A Faunistic Study of Diurnal and Nocturnal Lepidoptera in Darboğaz, Bolkar Mountains (Niğde, Turkey)

Author(s): Yusuf Hüseyinoğlu and Erol Atay
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A Faunistic Study of Diurnal and Nocturnal Lepidoptera in Darboğaz, Bolkar Mountains (Niğde, Turkey)

Yusuf Hüseyinoğlu[1,2] and Erol Atay[3]

ABSTRACT: In this study, the fauna of diurnal and nocturnal Lepidoptera from the Darboğaz, Bolkar Mountains in Ulukışla, Niğde province in the south of the Anatolian region of Turkey has been investigated. Field studies were carried out during the years 2008 and 2009. Specimens of butterflies and moths were collected from nine localities for this study. These specimens belong to 63 diurnal and 105 nocturnal species distributed in 15 families. The distribution of species, according to families, is as follows: Hesperidae, 7; Nymphalidae, 18; Papilionidae, 1; Pieridae, 7; Lycaenidae, 30; Crambidae, 17; Pyralidae, 10; Drepanoidae, 2; Lasiocampidae, 3; Sphingidae, 1; Geometridae, 28; Erebidae, 10; Noctuidae, 30; Nolidae, 2 and Notodontidae, 2. The evaluation of literature revealed that forty of 63 butterflies and all of the moths species determined in this study are newly recorded for the Lepidoptera fauna of the Darboğaz, Bolkar Mountains.

KEY WORDS: Fauna, butterfly, moth, biodiversity, Ulukışla

The Lepidoptera, commonly known as butterflies and moths, is one of the major insect orders, both in terms of size, with some 160,000 described species in more than 120 families, and in popularity, with many amateur and professional entomologists studying them, particularly butterflies (Gullan and Granston, 2010). The lepidopteran members have received more attention from entomologists and naturalists than any other insects, and certain Lepidoptera have been important in the development of ideas in evolutionary biology and ecology (Daly *et al*., 1998).

Although Lepidoptera is one of the largest orders among insects in terms of the number of species, studies carried out in Turkey to determine the fauna and distribution of lepidopteran are not complete yet. There are a lot of faunistic, ecologic and taxonomic studies about the Lepidoptera fauna of Turkey. Some of them are chronologically as: Staudinger (1878, 1892, 1899), Röber (1896, 1897), Rebel (1917), Wagener F. (1929, 1931), Pfeiffer (1931, 1932), Zukowsky (1938), Forster (1938, 1960), Higgins (1966), Koçak (1975, 1976, 1977, 1979, 1982), Wagener S. (1983, 1998), Oorschot *et al*., (1984, 1985, 1987), Leestmans *et al*., (1986), Oorschot and Brink (1989), Oorschot and Wagener (1990), Koçak and Seven (1994), Okyar and Aktaç (1998), Can (2008), Koçak and Kemal (2008, 2009, 2012), Kaygin *et al*., (2009), Atay (2012), Atay and Yolcu (2012), Hüseyinoğlu and Akyol (2013), Hüseyinoğlu (2013, 2014).

The study area is located in the Central Anatolian region of Niğde province from Turkey. The district of Ulukışla and Bolkar Mountains are located in the south of Niğde province, north side of the central Taurus Mountains. The Bolkar Mountains (Darboğaz) are of significant research interest because of different ecosystem types in both forests and agricultural lands. According to Karaçetin and Welch (2011) a total of 380 butterfly species distributed in 5 families have been recorded in Turkey.

From the 168 species captured in the study area, only 23 species had been reported for the Darboğaz, Bolkar Mountains. These records were mainly from Ulukışla gateway and less

[1] Department of Biology, Faculty of Science and Letters, Mersin University, 33343 Mersin, Turkey.
[2] Corresponding author. email: yusez03@gmail.com
[3] Department of Biology, Faculty of Arts and Sciences, Mustafa Kemal University, 31060 Hatay, Turkey.

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Table 1. Geographic information about field studies in Darboğaz, Bolkar Mountains (Ulukışla, Niğde).

#	Locality	Altitude	Date of collected	Coordinate
1	Darboğaz, Emirler	1450 m	19 Aug 2008	37°28′56″N; 34°30′11″E
2	Darboğaz, Kızılyer	1600 m	19, 20 Aug 2008	37°27′07″N; 34°33′15″E
3	Madenköy	1800 m	19 Aug 2008	37°26′32″N; 34°36′31″E
4	Muruklu Pınarı	1600 m	21, 22 Jul 2009	37°27′12″N; 34°33′49″E
5	Tekneçukur	1800 m	21 Jul 2009	37°28′55″N; 34°38′08″E
6	Gümüşköy	1800 m	21 Jul 2009	37°28′01″N; 34°36′34″E
7	Meydan Plateau	2325 m	21 Jul 2009	37°25′13″N; 34°33′60″E

from Darboğaz (Hesselbarth *et al*., 1995). These species are: *Thymelicus lineola* (Ochsenheimer, 1808); *Anthocharis damone* Boisduval, 1836; *Euchloe ausonia* (Hübner, [1804]), *Pieris brassicae* (Linnaeus, 1758); *Lycaena alciphron* (Rottemburg, 1775); *Satyrium spini* (Denis & Schiffermüller, 1775); *Satyrium ledereri* (Boisduval, 1848); *Glaucopsyche astraea* Freyer, [1851]; *Plebeius pylaon* (Fischer von Röslerstamm, 1832); *Plebeius loewii* (Zeller, 1847); *Plebeius eurypilus* (Freyer, 1851); *Plebeius eumedon* (Esper, 1780); *Plebeius anteros* (Freyer, 1838); *Polyommatus bellargus* (Rottemburg, 1775); *Polyommatus wagneri* Forster, 1956; *Polyommatus firdussii* (Forster, 1956); *Maniola jurtina* (Linnaeus, 1758); *Proterebia afra* (Fabricius, 1787); *Melanargia larissa* (Geyer, [1828]); *Chazara persephone* (Hübner, 1805); *Pseudochazara mniszechii* (Herrich-Schäffer, 1851); *Vanessa cardui* (Linnaeus, 1758); *Issoria lathonia* (Linnaeus, 1758). Also there is not any record about moths in the study area.

The objectives of this study were to investigate the butterfly and moth fauna of the Darboğaz, Bolkar Mountains in Niğde province and to contribute to the knowledge of the Lepidoptera species and their distribution in Turkey.

Materials and Methods

This study was conducted during the years 2008 and 2009 in the Darboğaz, Bolkar Mountains (Niğde province) of Turkey in order to determine the diurnal and nocturnal lepidopteran fauna in the area. The specimens collected from the study area were taken from 7 stations (nine field studies), each with different localities and habitat types between altitudes 1450 and 2325 m. These stations (identified by Locality number) are listed in Table 1.

The field studies were carried out during July and August (from 2008 to 2009). Specimens were collected using sweep net and light traps. Collected specimens were placed in killing jars with ethyl acetate. The collection data, name of the locality altitude and geographic coordinates were noted on an envelope for every specimen collected. Each specimen was then put into this envelope. All the material was brought to the laboratory for preparation and identification. All the butterfly and moth specimens were pinned with wings spread, dried and put into collection boxes in the Entomological Research Laboratory of the Department of Biology, Mersin University. Identifications were based on different publications and books as: (Hesselbarth *et al*., 1995), (Hofmann and Marktanner, 1995), (Tolman and Lewington, 1997), (Hausmann, 2001, 2004), (Miranov, 2003), (Hausmann and Viidalepp, 2012), (Redondo *et al*., 2009), (Skinner, 2009), (Schintlmeister, 2008), (Kitching and Cadiou, 2000), (Fibiger, 1997), (Hacker *et al*., 2002), (Zilli and Ronkay, 2005), (Fibiger and Hacker, 2007), (Goater *et al*., 2003, 2005), (Fibiger *et al*., 2009, 2010, 2011), (Slamka, 2013) and first author's reference collections.

All the material collected was kept in the Entomological Research Laboratory of the Department of Biology, Mersin University. The specimens have been collected from different

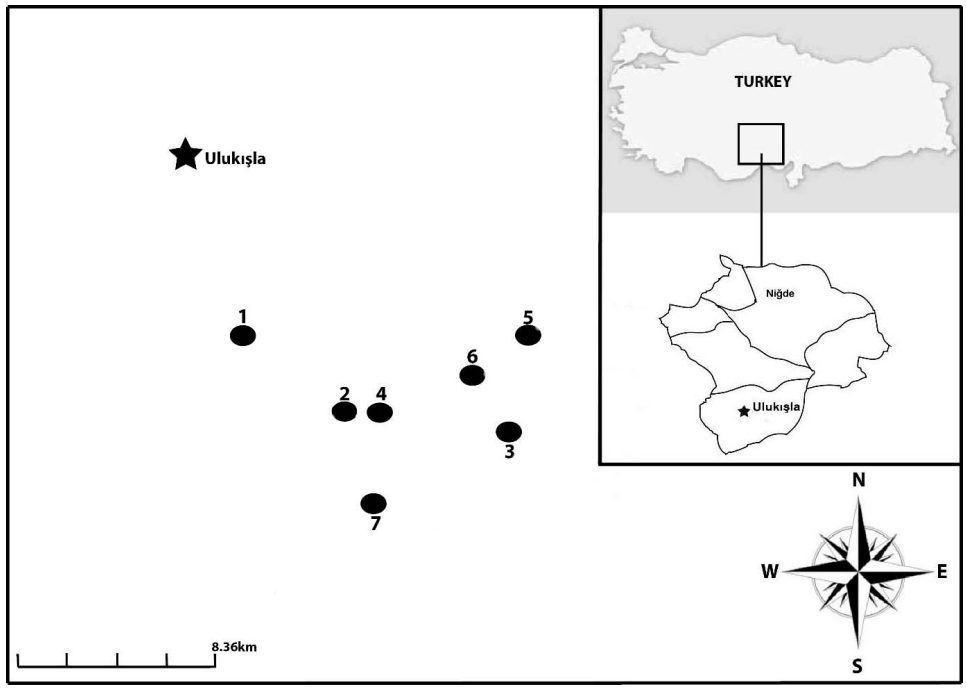

Fig. 1. The map of study area in Darboğaz, Bolkar Mountains (Ulukışla, Niğde). (The locality numbers are as in Table 1).

stations during the nine field studies. The geographic coordinates of all collecting localities, altitudes, information of localities and collecting dates is chronologically listed in Table 1 and the map of study area is in Figure 1.

Results

During the field surveys, 677 butterfly and moth specimens have been collected. In this study, a total of 168 species belonging to 102 genera within fifteen families and seven superfamilies of Lepidoptera were identified. Total species numbers according to families are as follows: Hesperidae (7); Nymphalidae (18); Papilionidae (1); Pieridae (7); Lycaenidae (30); Crambidae (17); Pyralidae (10); Drepanoidae (2); Lasiocampidae (3); Sphingidae (1); Geometridae (28); Erebidae (10); Noctuidae (30); Nolidae (2) and Notodontidae (2).

Also the distribution of genera numbers, according to families, is as follows: Hesperidae, 5; Nymphalidae, 13; Papilionidae, 1; Pieridae, 4; Lycaenidae, 7; Crambidae, 12; Pyralidae, 10; Drepanoidae, 2; Lasiocampidae, 3; Sphingidae, 1; Geometridae, 14; Erebidae, 7; Noctuidae, 19; Nolidae, 2 and Notodontidae, 2.

The list of species, according to (Hesselbarth *et al*., 1995), (Wahlberg *et al*., 2009), (Heikkila *et al*., 2012), (Hausmann, 2001, 2004), (Miranov, 2003), (Hausmann and Viidalepp, 2012), (Redondo *et al*., 2009), (Skinner, 2009), (Schintlmeister, 2008), (Kitching and Cadiou, 2000), (Fibiger, 1997), (Hacker *et al*., 2002), (Zilli and Ronkay, 2005), (Fibiger and Hacker, 2007), (Goater *et al*., 2003, 2005), (Fibiger *et al*., 2009, 2010, 2011) has been arranged using the higher level classification of van Nieukerken *et al*., 2011.

The systematic list of Lepidoptera species and corresponding locality numbers (from Table 1) are as follows:

Clade: **Obtectomera** Minet, 1986	
Superfamily: **PAPILIONOIDEA** Latreille, (1802)	
Family: **Hesperiidae** Latreille, 1809	
* *Carcharodus* (*Reverdinus*) *orientalis* Reverdin, 1913	7
* *Hesperia comma* (Linnaeus, 1758)	1, 3
* *Muschampia tessellum nomas* (Lederer, 1855)	7
* *Muschampia proteides* (Wagner, 1929)	3
* *Spialia* (*Neaspialia*) *orbifer* (Hübner, [1823])	2, 6
Thymelicus lineola (Ochsenheimer, 1808)	5
* *Thymelicus sylvestris* (Poda, 1761)	4, 6
Family: **Nymphalidae** Swainson, 1827	
* *Argynnis* (*Pandoriana*) *pandora* ([Denis & Schiffermüller], 1775)	6
* *Brenthis hecata* ([Denis & Schiffermüller], 1775)	4, 6
* *Melitaea* (*Didymaeformis*) *didyma* (Esper, [1779])	2, 3, 7
Vanessa cardui (Linnaeus, 1758)	4, 6, 7
* *Arethusana arethusa* (Denis & Schiffermüller, 1775)	2, 3
* *Chazara briseis* (Linnaeus, 1764)	2, 3, 4, 6
* *Chazara persephone* (Hübner, [1805])	2, 3, 4
* *Coenonympha pamphilus* (Linnaeus, 1758)	1, 6
* *Hipparchia* (*Parahipparchia*) *aristaeus* (Bonelli, 1826)	2
* *Hipparchia syriaca* (Staudinger, 1871)	2
* *Hipparchia* (*Neohipparchia*) *statilinus* (Hufnagel, 1766)	2
* *Hyponephele lupina* (Costa, [1836])	4
* *Hyponephele lycaon* (Rottemburg, 1775)	2, 4
* *Kirinia climene* (Fabricius, [1783])	4, 6
Maniola jurtina (Linnaeus, 1758)	4, 6
Melanargia (*Turcargia*) *larissa* (Geyer, [1828])	3, 4, 6, 7
* *Pseudochazara* (*Achazara*) *anthelea* (Hübner, [1824])	4
Pseudochazara mniszechii (Herrich-Schäffer, [1851])	2, 3, 4, 6
Family: **Papilionidae** Latreille, (1802)	
* *Iphiclides podalirius* (Linnaeus, 1758)	1
Family: **Pieridae** Duponchel, (1835)	
* *Colias crocea* (Fourcroy, 1785)	1, 3, 4, 6, 7
* *Colias alfacariensis* Ribber, 1905	2, 4
* *Leptidea duponcheli* (Staudinger, 1871)	4
Pieris brassicae (Linnaeus, 1758)	4, 6, 7
* *Pieris* (*Artogeia*) *mannii* (Mayer, 1851)	4, 7
* *Pieris* (*Artogeia*) *pseudorapae* Verity, 1908	1, 2, 3
* *Pontia edusa* (Fabricius, 1777)	1, 2, 4, 6, 7
Family: **Lycaenidae** Stephenes, 1829	
* *Callophrys rubi* (Linnaeus, 1758)	7
* *Cupido* (*Everes*) *alcetas* (Hoffmannsegg, 1804)	6, 7
* *Lampides boeticus* (Linnaeus, 1767)	4, 6
Lycaena (*Alciphronia*) *alciphron* (Rottemburg, 1775)	6
* *Lycaena* (*Thersamonia*) *thetis* (Klug, 1834)	3
* *Lycaena* (*Thersamonia*) *thersamon* (Esper, [1784])	2
* *Lycaena* (*Loweia*) *tityrus* (Poda, 1761)	6, 7
* *Plebejus* (*Kretania*) *carmon* (Gerhard, [1851])	2
* *Plebejus* (*Lycaeides*) *idas* (Linnaeus, 1761)	4, 6
* *Plebejus argus* (Linnaeus, 1758)	4, 5, 7
Polyommatus (*Albulina*) *loewii* (Zeller, 1847)	4, 6, 7
* *Polyommatus* (*Aricia*) *agestis* ([Denis & Schiffermüller], 1775)	2, 4, 6
* *Polyommatus* (*Agrodiaetus*) *menalcas* (Freyer, [1837])	4, 5
Polyommatus (*Lysandra*) *bellargus* (Rottemburg, 1775)	2
* *Polyommatus* (*Lysandra*) *ossmar* (Gerhard, [1851])	2
* *Polyommatus* (*Meleageria*) *daphnis* ([Denis & Schiffermüller], 1775)	3, 6
* *Polyommatus* (*Plebicula*) *amandus* (Schneider, 1792)	4

* *Polyommatus* (*Sublysandra*) *cornelius* (Freyer, [1850])	2, 3, 6, 7
* *Polyommatus* (*Thersitesia*) *thersites* (Canterer, [1835])	1, 2, 3, 4, 5, 6
* *Polyommatus icarus* Rottemburg, 1775	1, 3, 4, 6, 7
Polyommatus (*Agrodiaetus*) *wagneri* (Forster, 1956)	2, 7
* *Polyommatus (Agrodiaetus) actis* (Herrich-Schäffer, [1851])	6, 7
Polyommatus (*Agrodiaetus*) *firdussii* (Forster, 1956)	6
* *Polyommatus* (*Agrodiaetus*) *hopfferi* (Herrich-Schäffer, [1851])	2, 4, 6
Polyommatus (*Aricia*) *eumedon* (Esper, [1780])	7
* *Polyommatus* (*Plebicula*) *dorylas* ([Denis & Schiffermüller], 1775)	7
* *Polyommatus* (*Agrodiaetus*) *poseidon* (Herrich-Schäffer, [1851])	6
* *Polyommatus phyllis* (Christoph, 1877)	2, 3, 4, 5
* *Satyrium* (*Nordmannia*) *acaciae* (Fabricius 1787)	4
Satyrium (*Strymonidia*) *spini* (Fabricius 1787)	7
Superfamily: **PYRALOIDEA** Latreille, 1809	
Family: **Pyralidae** Latreille, 1809	
Galleria mellonella (Linnaeus, 1758)	4
Apomyelois ceratoniae (Zeller, 1839)	4
Epischnia leucoloma (Herrich-Schäffer, 1849)	4
Pyralis regularis (Denis & Schiffermüller, 1775)	4
Acrobasis dulcella (Zeller, 1848)	2, 4
Ephestia elutella (Hübner, 1796)	4
Etiella zinckenella (Treitschke, 1832)	4
Hypsotropa limbella Zeller, 1848	4
Gymnacyla canella (Denis & Schiffermüller, 1775)	4
Laodamia faecella (Zeller, 1839)	7
Family: **Crambidae** Latreille, 1810	
Catoptria pinella (Linnaeus, 1758)	4
Chrysocrambus craterella (Scopoli, 1763)	4
Cybalomia lutosalis (Mann, 1862)	4
Evergestis aenalis (Denis & Schiffermüller, 1775)	4
Evergestis mundalis (Guenee, 1854)	4
Anania terrealis (Treitschke, 1829)	2
Ephelis cruentalis (Geyer, 1832)	4
Tegostoma lepidalis (Herrich-Schäffer, 1851)	4
Pyrausta sanguinalis (Linnaeus, 1767)	2, 4
Scoparia ambigualis (Treitschke, 1829)	4
Scoparia staudingeralis (Mabille, 1869)	4
Scoparia pyralella (Denis & Schiffermüller, 1775)	4
Dolicharthria punctalis (Denis & Schiffermüller, 1775)	4
Mecyna flavalis (Denis & Schiffermüller, 1775)	4
Mecyna lutulentalis (Lederer, 1858)	4
Udea bipunctalis (Herrich-Schäffer, 1851)	4
Udea ferrugalis (Hübner, 1796)	4
Clade: **Macroheterocera** Chapman, 1893	
Superfamily: **DREPANOIDEA** Boisduval, 1828	
Family: **Drepanidae** Boisduval, 1828	
Watsonalla binaria (Hufnagel, 1767)	2
Tethea ocularis (Linnaeus, 1767)	4
Superfamily: **LASIOCAMPOIDEA** Harris, 1841	
Family: **Lasiocampidae** Harris, 1841	
Lasiocampa (*Pachygastria*) *trifolii* (Denis & Schiffermüller, 1775)	2
Dendrolimus pini (Linnaeus, 1758)	4
Phyllodesma tremulifolia (Hübner, 1810)	4
Superfamily: **BOMBYCOIDEA** Latreille, 1802	
Family: **Sphingidae** Latreille, 1802	
Macroglossum stellatarum (Linnaeus, 1758)	4
Superfamily**: GEOMETROIDEA** Leach, 1815	

Family: **Geometridae** Leach, 1815	
Acanthovalva inconspicuaria (Hübner, [1819])	2
Macaria notata (Linnaeus, 1758)	4
Macaria signaria (Hübner, 1809)	4
Preconia strigillaria (Hübner, 1787)	4
Aplocera annexata (Freyer, 1830)	7
Cataclysme riguata (Hübner, 1813)	4
Colostygia cyrnea (Wehrli, 1925)	4
Hydria montivagata (Duponchel, 1830)	2
Eupithecia cuculliaria (Rebel, 1901)	4
Lithostege farinata (Hufnagel, 1767)	7
Philereme vetulata (Denis & Schiffermüller, 1775)	2
Orthostixis cribraria (Hübner, 1799)	4
Idaea alicantaria (Reisser, 1963)	4
Idaea aversata (Linnaeus, 1758)	2, 4
Idaea consanguinaria (Lederer, 1853)	4, 7
Idaea deversaria (Herrich-Schäffer, 1847)	4
Idaea filicata (Hübner, 1799)	4
Idaea libycata (Bartel, 1906)	4
Idaea litigiosaria (Boisduval, 1840)	4
Idaea moniliata (Denis & Schiffermüller, 1775)	4
Idaea ossiculata (Lederer, 1870)	4
Idaea rufaria (Hübner, 1799)	4
Idaea straminata (Borkhausen, 1794)	2
Idaea troglodytaria (Heydenreich, 1851)	2, 4
Rhodostrophia tabidaria (Zeller, 1847)	4
Rhodostrophia vibicaria (Clerck, 1759)	2
Scopula minorata (Boisduval, 1833)	2
Scopula turbulentaria (Staudinger, 1870)	4
Superfamily**: NOCTUOIDEA** Latreille, 1809	
Family: **Notodontidae** Stephens, 1829	
Harpyia milhauseri (Fabricius, 1775)	4
Drymonia velitaris (Hufnagel, 1766)	4
Family: **Erebidae** Leach, 1815	
Dysauxes ancilla (Linnaeus, 1767)	2
Dysauxes (*Dysauxes*) *famula* (Freyer, 1836)	2
Dysauxes (*Adauctis*) *punctata* (Fabricius, 1781)	2
Eilema costalis (Zeller, 1847)	2
Eilema pseudocomplana (Daniel, 1939)	2, 4
Clytie syriaca (Bugnion, 1837)	2
Drasteria saisani (Staudinger, 1882)	2
Exophyla rectangularis (Geyer, 1828)	2
Odice arcuinna (Hübner, 1790)	2
Ocneria (*Ocneria*) *lapidicola* (Herrich-Schäffer, [1852])	2
Family: **Nolidae** Bruand, 1847	
Meganola gigantula (Staudinger, 1879)	4
Bena bicolorana (Fuessly, 1775)	2, 4
Family: **Noctuidae** Latreille, 1809	
Bryophila (*Bryoleuca) tephrocharis* (Boursin, 1953)	2
Bryophila (*Bryoleuca) rectilinea* (Warren, 1909)	2
Bryophila (*Scythobrya) maeonis* (Lederer, 1865)	2
Bryophila (*Bryoleuca*) *raptricula* ([Denis & Schiffermüller], 1775)	2
Cucullia tanaceti ([Denis & Schiffermüller], 1775)	2
Aedophron phlebophora Lederer, 1858	4
Heliothis peltigera ([Denis & Schiffermüller], 1775)	2
Agrotis schawerdai Bytinski-Salz, 1937	4
Dichagyris (*Dichagyris*) *forcipula* ([Denis & Schiffermüller], 1775)	4

Dichagyris (*Dichagyris*) *soror* (Fibiger, 1997)	2
Euxoa (*Euxoa*) *canariensis* Rebel, 1902	4
Litoligia literosa (Haworth, 1809)	4
Noctua janthe (Borkhausen, 1792)	2
Noctua fimbriata (Schreber, 1759)	4
Noctua orbona (Hufnagel, 1766)	2
Peridroma saucia (Hübner, [1808])	4
Rhizedra lutosa (Hübner, [1803])	4
Rhyacia fimbriola (Esper, [1803])	4
Eremohadena (*Eremohadena*) *halimi* (Milliere, 1877)	7
Hoplodrina hespercia Dufay & Boursin, 1960	2
Auchmis detersa (Esper, [1787])	2
Caradrina (*Paradrina*) *clavipalpis* (Scopoli, 1763)	4
Caradrina (*Paradrina*) *fulvafusca* Hacker, 2004	4
Caradrina (*Paradrina*) *minoica* Hacker, 2004	4
Caradrina (*Platyperigea*) *albina* Eversmann, 1848	2
Caradrina (*Platyperigea*) *aspersa* Rambur, 1834	2, 4
Caradrina (*Platyperigea*) *terrea* Freyer, [1839]	2
Chloantha hyperici ([Denis & Schiffermüller], 1775)	2
Dicycla oo (Linneaus, 1758)	4
Mythimna (*Hyphilare*) *l-album* (Linnaeus, 1767)	4

Discussion

Detailed studies must be done for the determination of the biological richness in all regions of Turkey. At this point, there wasn't enough faunistic, taxonomic and ecological information in literature about the Darboğaz, Bolkar Mountains (Ulukışla).

In industrialized countries Lepidoptera species are confronted with extinction due to environmental pollution, destruction of biotopes, as well as factors such as the effect of pesticides and chemicals. In addition to this, some species are in danger of extinction as a result of over-collection for commercial purposes. Also, the continuing illegal use of forests and incorrect land use practices threaten to destroy the fauna diversity in the Darboğaz, Bolkar Mountains; therefore, illegal use of forests, incorrect land use and also the unconscious and excessive collecting of butterfly and moth specimens should be avoided and punished with legal sanctions. Additionally, detailed studies should be carried out as quickly as possible to determine the biological diversity of the Darboğaz, Bolkar Mountains.

This is the first study of the Lepidoptera fauna in the Darboğaz, Bolkar Mountains (Ulukışla, Niğde province). The different ecosystem types in both agricultural lands and forests in the Darboğaz, provide richness in habitat types for animals and plants. For proper and efficient sampling, butterfly and moth species were collected in different localities possessing different vegetation types (agricultural crops, Pinus, Quercus and Cedrus forests, steppe and herbaceous) and from altitudes 1450 to 2325 m.

During the nine field studies a total of 168 species belonging to fifteen families and seven superfamilies of Lepidoptera were collected. Sixty-three butterfly and 105 moth species were identified from study area. Fifty of diurnal Lepidoptera (indicated with asterisks in the systematic list) and all of the nocturnal species which were identified in this study, are first records for the Lepidoptera fauna of study area in the Darboğaz.

The highest number of collected species in butterflies, according to families, belonged to Lycaenidae (18%) followed by Nymphalidae (10.7%), and highest number of species in moths, belonged to Noctuidae (18%) followed by Geometridae (16.5%), Crambidae 10%),

Table 2. Number of species and rates of families in Darboğaz, Bolkar Mountains (Ulukışla, Niğde)

Superfamily	Sub-total of all species	Family	Number of species	Rate (%)
Papilionoidea	63	Hesperidae	7	4.1
		Nymphalidae	18	10.7
		Papilionidae	1	0.6
		Pieridae	7	4.1
		Lycaenidae	30	18.0
Pyraloidea	27	Crambidae	17	10.0
		Pyralidae	10	6.0
Drepanoidea	2	Drepanoidae	2	1.2
Lasiocampoidea	3	Lasiocampidae	3	1.8
Bombycoidea	1	Sphingidae	1	0.6
Geometroidea	28	Geometridae	28	16.5
Noctuoidea	44	Erebidae	10	6.0
		Noctuidae	30	18.0
		Nolidae	2	1.2
		Notodontidae	2	1.2
Total 7	168	15	168	100

Erebidae (6%) and Pyralidae (6%). Additionally, all the families, number of species and their collecting frequency are cited in Table 2.

In this study, the highest number of genera in butterflies, according to families, belonged to Nymphalidae (13) followed by Lycaenidae (7); and in moths, belonged to Noctuidae (19) followed by Geometridae (14), Crambidae (12) and Pyralidae (10).

This study has contributed to the knowledge of the Lepidoptera fauna of the Darboğaz, Bolkar Mountains in the Anatolian region (Ulukışla, Niğde province) of Turkey. Faunistic, taxonomic and ecological studies from this region are very limited in number. New studies considering other insect groups should be carried out before agricultural and forest ecosystems are destroyed. Also, plant species used by Lepidoptera as a source of food, should be identified and protected.

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