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Contribution to the Butterfly Fauna of the Gevne Valley (South Turkey: West Toros)

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Abstract

In this study the butterflly fauna of the Gevne Valley (West Toros) in the Mediterranean Region of Turkey is investigated. 125 species belonging to 7 families were identified. Five species are endemic to Turkey: *Sublysandra cornelia* (Freyer, [1850]), *Polyommatus* (*Agrodiaetus) theresia* Schurian et al., 1992, *Polyommatus* (*Agrodiaetus) hopfferi* (Gerhard, [1851]), *Pseudochazara lydia* (Staudinger, 1878), *Hyponephele kocaki* Eckweiler, 1978. When evaluated considering vertical distributions of all species, the highest and the lowest number of species has been determined respectively between 1000-1250 m (63 species), and 0-250 m (5 species).

Key words: Butterfly, Fauna, Endemic, Gevne Valley, Turkey

Zusammenfassung

In dieser Studie wird die Tagfalterfauna des Gevne Valley (West Taurus) in der mediterranen Türkei erforscht. 125 Arten aus 7 Familien wurden nachgewiesen. 5 Arten sind endemisch für die Türkei: *Sublysandra cornelia* (Freyer, [1850]), *Polyommatus (Agrodiaetus) theresia* Schurian et al., 1992, *Polyommatus* (*Agrodiaetus) hopfferi* (Gerhard, [1851]), *Pseudochazara lydia* (Staudinger, 1878), *Hyponephele kocaki* Eckweiler, 1978. In der Höhenverbreitung aller Arten wurde in Lagen von 1000-1250m mit 63 Arten die höchste Anzahl nachgewiesen und in Lagen von 0-250 m mit 5 Arten die niedrigste.

Introduction

Turkey consists of seven different geographical regions as the Marmara Region, the Black Sea Region, the Aegean Region, the Central Anatolia Region, the Eastern Anatolia, the Southeastern Anatolia Region and the Mediterranean Region. Gevne Valley, selected for research area, is a deep valley in which Gevne Runlet passes, on Western Taurus Mountains, in a transition zone between the Mediterranean and the Central Anatolia Regions, between Konya-Antalya provinces, within Alanya-Hadım provinces border (Map 1). This area is included in the Mediterranean phytogeographical zone. Besides, the valley has an amazing microclimatic property that some species which spread only in Eastern and Southeastern Anatolia regions keeps living. This area is one of the richest zones in terms of endemism in Turkey. (Duman et al. 2000). Geyik Mountain and Akdağ Mountain with Gevne Valley and Gökbel Plateau which are in borders of Antalya province are considered as vulnerable areas in the list of Important Plant Areas (IPA) (Özhatay 2003).

Lepidoptera of Turkey were studied by many researchers from past to present. First butterfly identifications from Turkey in the 18th century were performed by Cramer (1775) and Herbst (1778). Researches regarding Turkey's butterflies continued on in the 19th century (Zeller 1847; Mann 1861; Lederer 1865; Staudinger 1878; Graves 1920, 1921; Wagner 1929, 1930, 1931, 1932, 1933; Zukowsky 1938; Wheeler 1943; Higgins 1966; Koçak 1976, 1989a, 1992; Koçak & Seven 1993, 1996, 1998; Koçak & Kemal 2007; Seven 1996; Wagener 1983, 2005). The most comprehensive study performed in the 20th century belongs to Hesselbarth et al. (1995). In this study, 365 taxa from Turkey were reported. Only 11 species of them are from records of areas within Gevne valley limits. Koçak (1989b, 1990) made the most extensive research regarding Western Taurus. In this study, 122 butterfly species were reported from the Western Taurus and 76 species are records of study field.

The aim of this study is to determine butterflies of Gevne Valley.

Map 1: Gevne Valley: study area

Material and methods

This study was conducted from April to September in different localities and habitat types in Gevne Valley (Western Taurus) during 2005-2008 (Table 1). Samples were gathered by means of netting during the day, killed with ethyl acetate and placed in triangular insect envelopes, later softened, needled and set on settingboards. For identification of specimens, help was taken from Hesselbarth et al. (1995) and the author's private collection. Samples are deposited in Zoology Museum of Gazi University (ZMGU).

Table 1: Numbers and full names of collecting stations

Collecting Stations	
1) **Antalya**: Manavgat, between Güzelbağ-Alanya, 744 m, 15.5.2006, N 36 42 E 31 54	15) **Antalya:** Akseki, Yarpuz, 1350 m,13.8.2007, N 37 13 E 31 55
2) **Antalya**: Akseki: Murtiçi-Güzelsu, 977 m, 09.06.2008, N 36 54 E 31 49	16) **Antalya:** İbradı-Akseki road, 984 m, 20.5.2008, N 37 05 E 31 36
3) **Antalya:** Gündoğmuş, 1002 m, 16.5.2007, N 36 48 E 31 51	17) **Antalya:** Alanya, Gödre plateau, 1533 m, 18.7.2006, N 36 39 E 32 22
4) **Antalya:** Manavgat, Gündoğmuş road, 239 m, 22.4.2008, N 36 47 E 31 45	18) **Antalya:** Alanya, Şıhlar village plateau, 1192 m, 13.5.2007, N 36 39 E 32 25
5) **Antalya:** Akseki-Manavgat road, Gündoğmuş return 5th km, 396 m, 15.6.2007, N 36 46 E 31 45	19) **Antalya:** Mahmutlar, Kozarası plateau, 1133 m, 18.7.2006, N 36 39 E 32 25
6) **Antalya:** Gündoğmuş-Akseki road, 410 m, 22.4.2008, N 36 47 E 31 45	20) **Antalya:** Alanya, Gevne valley (Karapınar), 1704 m, 13.5.2007, N 36 41 E 32 27
7) **Antalya:** Akseki, Güzelsu, 409 m, 22.4.2008, N 36 47 E 31 45	21) **Antalya:** Alanya, Gevne, 1114 m, 11.6.2008, N 36 37 E 32 23
8) **Antalya:** Akseki, Cemerler village env., 717 m, 16.4.2007, N 36 57 E 31 45	22) **Antalya:** Alanya, Gevne, 3.6.2006, N 36 37 E 32 23
9) **Antalya:** Akseki, Güzelsu village, 1154 m, 09.6.2008, N 36 53 E 31 50	23) **Antalya:** Manavgat, Taşkesiği, Kabukluhan plateau, 1805m, 11.6.2008
10) **Antalya:** Akseki, Murtiçi-Güzelsu, 970 m, 11.6.2007, N 36 54 E 31 49	24) **Antalya:** İbradı: 1300 m, 20.5.2008, N 37 08 E 31 32
11) **Antalya:** Akseki, Çukurköy-Mahmutlu, 830 m, 19.5.2008, N 36 54 E 31 48	25) **Antalya:** İbradı, 1008 m, 9.6.2008, N 37 05 E 31 36
12) **Antalya:** Akseki, Güçlüköy env., 473 m,19.5.2008, N 36 47 E 31 45	26) **Konya:** Beyşehir, Huğlu, 1431m, 20.5.2008, N 37 28 E 31 37
13) **Antalya**: Akseki, Mahmutlu village env., 1054 m, 19.5.2008, N 36 55 E 31 47	27) **Konya:** Beyşehir, Huğlu, 1250m, 23.4.2008, N 37 28 E 31 37
14) **Antalya:** Alanya, Gevne Valley (Sarımut) Çayarası), 1108 m, 14.06.2007, N 36 38 E 32 23	28) **Konya:** Beyşehir, Huğlu env., 1410 m, 11.6.2007, N 37 28 E 31 37

29) **Konya:** İbradı-Derebucak road, 12 km to Derebucak, 1217 m, 20.5.2008, N 37 22 E 31 29	43) **Konya:** Hadim, Korualan town env.,1650 m, 13.6.2008, N 36 58 E 32 24
30) **Konya:** Gencek-Derebucak, 1212 m, 20.5.2008, N 37 25 E 31 29	44) **Konya:** Bozkır, Kozağaç and Bayboğan villages env., 1439 m, 21.5.2008, N 37 09 E 32 15
31) **Konya:**Derebucak, 1221 m, 16.5.2007, N 36 22 E 31 29	45) **Konya:** Bozkır, Üçpınar village, 1471 m, 15.5.2007, N 37 08 E 32 1
32) **Konya:** Hadim,Beyreli, 1778 m, 17.7.2006, N 36 55 E 32 24	46) **Konya:** Bozkır Yalnızca, 1460 m, 13.6.2007, N 37 08 E 32 15
33) **Konya:** Hadim, Beyreli, 1467 m, 17.7.2006, N 36 50 E 32 23	47) **Konya:** Bozkır, Sorkun (Akseki road), 1347 m, 15.5.2007, N 37 09 E 32 08
34) **Konya:** Hadim, Beyreli, 1486 m, 21.5.2008, N 36 55 E 32 24	48) **Konya:** Bozkır, Sorgun, 1143 m, 15.5.2007, N 37 09 E 32 08
35) **Konya:** Hadim, Beyreli, 1458 m, 14.5.2007, N 36 55 E 32 24	49) **Konya:** Taşkent, Avşar town, 1556 m, 09.6.2007, N 36 54 E 32 30
36) **Konya:** Hadim, Beyreli, 1975 m, 17.7.2006, N 36 55 E 32 24	50) **Konya:** Taşkent, Faşikan plateau env., 1730m, 21.4.2008, N 36 51 E 32 31
37) **Konya:** Hadim, Küçüklü village env., 1298 m, 13.5.2007, N 36 45 E 32 27	51) **Konya**: Taşkent, Çukuryurt pass, 1900 m, 13.5.2007, N 36 50 E 32 29
38) **Konya:** Hadim, Küçüklü return env., 1762 m, 9.7.2007, N 36 59 E 32 27	52) **Konya:** Taşkent, 1610 m, 14.04.2007 N 36 54 E 32 30
39) **Konya:** between Hadim-Beyreli, Beyreli return env., 1894 m, 21.5.2008, N 36 55 E 32 24	53) **Konya:** Beyşehir-Akseki road, Tepearası return, 1390 m, 20.07.2006, N 37 28 E 31 38
40) **Konya:** Bozkır) Hadim road: 10 km to Hadim, 1439 m, 21.5.2008, N 37 02 E 32 19	54) **Konya:** Seydişehir road, 1102 m, 20.7.2006
41) **Konya:** 15 km to Hadim, 1578 m, 21.5.2008, N 37 02 E 32 19	55) **Konya:** Seydişehir, Zirve recreational facilities, 1549 m, 10.6.2008
42) **Konya:** Hadim, 1569 m, 14.5.2007, N 36 58 E 32 26	

Results

The Lepidoptera fauna of Turkey has been studied by several scientists. According to their reports, the Lepidoptera fauna of Turkey consists of more than 5363 species (Koçak & Kemal 2014). This is the first study to determine the butterflies fauna of Gevne Valley. A total of 125 species belonging to 7 families were identified and are indicated in Table 2. As a result of this study, we detected that the major part of the butterfly fauna of the Gevne Valley is formed in species richness by Papilionidae (7), Pieridae (18), Nymphalidae (15), Libytheidae (1), Satyridae (24), Lycaenidae (44) and Hesperiidae (15), (Fig.1). Lycaenidae is the richest family with 44 species from the Gevne Valley. *Sublysandra cornelia* (Freyer, [1850]), *Polyommatus* (*Agrodiaetus) theresia* Schurian, 1992, *Polyommatus* (*Agrodiaetus) hopfferi* (Gerhard, [1851]), *Pseudochazara lydia* (Staudinger, 1878), *Hyponephele kocaki* Eckweiler, 1978 are endemic species which are recorded in Turkey in the study.

According to vertical distribution of all species, 5 species were collected between 0-250 m, 14 species were collected between 250-500 m, 19 species were collected between 500-750 m and 50 species were collected between 750-1000 m , 63 species were collected between 1000-1250 m, 58 species were collected between 1250-1500 m , 49 species were collected on 1500-1750 m, 33 species were collected above of 1750 m (Fig. 2).

Discussion

Polyommatus (*Agrodiaetus) theresia* is known from Adana, Konya, Maraş, Gaziantep in Turkey (Koçak & Kemal 2011). Olivier et al (1999) separated the individuals in Konya by examining their chromosome numbers and identified them as *Polyommatus* (*Agrodiaetus) guezelmavi* in their study related to *therisia* from Turkey. Karaçetin & Welch (2011) defined the danger category of this species endemic to Turkey as NT. Koçak & Kemal (2011) instruct that *guezelmavi* is spread in Konya while *theresia* is spread in Adana, Konya, Maraş, Gaziantep. In order to solve this confusion, populations of the species in Turkey must be studied again to clear this matter.

Hyponephele kocaki is merely known in Antalya, Hakkari and Van. Records of this species determined in Konya with this study is the far western point. In their study, Karaçetin & Welch (2011) state this species in the species with insufficient data (DD) group without remarking its threat category. Record in this study will make a great contribution to revision studies about threat categories. *Sublysandra cornelia, Polyommatus (Agrodietus) hopfferi* and *Pseudochazara lydia* are in LC category (Karaçetin & Welch 2011).

Five subspecies of *Melanargia larissa* (Geyer, [1828]) are known in Turkey. Individuals belonging to ssp. *noacki* Wagener,1983 are spread in Gevne Valley, Central and Eastern Anatolia; ssp. *taurica* Röber,1896 is spread in the Mediterranean Region, Toros Mts.. This area is an important zone in which these 2 subspecies coincide.

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Table 2: Numbers of collecting stations of butterfly types collected from Gevne Valley and endemic species in the field (NS: Number species, A: Altitude, A:0-250, B:250-500, C: 500-750, D:750-1000, E:1000-1250, F: 1250-1500, G: 1500-1750, H: 1750 üzeri, E: Endemic)

	Godart	Collecting stations	NS	A(m) A,B,C,-D,E,F,-G,H	Ende-mic
Papilionidae	*Zerynthia (Allancastria) cerisyi* (Godart,1822)	1, 3, 4, 7, 8, 10	15	A, B, C, D, E,	
	Zerynthia (Allancastria) deyrollei (Oberthür, 1869)	8, 26, 30, 31, 34, 35, 40, 41, 42, 45, 48, 49	40	C, E, F, G	
	Archon apollinus (Herbst, 1798)	16, 37	10	D, F	
	Parnassius (Driopa) mnemosyne (Linnaeus, 1758)	29	1	E	
	Iphiclides podalirius (Linnaeus, 1758)	44	1	F	
	Papilio (Alexanoria) alexanor Esper, [1800]	42	1	G	
	Papilio (*s.str.*) *machaon* (Linnaeus, 1758)	1, 22	2	C	
Pieridae	*Leptidea duponcheli* (Staudinger, 1871)	32, 33, 48	7	E, F, H	
	Leptidea sinapis (Linnaeus,1758)	16, 48	2	D, E	
	Pieris (Artogeia) ergane (Geyer, [1828])	30	2	E	
	Pieris (Artogeia) krueperi (Staudinger, 1860)	2	1	D	
	Pieris (Artogeia) pseudorapae Verity, [1908]	20, 34, 35	3	F, G	
	Pieris (Artogeia) rapae (Linnaeus,1758)	6, 8, 21, 31, 32, 34, 37, 38	11	B,-C,E,F,G	
	Pieris (Artogeia) mannii (Mayer, 1851)	31, 34	2	E, F	
	Pieris (*s.str.*) *brassicae* (Linnaeus, 1758)	12, 13, 32, 42, 49	6	B, E, G, H	
	Pontia edusa (Fabricius, 1777)	11, 16, 21, 23, 32, 50, 51	8	D, E, G, H	
	Anthocharis cardamines (Linnaeus, 1758)	3, 6, 7, 8, 9, 10, 26, 37, 40,42	17	B, C, D, E, F, G	
	Anthocharis gruneri Herrich-Schaeffer, [1851]	15, 16, 28, 30, 35	8	D, E, F	
	Anthocharis damone Boisduval, 1836	33, 35	7	F	
	Aporia crataegi (Linnaeus, 1758)	43	1	G	
	Euchloe (s.str.) *ausonia* (Hübner, [1804])	5, 7, 16, 33	6	B, D, F	
	Colias (Eriocolias) crocea (Fourcroy, 1785)	5, 6, 8, 14, 31, 40, 42, 43	11	B, C, E, F, G	
	Colias (s.str.) alfacariensis Ribbe,1905	33, 49	3	F,G	
	Gonepteryx (s.str.) farinosa (Zeller, 1847)	2, 6, 8, 16	5	B, C, D	
	Gonepteryx (s.str.) rhamni (Linnaeus, 1758)	8, 40	2	C, F	
Libytheidae	*Libythea (s.str.) celtis* (Laicharting, 1782)	13, 52	3	E, G	

	Godart	Collecting stations	NS	A(m) A,B,C,-D,E,F,-G,H	Ende-mic
Satyridae	*Arethusana arethusa* ([Denis &Schiffermüller], 1775)	52	1	G	
	Esperarge (s.str.) clymene (Fabricius, 1787)	26	3	F	
	Brintesia circe (Fabricius, 1775)	2, 21, 43	4	D, E, G	
	Chazara (s.str.) briseis (Linnaeus, 1764)	17, 52	5	G	
	Chazara (Neochazara) anthe (Hoffmannsegg, 1804)	32	2	H	
	Pseudochazara (s.str.) mniszechii (Herrich-Schaeffer, [1851])	50	2	G	
	Pseudochazara (s.str.) lydia (Staudinger, 1878)	17, 54	2	E, G	E
	Pseudochazara (Achazara) anthelea (Hübner, [1824])	21, 46, 54	12	E, F	
	Lasiommata maera (Linnaeus, 1758)	8, 10, 30	3	C, D	
	Lasiommata megera (Linnaeus, 1767)	2	1	D	
	*Pararge aegeria (*Linnaeus*,* 1758*)*	20, 38	3	G, H	
	Kirinia roxelana (Cramer, [1777])	2, 21	3	D, E	
	Melanargia (Turcargia) larissa (Geyer, [1828])	2, 21, 32, 43, 53	7	D, E, F, G, H	
	Coenonympha (s.str.) pamphilus (Linnaeus,1758)	2, 3, 8, 13, 14, 18, 19, 20, 26, 28, 29, 30, 31, 34, 37, 39, 40, 42, 44, 45, 47, 48, 49, 52, 53, 54	44	C, D, E, F, G, H	
	Coenonympha (s.str.) leander (Esper, [1784])	16, 26, 29, 30, 31, 34	13	D, E, F	
	Maniola megala (Oberthür, 1909)	2	2	D	
	Maniola jurtina (Linnaeus, 1758)	43	1	H	
	Maniola (Telmessiola) telmessia (Zeller, 1847)	2, 5, 8, 11, 12, 17, 19	37	B, C, D, E, G	
	Hipparchia (Parahipparchia) mersina (Staudinger, 1871)	3, 11, 25	3	D, E	
	Hipparchia (Parahipparchia) aristaeus (Bonelli, 1826)	46	1	F	
	Hipparchia (s.str.) syriaca (Staudinger, 1871)	2	1	D	
	Hipparchia (Neohipparchia) fatua (Freyer, 1844)	26, 52	2	F,G	
	Hyponephele (s.str.) lycaon (Rottemburg, 1775)	11, 32	4	D, H	
	Hyponephele (s.str.) lupina (Costa, [1836])	32, 46, 53	4	F,H	
	Hyponephele kocaki Eckweiler, 1978	36	3	H	E

	Godart	Collecting stations	NS	A(m) A,B,C,-D,E,F,-G,H	Ende-mic
Nympha-lidae	*Aglais urticae* (Linnaeus,1758)	13, 30	2	E	
	Thaleropis ionia (Eversmann, 1851)	52	1	G	
	Vanessa (Cynthia) cardui (Linnaeus, 1758)	2, 4, 8, 15	4	A, C, D, F	
	Limenitis (Azuritis) reducta Staudinger, 1901	2, 8	3	C, D	
	Argynnis (Speyeria) aglaja (Linnaeus, 1758)	32	**1**	H	
	Argynnis (Fabriciana) niobe (Linnaeus, 1758)	2, 30, 46	5	D, E, F	
	Brenthis hecate ([Denis &Schiffermüller], 1775)	43	1	G	
	Argynnis (Pandoriana) pandora ([Denis &Schiffermüller], 1775)	2, 43	2	D, G	
	Issoria lathonia (Linnaeus, 1758)	26, 28, 29, 30, 31, 37, 39, 42, 46, 47, 49	15	E, F, G, H	
	Melitaea (Cinclidia) phoebe (Goeze, 1779)	31	1	E	
	Melitaea (Cinclidia) punica Oberthür, 1876	18, 34, 35	3	E, F	
	Melitaea (Didymaeformis) didyma (Esper, [1779])	13, 26, 27, 29, 30, 31, 40, 42, 43, 46	23	E, F, G	
	Melitaea (Didymaeformis) fascelis (Fabricius, 1787)	11, 21, 43	5	D, E, G	
	Melitaea (s.str.) arduinna (Fabricius, 1787)	43, 46	2	F, G	
	Melitaea (s.str.) cinxia (Linnaeus, 1758)	29, 30, 31, 34, 35, 42, 47	17	E, F,G	
Lycaenidae	*Leptotes pirithous* (Linnaeus, 1767)	32	1	H	
	Satyrium (Nordmannia) abdominalis (Gerhard, [1850])	8, 16, 21	8	C, D, E	
	Satyrium (Nordmannia) acaciae (Fabricius, 1787)	2, 21, 46	7	E, D, F	
	Satyrium (Superflua) ledereri (Boisduval, 1848)	2, 21	2	D, E	
	Satyrium (Nordmannia) ilicis (Esper, [1779])	2, 52	9	D, G	
	Satyrium (Strymonidia) spini (Fabricius,1787)	2, 11, 46	6	D, F	
	Plebejus (Plebejides) modicus Verity, 1935	2, 21, 23, 31, 43	17	D, E, G, H	
	Callophrys rubi (Linnaeus,1758)	5, 8, 26, 28, 30, 33, 35, 42	14	B, C, E, F, G	
	Tomares nesimachus (Oberthür, 1893)	9, 10, 28	10	D, E, F	
	Tomares nogelii (Freyer, [1851])	13	2	E	
	Lampides boeticus (Linnaeus,1767)	2, 11, 16	3	D	

	Godart	Collecting stations	NS	A(m) A,B,C,-D,E,F,-G,H	Ende-mic
Lycaenidae	*Celastrina argiolus* (Linnaeus, 1758)	2, 8, 42, 52	4	C, D, F, H	
	Tarucus (s.str.) balkanicus (Freyer, [1843])	28, 53	4	F	
	Cupido (s.str.) osiris (Meigen, [1829])	3, 18, 20, 21, 30, 34, 35, 43, 45, 46, 47	23	E, F, G	
	Polyommatus (Meleageria) daphnis ([Denis &Schiffermüller], 1775)	19, 32, 33	5	E, F, H	
	Glaucopsyche (s.str.) alexis (Poda, 1761)	26, 28, 29, 30, 31, 34, 35, 42, 45, 47	21	E, F, G	
	Pseudophilotes vicrama (Moore, 1865)	10, 28, 53	4	D, F	
	Rubrapterus bavius (Eversmann, 1832)	7, 8, 9, 10	5	B, C, D, E	
	Turanana endymion (Freyer, [1859])	52	1	G	
	Polyommatus (Aricia) agestis ([Denis &Schiffermüller], 1775)	5, 6, 7, 13, 18, 20, 29, 30, 31, 35, 38, 40, 47, 48, 53, 54	45	B, E, F, G, H	
	Polyommatus (Albulina) loewii (Zeller, 1847)	32, 43	3	G, H	
	Polyommatus (Cyaniris) bellis (Freyer, [1842])	18, 47	14	E,F	
	89.Polyommatus (Lysandra) bellargus (Rottemburg, 1775)	13, 29, 30, 31, 34, 35, 40, 42, 43, 47, 48	23	E,F,G	
	Polyommatus (Neolysandra) coelestinus (Eversmann, [1843])	26, 27, 34	7	F	
	Polyommatus (Plebicula) amandus (Schneider, 1792)	43, 47	4	F,G	
	Polyommatus (Sublysandra) cornelia (Freyer, [1850])	32, 36	2	H	**E**
	Polyommatus (Thersitesia) thersites (Canterer, [1835])	32, 34, 35, 44, 45, 53	18	F, H	
	Polyommatus (s.str.) icarus (Rottemburg, 1775)	2, 3, 4, 5, 6, 7, 8, 13, 16, 17, 18, 19, 21, 29, 30, 31, 32, 33, 34, 35, 38, 40, 42, 48, 52, 53	85	A, B, C, D, E, F, G, H	
	Chilades (Freyeria) trochylus (Freyer, [1843])	2, 32, 46	6	D, F, H	
	Plebejus (Kretania) carmon (Gerhard, [1851])	21	1	E	
	Plebejus (s.str.) argus (Linnaeus, 1758)	32, 33	13	F, H	
	Lycaena (Alciphronia) alciphron (Rottemburg, 1775)	17, 21, 30	4	E, G	

	Godart	Collecting stations	NS	A(m) A,B,C,-D,E,F,-G,H	Ende-mic
Lycaenidae	*Lycaena (Loweia) tityrus* (Poda, 1761)	20, 21, 26, 32, 34, 42	7	E, F, G, H	
	Thersamonia (s.str.) *thersamon* (Esper, [1784])	21, 26, 31, 34, 40	8	E, F	
	Thersamonia (s.str.) thetis (Klug, 1834)	33, 50	4	F, G	
	Lycaena (Thersamonia) asabinus (Gerhard, [1850])	2, 52	2	D, G	
	Lycaena ochimus (Herrich-Schaeffer, [1851])	2, 4, 28, 40	4	A, D, F	
	Lycaena ottomanus (Lefèbvre [1830])	2, 4, 5	3	A, B, D	
	Lycaena (s.str.) phlaeas (Linnaeus, 1761)	2, 5, 7, 8, 20, 21, 28, 34, 36, 45, 47	13	B, C, D, E, F, G, H	
	Polyommatus (Agrodiaetus) theresiae (Schurian et al.,1992)	32	1	H	E
	Polyommatus (Agrodiaetus) menalcas (Freyer, [1837])	32, 53	8	E, H	
	Polyommatus (Agrodiaetus) hopfferi (Gerhard, [1851])	19	1	E	E
	Polyommatus (Agrodiaetus) iphigenia (Herrich-Schaeffer, [1847])	32, 36	3	H	
	Polyommatus (Agrodiaetus) admetus (Esper, [1783])	19, 32	3	E, H	
Hesperiidae	*Carcharodus (Lavatheria) stauderi* (Reverdin, 1913)	2	1	D	
	Carcharodus (s.str.) alceae (Esper, [1780])	2, 4, 30, 34	4	A, D, E, F	
	Erynnis(s.str.) *tages* (Linnaeus, 1758)	9, 10, 19, 26, 33, 37, 40, 47	8	D, E, F	
	Muschampia nomas (Lederer, 1855)	23	1	H	
	Muschampia poggei (Lederer, 1858)	33, 48	5	E, F	
	Muschampia tessellum (Hübner, [1802])	30, 47	2	E, F	
	Pyrgus armoricanus (Oberthür, 1910)	34	2	F	
	Pyrgus melotis (Duponchel, [1834])	18, 20, 30, 40, 42, 55	8	E, F, G	
	Pyrgus sidae (Esper, [1784])	13, 21, 43	6	E, G	
	Spialia phlomidis (Herrich-Schaeffer, [1845])	48	2	E	
	Spialia (Neospialia) orbifer (Hübner, [1823])	2, 13, 24, 29, 32, 40, 42	14	D, E, F, G, H	
	Thymelicus lineola (Ochsenheimer, 1808)	2	1	D	
	Thymelicus hyrax (Lederer, 1861)	2	2	D	
	Thymelicus acteon (Rottemburg, 1775)	32	1	H	
	Thymelicus sylvestris (Poda, 1761)	11, 21, 32, 43, 46	13	D, E, F, G, H	

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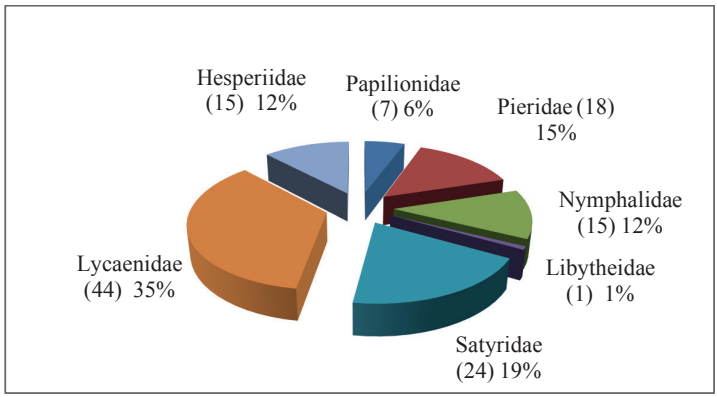

Fig.1: Number of species in families.

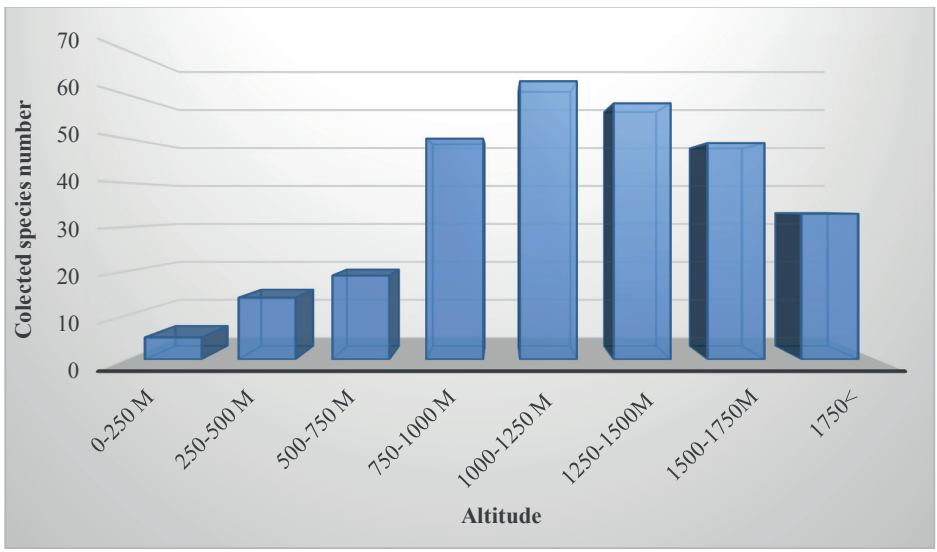

Fig.2: Vertical distribution of species.

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