: Chuarta; locality: Little Barê Village; verbatimCoordinates: 35°53'02"N, 45°40'07"E
- e. county: Penjwen; locality: Sya Gwez Village; verbatimCoordinates: 35°48'37"N, 45°47'33"E
- f. county: Dukan; locality: Zêwê (Piramağroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- g. county: Halabja; locality: Sargat Village; verbatimCoordinates: 35°17'34"N, 46°06'18"E

Maniola jurtina* (Linnaeus, 1758)*Materials**

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
- c. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E

Maniola telmessia* (Zeller, 1847)*Materials**

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- b. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- c. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- d. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- e. county: Penjwen; locality: Sya Gwez Village; verbatimCoordinates: 35°48'37"N, 45°47'33"E

Melanargia hylata* (Ménétriés, 1832)*Materials**

- a. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E
- b. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- c. county: Dukan; locality: Zêwê (Piramağroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

Melanargia larissa* (Geyer, [1828])*Materials**

- a. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- b. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E
- c. county: Halabja; locality: Sargat Village; verbatimCoordinates: 35°17'34"N, 46°06'18"E

Melitaea arduinna* (Esper, 1783)*Material**

- a. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Melitaea cinxia* (Linnaeus, 1758)*Material**

- a. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Melitaea didyma* (Esper, 1778)*Material**

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E

Melitaea gina* Higgins, 1941*Material**

- a. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E

Nymphalis polychloros* (Linnaeus, 1758)*Material**

- a. county: Mawat; locality: Mokaba; verbatimCoordinates: 35°45'26"N, 45°25'41"E

Pararge aegeria* (Linnaeus, 1758)*Materials**

- a. county: Ranya; locality: Sarkapkan; verbatimCoordinates: 36°21'04"N, 44°46'24"E
- b. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- c. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E
- d. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
- e. county: Penjwen; locality: Sya Gwez Village; verbatimCoordinates: 35°48'37"N, 45°47'33"E

- f. county: Penjwen; locality: Penjwen; verbatimCoordinates: 35°36'09"N, 45°57'48"E
- g. county: Halabja; locality: Sargat Village; verbatimCoordinates: 35°17'34"N, 46°06'18"E
- h. county: Halabja; locality: Byara; verbatimCoordinates: 35°13'47"N, 46°07'13"E

***Pararge climene* (Esper, 1783)**

Material

- a. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

***Pararge roxelana* (Cramer, [1777])**

Materials

- a. county: Dukan; locality: Sargalw (Bargalw); verbatimCoordinates: 35°52'44"N, 45°09'49"E
- b. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

***Polygonia c-album* (Linnaeus, 1758)**

Material

- a. county: Mawat; locality: Mawat; verbatimCoordinates: 35°53'10"N, 45°23'59"E

*** *Pseudochazara mamurra* (Herrich-Schäffer, [1846])**

Materials

- a. county: Mawat; locality: Galala Village; verbatimCoordinates: 35°53'58"N, 45°19'51"E; eventDate: 11-Jun-20; sex: 1 female; recordedBy: F. A. Khudhur; identifiedBy: Farhad A. Khudhur; identificationReferences: Eckweiler 2012, Tshikolovets et al. 2014 & Tikhonov et al. 2020; basisOfRecord: PreservedSpecimen
- b. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E; eventDate: 6-Jun-20; sex: 1 male; recordedBy: F. A. Khudhur; identifiedBy: Farhad A. Khudhur; identificationReferences: Eckweiler 2012, Tshikolovets et al. 2014 & Tikhonov et al. 2020; basisOfRecord: PreservedSpecimen

Notes: First record for Iraq.

***Pseudochazara pelopea* (Klug, 1832)**

Materials

- a. county: Chuarta; locality: Upper Dêrê Village; verbatimCoordinates: 35°56'08"N, 44°57'38"E
- b. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E

Pseudochazara thelephassa* (Geyer, [1827])*Materials**

- a. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- b. county: Qareh Dagh; locality: Qareh Dagh Mount.; verbatimCoordinates: 35°14'27"N, 45°22'12"E

Vanessa atalanta* (Linnaeus, 1758)*Materials**

- a. county: Dukan; locality: Upper Dukan; verbatimCoordinates: 35°56'59"N, 44°57'38"E
- b. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- c. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E
- d. county: Bakrajo; locality: Hazarmerd; verbatimCoordinates: 35°29'56"N, 45°18'54"E

Vanessa cardui* (Linnaeus, 1758)*Materials**

- a. county: Ranya; locality: Sarkapkan; verbatimCoordinates: 36°21'04"N, 44°46'24"E
- b. county: Pishdar; locality: Shênê Village; verbatimCoordinates: 36°17'00"N, 45°16'01"E
- c. county: Dukan; locality: Qamchukha Village; verbatimCoordinates: 35°53'51"N, 45°00'51"E
- d. county: Chamchamal; locality: Goptapa Village; verbatimCoordinates: 35°51'00"N, 44°50'07"E
- e. county: Dukan; locality: Chami Razan Valley; verbatimCoordinates: 35°48'03"N, 44°58'38"E
- f. county: Dukan; locality: Zêwê (Piramagroon Mount.); verbatimCoordinates: 35°45'41"N, 45°14'17"E
- g. county: Mawat; locality: Mokaba; verbatimCoordinates: 35°45'26"N, 45°25'41"E
- h. county: Sulyamaniyah; locality: Hawary Shar Park; verbatimCoordinates: 35°36'41"N, 45°25'48"E
- i. county: Sulyamaniyah; locality: Azady Park; verbatimCoordinates: 35°34'02"N, 45°25'51"E
- j. county: Barzinja; locality: Basak Village; verbatimCoordinates: 35°33'30"N, 45°42'57"E
- k. county: Bakrajo; locality: Kany Pan; verbatimCoordinates: 35°33'03"N, 45°18'00"E
- l. county: Bazyan; locality: Dêlêzha; verbatimCoordinates: 35°27'36"N, 45°11'26"E
- m. county: Said Sadiq; locality: Nawê Village; verbatimCoordinates: 35°24'42"N, 45°57'59"E
- n. county: Darbandikhan; locality: Sartak; verbatimCoordinates: 34°56'45"N, 45°46'32"E

Discussion

This study is first intensive faunistic study of butterfly in Sulaymaniyah Province. The diverse topography and ecosystems in Sulaymaniyah Province contributes to the richness

in its biodiversity (Ararat 2009). In particular, the area has a mixed long border and extended geography with three areas of rich biodiversity: the Zagrosian Provinces of Iran including West Azarbaijan, Kordestan and Kermanshah (Haidari 2012, Kazemi and Hossienzadeh 2020). The results of this study reflect this biodiversity richness. In addition to the 154 species of butterflies that have been documented previously in Iraq (Wiltshire 1957, Higgins 1958, Igarashi 1971, Othman et al. 2018, Said et al. 2018, Yakovlev 2018, Khudhur 2021), 95 species were founded in Sulaymaniyah Province during these investigations. Moreover, this study adds eight new species previously unrecorded to the butterfly fauna of Iraq. Three of these newly-found species within Iraq belong to Pieridae; *Pieris krueperi*, *Gonepteryx rhamni* and *Colias erate*. The five others were two skippers, *Carcharodus stauderi* and *Thymelicus hyrax*; two Nymphalids *Brenthis mofidii* and *Pseudochazara mamurra* and a lycaenid butterfly *Polyommatus thersites*. All of these new records were predicted to be found here, since Sulaymaniyah is located near to the known distribution range of these species (Wiltshire 1957, Eckweiler 2012, Tshikolovets et al. 2014, Tikhonov et al. 2020). Several works of literature (Kemal and Koçak 2011, Bozano et al. 2016, Kemal and Koçak 2018) indicated distribution of these mentioned species in Iraq, based on the country position within the range of the Westren Palaearctic Region, while these indications were not supported by referencing to specific preserved specimens from Iraq. More new records of butterflies are likely to be found in this region and neighbouring areas in the future studies. Amongst the visited localities of this study, PiraMagroon Mountain (Zêwê Village, locality no.15) was unique and had the richest diversity regarding butterflies with the highest number of species recorded, including the three new records *Carcharodus stauderi*, *Gonepteryx rhamni* and *Pseudochazara mamurra*. Furthermore, several other rarely found species were collected from PiraMagroon Mountain, including *Favonius quercus*, *Satyrrium gerhardi*, *Hyponephele wagneri*, *Hyponephele lupine*, *Pararge climene* and *Erynnis marloyi*. Therefore, this mountain deserves further investigations and will be the next focus for our future work.

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References

- Ahmed H (2016) Ethnopharmacobotanical study on the medicinal plants used by herbalists in Sulaymaniyah Province, Kurdistan, Iraq. Journal of Ethnobiology and Ethnomedicine 12 (1). <https://doi.org/10.1186/s13002-016-0081-3>
- Ararat K (2009) Key Biodiversity Areas: Rapid assessment of birds in Kurdistan, northern Iraq. BioRisk 3: 187-203. <https://doi.org/10.3897/biorisk.3.21>

- Baytaş A (2007) A field guide to the butterflies of Turkey. NTV Yayınları, İstanbul, 218 pp.
- Bozano GC, Coutsis JG, Herman P, Allegrucci G, Cesaroni D, Sbordoni V (2016) Guide to the butterflies of the Palearctic region: Pieridae 3: Coliadinae: Rhodocerini, Euremini, Coliadini (*Gonepteryx* and others) & Dismorphiinae (*Leptidea*). Omnes Artes, Mila, 70 pp.
- Eckweiler W (2011) Die Verbreitung und subspezifische Gliederung von *Pseudochazara mamurra* (Herrich-Schäffer, [1846]) (Lepidoptera: Nymphalidae, Satyrinae). Nachrichten des entomologischen Vereins Apollo 25 (1/2): 9-14.
- Eckweiler W (2012) New discoveries of *Pseudochazara mamurra amymone* Brown, 1976 (Lepidoptera: Nymphalidae, Satyrinae). Nachrichten des entomologischen Vereins Apollo 33 (1): 1-4.
- Haidari M (2012) Structural diversity of oak forests in Kurdistan Province (Case study: Oak forest). IOSR Journal of Pharmacy and Biological Sciences 4 (3): 37-43. <https://doi.org/10.9790/3008-0433743>
- Heikkilä M, Kaila L, Mutanen M, Peña C, Wahlberg N (2011) Cretaceous origin and repeated tertiary diversification of the redefined butterflies. Proceedings of the Royal Society B: Biological Sciences 279 (1731): 1093-1099. <https://doi.org/10.1098/rspb.2011.1430>
- Higgins LG (1958) Butterflies in Kurdistan. Entomologists 91: 38-45.
- Igarashi S (1971) *Protmpanura iwaseia* new nymphalid butterfly from Kurdistan, the Northern Iraq (Nymphalidae). Journal Lepidoptera Science 22 (1-2): 14-17. https://doi.org/10.18984/lepid.22.1-2_14
- Kazemi SM, Hossienzadeh MS (2020) High diversity and endemism of herpetofauna in Zagros Mountains. Ecopersia 8 (4): 221-229.
- Kemal M, Koçak AÖ (2011) Asynonymical, and disributional checklist of the Papilionoidea and Hesperioidea of East Mediterranean countries, including Turkey (Lepidoptera). Priamus 25: 1-162.
- Kemal M, Koçak AÖ (2018) A synonymous and distributional list of the Lepidoptera of Iraq based on the infosystems of the Cesa. Priamus 17 (2114): 208.
- Khudhur FA (2021) New records of two butterflies of the genus *Polyommatus* Latreille, 1804 (subgenus *Agrodiaetus* Hübner, 1822) (Lepidoptera: Lycaenidae) from Iraq. Zootaxa 5061 (3): 597-600. <https://doi.org/10.11646/zootaxa.5061.3.13>
- Koçak AÖ, Kemal M (2001) Studies on the geography of the Lepidoptera 3. Zoogeographical remarks on the butterflies of Iraq (Lepidoptera, Papilionoidea, Hesperioidea). Priamus 10 (3-4): 164-173. [In Uighur].
- Othman HD, Çiftçi MC, Seven E (2018) Studies on the fauna of Papilionoidea and Hesperioidea (Lepidoptera) of Erbil Province (Northern Iraq). Türkiye Tarımsal Araştırmalar Dergisi 5 (2): 120-124. <https://doi.org/10.19159/tutad.369079>
- Peile H (1921) The butterflies of Mesopotamia. Journal of the Bombay Natural History Society 28 (1): 50-57.
- Said NT, Çiftçi MC, Seven E (2018) A preliminary list of butterflies (Lepidoptera, Rhopalocera) from Duhok (Northern Iraq)*. Transactions of the American Entomological Society 144 (3). <https://doi.org/10.3157/061.144.0313>
- Scott H (1929) An entomological tour in Kurdistan. Entomologist's Monthly Magazine 65: 69-82.

- Tikhonov VV, Stradomsky BV, Kuznetsov GV, Andreev SA (2020) Butterflies of the Caucasus and the South of Russia. <http://babochki-kavkaza.ru/>. Accessed on: 2021-6-24.
- Tshkolovets V, Naderi A, Eckweiler W (2014) The butterflies of Iran and Iraq. Tshkolovets-Publications, Pardubice, 440 pp.
- van Nieukerken EJ, Kaila L, Kitching IJ, Kristensen NP, Lees DC, et al. (2011) Order Lepidoptera Linnaeus, 1758. In: Zhang, Z-Q (Ed.) Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness. Zootaxa 3148 (1). <https://doi.org/10.11646/zootaxa.3148.1.39>
- Wiemers M, Verovnik R (2016) Species delimitation in the grayling genus *Pseudochazara* (Lepidoptera, Nymphalidae, Satyrinae) supported by DNA barcodes. ZooKeys 600: 131-154. <https://doi.org/10.3897/zookeys.600.7798>
- Wiltshire EP (1937a) Autumnal Lepidoptera in Kurdistan: Preliminary notes on some excursions in the Rowanduz Chai Valley, Iraq. The Entomologist's Record and Journal of Variation 49: 91-94.
- Wiltshire EP (1937b) Autumnal Lepidoptera in Kurdistan. Preliminary notes on some excursions in the Rowanduz Chai Valley, Iraq. The Entomologist's Record and Journal of Variation 49: 107-109.
- Wiltshire EP (1939a) More notes on Kurdish Lepidoptera, with description of a new race and comparisons with Luristan and Alvand, Iran. The Entomologist's Record and Journal of Variation 51: 97-103.
- Wiltshire EP (1939b) More notes on Kurdish Lepidoptera, with description of a new race and comparisons with Luristan and Alvand, Iran. The Entomologist's Record and Journal of Variation 51: 133-139.
- Wiltshire EP (1941) Mesopotamian desert Lepidoptera. Journal of Bombay Natural History Society 42 (4): 826-884.
- Wiltshire EP (1944) The butterflies and moths (Lepidoptera) of Iraq: their distribution, phenology, ecology and importance. Government Press, Baghdad, 101 pp.
- Wiltshire EP (1957) The Lepidoptera of Iraq. The Minister of Agriculture Government of Iraq, Baghdad, 160 pp.
- Yakovlev RV (2018) New data on the butterflies fauna (Insecta: Lepidoptera, Papilionoidea & Hesperioidea) of Iraqi Kurdistan. Ukrainian Journal of Ecology 8 (4): 229-230.