

Preliminary Work on Rhopalocera and Heterocera Fauna of Çubuk Districts (Ankara Province, North Turkey)

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Received: 22/05/2014 Revised: 04/06/2014 Accepted: 10/06/2014

ABSTRACT

In this paper, diurnal moths and the butterflies, which were collected by author during the field works in Çubuk district in Ankara province. In this study 67 lepidopteran species from 15 families were determined. Totally 41 species of butterflies and 26 species of diurnal moths were listed. Both external morphology and male genitals of *Olethreutes arcuella* (Clerck, 1759) were examined,, the present situation of this species in Turkey was also discussed.

Key words: Rhopalocera, Heterocera, Fauna, Ankara, Turkey.

1. INTRODUCTION

Ankara is one of the most important butterfly areas in Central Anatolia Region where new Lepidoptera species described located. From past to present Ankara is one of the most sampled areas by researchers. Koçak [7], listed 70 species from *Heterocera* which were collected by M. and W.Glaser from the district of Kızılcahamam. When it comes to Lepidoptera in Turkey, there are 5163 species in total, 408 of which consists of butterflies [2]. While Hesselbarth, et al [1] reported 100 species. Koçak [9] reported 177 species of butterflies from Ankara province. Most of these studies were conducted near Ankara centre around Kızılcahamam, Beynam and Ayaş districts [3-6,8,10-13,15-19,21]. There are limited number of studies concerning butterflies around Çubuk district [20].

The aim of this study is to make contributions to the Lepidoptera fauna of Çubuk district and comparison

between the species and sibling species belongs to the genus *Olethreutes*

2. EXPERIMENTAL

This study was conducted between the years 2009-2011 in Çubuk in the province of Ankara. Specimens were collected using a sweep net. Collected specimens were killed in killing jars with ethyl acetate. During the collection, the collection date, localities and altitudes were noted on a part of an envelope for every specimen. Each specimen was then put into this envelope and all materials were brought to the laboratory for preparation and identification. All butterfly specimens were pinned with wings spread, dried, and put into collection boxes. For the identification of specimens, Hesselbarth *et al.* [1]. and the private collection of the author were used. The material is preserved in the Zoology Museum of Gazi

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University. New records for Çubuk are marked with asterix (*).

3. RESULTS

In this study, a total of 67 taxa belonging to 15 families of the order Lepidoptera were identified and are listed below. Species and subspecies are given under the family to which they belong. Faunistic records from previous studies carried out on the same area are also cited.

PAPILIONIDAE

Parnassius (Driopa) mnemosyne* (Linnaeus, 1758)

Material examined: Çubuk, Karagöl, 1500m, 10.6.2011, 2♂♂; 1600m, 11.06.2011, 1♂.

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

Material examined: Çubuk, Karagöl, 1500m, 10.6.2011, 2♂♂; 1600m, 11.06.2011, 1♂1♀.

PIERIDAE

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

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 7♂♀, leg. E. Çalışkan.

***Colias (Eriocolias) croceus* (Fourcroy, 1785)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 3♂♀, leg. E. Çalışkan; Karagöl, 1500m, 10.06.2011, 1♂.

***Leptidea sinapis* (Linnaeus, 1758)**

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Colias (Neocolias) aurorina* (Herrich-Schäffer, [1850])

Material examined: Çubuk, Karagöl, 1500m, 10.06.2011, 1♀.

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

Material examined: Çubuk, Karagöl, 1500m, 10.06.2011 1♂.

NYMPHALIDAE

***Aglais urticae* (Linnaeus, 1758)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 11♂♀, leg. E. Çalışkan.

***Issoria lathonia* (Linnaeus, 1758)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 4♂♀, leg. E. Çalışkan.

***Limenitis (Azuritis) reducta* Staudinger, 1901**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan.

Melitaea (Melicta) athalia* (Rottenburg, 1775)

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan.

***Argynnis (Pandoriana) pandora* ([Denis & Schiffermüller], 1775)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 6♂♀, leg. E. Çalışkan; Çubuk, Karagöl, 1600m, 11.06.2011, 1♂.

Euphydryas (Eurodryas) orientalis* (Herrich-Schäffer, [1845])

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan.

***Melitaea (Didymaeformis) didyma* (Esper, [1779])**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 2♂♂, leg. E. Çalışkan; Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

***Melitaea (s.str.) cinxia* (Linnaeus, 1758)**

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 4♂♂.

***Cynthia cardui* (Linnaeus, 1758)**

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂1♀.

SATYRIDAE

Erebia medusa* ([Denis & Schiffermüller], 1775)

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan.

***Coenonympha pamphilus* (Linnaeus, 1758)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan; Çubuk, Karagöl, 1600m, 11.06.2011 1♂; 1500m, 11.6.2011, 4♂♂.

***Hipparchia (Parahipparchia) aristaeus* (Bonelli, 1826)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂1♀, leg. E. Çalışkan.

Coenonympha (s.str.) leander* (Fabricius, 1787)

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

LYCAENIDAE

***Callophrys rubi* (Linnaeus, 1758)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan; Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

***Tomares nogelii* (Freyer, [1851])**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 3♂♀, leg. E. Çalışkan.

Tomares nesimachus* (Oberthür, 1893)

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011 1♂.

***Thersamolycaena (Alciphronia) alciphron* (Rottenburg, 1775)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan; Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

***Polyommatus (s.str. (Lysandra)) bellargus* (Rottenburg, 1775)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 2♂♂, leg. E. Çalışkan.

***Polyommatus (s.str. (Plebicula)) amandus* (Schneider, 1792)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 6♂♀, leg. E. Çalışkan.

***Polyommatus (s.str. (Cyaniris)) bellis* (Freyer, [1842])**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂2♀, leg. E. Çalışkan; Çubuk, Karagöl, 1600m, 11.06.2011, 1♂; 1500m, 11.6.2011, 1♂.

***Loweia tityrus* (Poda, 1761)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 2♂♂, leg. E. Çalışkan; Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Neolysandra coelestinus* (Eversmann, [1843])

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 2♂♂, leg. E. Çalışkan.

***Plebeius pylaon* (Fischer von Waldheim, 1832)**

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan; Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Polyommatus (s.str.) icarus (Rottemburg,1775)

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 4♂♂, leg. E. Çalışkan; Çubuk, Karagöl, 1600m, 11.06.2011 2♂♂ ; 1500m, 11.6.2011, 5♂♂.

Plebejus (s.str.) argus (Linnaeus, 1758)

Material examined: Çubuk, Karagöl, 1600m, 11.06.2011, 2♂♂; 1500m, 11.6.2011, 24♂♂13♀♀.

Cupido (s.str.) osiris (Meigen, [1829])

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Glaucopsyche (s.str.) alexis (Poda, 1761)

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♀

LIBYHTEIDAE

Libythea (s.str.) celtis (Laicharting, 1782)*

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan.

HESPERIDAE

Erynnis (s.str.) tages (Linnaeus,1758)

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 4♂♀, leg. E. Çalışkan; Çubuk, Karagöl, 1600m, 11.06.2011, 1♂; 1500m, 11.6.2011, 1♂.

Spialia (Neospialia) orbifer (Hübner,[1823])

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan; Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Mushampia nomas (Lederer, 1855) *

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan.

Pyrgus melotis (Duponchel, [1834])

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 2♂♂, leg. E. Çalışkan.

Pyrgus malvae (Linnaeus,1758)*

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Spialia phlomidis (Heriich-Schaeffer, [1845])*

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

PYRALIDAE

Pyrausta (Haematia) despicata (Scopoli, 1763)

Seven, et al., (2000).Misc.Pap. 63
Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 2♂♂, leg. E. Çalışkan.

Pyrausta (s.str.) ostrinalis (Hübner, 1796) *

Material examined: Çubuk, Karagöl, 1500m, 10.06.2011, 1♂.

Pyrausta (s.str.) nigrata (Scopoli, 1763) *

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 2♂♂, leg. E. Çalışkan; Çubuk, Karagöl, 1500m, 10.06.2011, 1♂.

Tretopteryx pertusalis (Geyer, [1832]) *

Material examined: Çubuk, Karagöl, 1600m, 11.06.2011,1♂ ; 1500m, 10.6.20011, 2♂♂.

Nomophila noctuella ([Denis & Schiffermüller], 1775)*

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan; Çubuk, Karagöl, 1600m, 11.06.2011, 2♂♂.

Synaphe moldavica (Esper,[1789]) *

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 4♂♀, leg. E. Çalışkan.

YPONOMEUTIDAE

Plutella xylostella (Linnaeus, 1758)*

Material examined: Ankara, Çubuk, Karagöl, 1500m, 10.06.2011, 1♂.

CTENUCHIDAE

Amata rossica (Turati, 1917)*

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 5♂♀, leg. E. Çalışkan; Çubuk, Karagöl, 1500m, 10.06.2011, 2♀♀.

ZYGAENIDAE

Adscita sp. *

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♀, leg. E. Çalışkan.

GEOMETRIDAE

Minoa murinata (Scopoli,1763)*

Material examined: Çubuk, Karagöl, 1500m, 10.06.2011, 3♂♂.

Odezia atrata (Linnaeus, 1758)*

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 2♂♂, leg. E. Çalışkan.

Semiothisa glarearia (Brahm, 1791) *

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Semiothisa clathrata (Linnaeus, 1758)

Seven, et al., (2000). Misc.Pap. 63

Material examined: Çubuk, Karagöl, 1600m, 11.06.2011, 4♂♂ ; 1500m, 11.6.2011, 4♂♀.

Scopula ornata (Scopoli,1763)*

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂1♀, leg. E. Çalışkan.

Scopula rubiginata (Hufnagel,1767)*

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Ematurga atomaria (Linnaeus,1758)

Seven, et al., (2000). Misc.Pap. 63

Material examined: Çubuk, Karagöl, 1600m, 11.06.2011 9♂♀

Pseudopanthera macularia (Linnaeus,1758)

Seven, et al., (2000). Misc.Pap. 63

Material examined: Çubuk, Karagöl, 1600m, 11.06.2011, 4♂♀ ; 1500m, 11.6.2011, 3♂♂.

NOCTUIDAE

Prothymia viridaria (Clerck,1759)

Material examined: Çubuk, Aydos dağı, 1700m, 20-21.06.2009, 1♂, leg. E. Çalışkan.

Autographa gamma (Linnaeus,1758)*

Material examined: Çubuk, Karagöl, 1600m, 11.06.2011, 1♂ ; 1500m, 11.6.2011, 1♂.

Euclidia glyphica (Linnaeus,1758)

Seven, et al., (2000).Misc.Pap. 63

Material examined: Çubuk, Aydos dağı, 1700m, 20-21. 06.2009, 1♂, leg. E. Çalışkan; Çubuk, Karagöl, 1600m, 11.06.2011, 17♂♀ ; 1500m, 11.6.2011, 9♂♀.

Callistege mi* (Clerck,1759)

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

Noctuelia superba* (Freyer,[1844])

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011 1♂.

Heliiothis maritima* (Graslin,1855)

Material examined: Çubuk, Karagöl, 1600m, 11.06.2011, 1♂.

TORTRICIDAE

***Olethreutes arcuella* (Clerck,1759)* (Fig.1)**

Material examined: Çubuk, Karagöl, 1600m, 11.06.2011, 1♂

Cydia duplicana* (Zettersted,1839)

Material examined: Çubuk, Aydos dağı, 1700m, 20-21. 06.2009, 1♂, leg. E. Çalışkan.

CIMELIIDAE

Axia (Epicimelia) theresiae* (Korb,1900)

Material examined: Çubuk, Karagöl, 1500m, 11.06.2011, 1♂.

4. DISCUSSION

In this study 67 lepidopteran species of 15 families from Çubuk district were determined. These families and numbers of species are as follows: Papilionidae (2), Pieridae (5), Libytheidae (1),Argynnididae (9), Satyridae (4), Lycaenidae (13), Hesperidae (6), Pyralidae (7), Yponomeutidae (2), Geometridae (7), Tortricidae (2), Ctenuchidae (1), Noctuidae (6) Zygaenidae (1), and Cimeliidae (1). The 30 of them which were identified in this study are the first records for the Lepidoptera fauna of Çubuk district.

Genus *Olethreutes* belongs to the family Tortricidae. Heretofore, only one species known from this genus [14] from Turkey. During the recent years there have been lots of study about the genus, *Olethreutes* after all a sibling species of sp.*arcuella* was identified as sp. *subtiliana*. Both of these sibling species could easily be separated from each other by some differences of the male genital structure [22] (Fig.1b).

Olethreutes arcuella known from Ankara, Ordu, Bolu Düzce and İstanbul in Turkey [14]. It is important to check related records and confirm which species belongs to which record. In this study specimens collected from Ankara were studied and confirmed that Ankara record was *Olethreutes arcuella*.(Fig.1a).

Axia (Epicimelia) theresiae is one of the rarely distributed species and needed to be put under protection in Turkey. Until present there was only one record known Ankara which is from Kalecik district. With this study, the species are also recorded from Çubuk district and so this is the second known locality from Ankara province

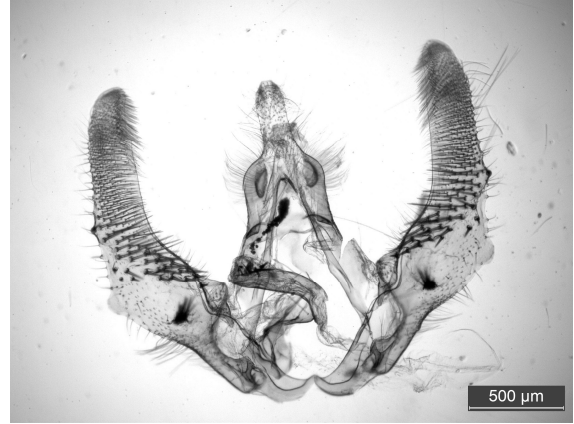


Fig. 1a. Male genitalia of *Olethreutes arcuella* (Clerck, 1759)



Fig. 1b. Male genitalia of *Olethreutes subtiliana* (Falkovitsh,1959) (Wojciech Kubasik, 2012)

CONFLICT OF INTEREST

No conflict of interest was declared by the authors.

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