

Preliminary work on the moth fauna (Lepidoptera: Heterocera) of Kazdağı National Park – II (Turkey)

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Abstract. In this study, moth specimens collected from Kazdağı National Park are evaluated and 32 taxa belonging to 12 families are identified. All of the species have been recorded for the first time from Kazdağı National Park. *Syndemis musculana* (Hübner, [1799]), known from Turkey with uncertain locality record, has been recorded with an exact locality for the first time. The distribution in Turkey of *Panalia schwarzeella* (Fabricius, 1798) and *Eudonia mercurella* (Linnaeus, 1758) are discussed. *Pyrausta ostrinalis* (Hübner, 1796) is recorded for the first time for the Turkish Crambidae fauna.

Samenvatting. Voorlopig studie van de nachtvlinderfauna (Lepidoptera: Heterocera) van het Kazdağı Nationaalpark – II (Turkije)

In deze studie worden de 32 Heterocera-taxa uit 12 families, verzameld in het Kazdağı Nationaalpark, besproken. Al deze soorten worden voor het eerst uit dit gebied vermeld. *Syndemis musculana* (Hübner, [1799]), voordien bekend uit Turkije zonder enige vindplaats, wordt hier voor het eerst met een duidelijke lokaliteit vermeld. De verspreiding in Turkije van *Panalia schwarzeella* (Fabricius, 1798) en *Eudonia mercurella* (Linnaeus, 1758) wordt besproken. *Pyrausta ostrinalis* (Hübner, 1796) wordt hier voor het eerst uit Turkije vermeld.

Résumé. Etude préliminaire des hétérocères (Lepidoptera: Heterocera) du Parque National de Kazdağı – II (Turquie)

Dans cette étude les 32 taxa d'hétérocères appartenant à 12 familles, capturés dans le Parque National de Kazdağı, sont discutés. Toutes ces espèces sont mentionnées pour la première fois de ce parc. *Syndemis musculana* (Hübner, [1799]), auparavant seulement connu de Turquie sans localité précise, est mentionné ici pour la première fois avec certitude. La distribution en Turquie de *Panalia schwarzeella* (Fabricius, 1798) et de *Eudonia mercurella* (Linnaeus, 1758) est commentée. *Pyrausta ostrinalis* (Hübner, 1796) est mentionnée ici pour la première fois de la Turquie.

Key words: Lepidoptera – National Park – first record – faunistics – Turkey.

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Introduction

The Kazdağı National Park is situated in the north-west of Turkey at the border of the Edremit county (Balıkesir province) and north of the Edremit gulf. It is the highest elevation of the Biga peninsula which separates the Ege and Marmara regions. The highest mountain of Kazdağı National Park is Karataş Hill with an altitude of 1774 m. In this park, until 700–800 m *Pinus brutia* is present, and until 1400 m, mixed with *Pinus brutia*, are other tree species like *Fagus* and *Abies*. Also, the park has a rich flora in terms of medical plants like *Thymus*, *Salvia*, *Rhus coriaria* together with *Castanea*, *Quercus*, *Alnus*, *Platanus orientalis*, and sometimes *Cistus*, *Erica*, *Prunus spinosa*, *Rubus* sp.

National Parks and Nature Protection Areas are very important due to the fact that they represent the faunistic and floristic structure of their region. Nevertheless, only a few faunistic studies about national parks in Turkey have been published. The only work known is about the Gelibolu Peninsula National Park (Karatepe 1997). The Lepidoptera of Kazdağı National Park have been

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identified for the first time during this study. The butterflies were submitted as a separate publication (Seven 2006), and have been treated as a separate group due to including some important and interesting records, giving some important data about the research area and being a basic work for detailed studies in the future. The moths of Kazdağı National Park are treated in the present paper and listed with their synonyms.

Studies including some important records for the research area are Mann (1861, 1862), Staudinger (1878, 1881), and Hacker (1990). Works used for the identification of some moth specimens are: Bleszynski (1965), Back (1973), Kuznetsov (1978), Lvovski (1981), Zagulyaev & Sinev (1981), Hacker (1989), Roesler (1993), Arenberger (1995), de Freina (1997), Naumann *et al.* (1999), and Koster & Sinev (2003).

Material and Methods

Field expeditions were carried out in the research area between the years 2004–2005. Specimens were collected with a light trap and placed in triangle papers by using pliers. After that, they were relaxed in a softening container in the laboratory, spread on setting boards according to museum material methods, dried and placed in collection boxes after labelling. The genital preparation number (GP) has been added when appropriate.

Oecophoridae

Pleurota pyropella ([Denis & Schiffermüller], 1775)

Material examined: Balıkesir, Edremit, Kazdağı, Kampalanı, 0800 m, 04.06.2005, 4♂ (GP2065♂).

Cosmopterigidae

Panacalia schwarzeella (Fabricius, 1798)

Syn: *latreillella* Curtis, 1830. Material examined: Balıkesir, Edremit, Kazdağı, Zirve, 1700 m 17.07.2005, 4♂♀ (GP2006♂).

Sesiidae

Chamaesphecia thracica Laštůvka, 1983

Material examined: Balıkesir, Edremit, Kazdağı, Zirve, 1700 m, 17.07.2005, 1♂ (GP2067♂).

Zygaenidae

Adscita statices (Linnaeus, 1758)

Syn: *turcosa* Retzius, 1783; *heuseri* Reichl, 1964. Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0800 m, 04.06.2005, 6♂ 3♀; 16.07.2005 6♀ (GP2070♂).

Jordanita subsolana (Staudinger, 1862)

Material examined: Balıkesir, Edremit, Kazdağı, Tozlu mevkii, 1200 m, 17.07.2005, 2♂ 5♀; Zirve, 1700 m, 1♂ 1♀ (GP2068♂, GP2069♂).

Zygaena filipendulae (Linnaeus, 1758)

Syn: *aries* Retzius, 1783. Material examined: Balıkesir, Edremit, Kazdağı, Tozlu mevkii, 1067 m, 03.07.2004, 1♂ (leg. Y. Durmuş), 1200 m, 17.07.2005, 2♂; Kamp alanı, 0800 m, 16.07.2005, 2♀.

Zygaena lonicerae (Scheven, 1777)

Syn: *graminis* Villers, 1789; *reichei* Dujardin, 1965; *microdoxa* Dujardin, 1965. Material examined: Balıkesir, Edremit, Kazdağı, Tozlu mevkii, 1067 m, 03.07.2004, 1♀ (leg. Y. Durmuş), 1200 m, 17.07.2005, 2♂ 2♀.

Tortricidae

Syndemis musculana (Hübner, [1799])

Syn: *musculinana* Kennel, 1899; *nipponensis* Yasuda, 1975. Material examined: Balıkesir, Edremit, Kazdağı, Tozlu mevkii, 1200 m, 05.06.2005, 1♂ (GP2063♂).

Pterophoridae

Emmelina monodactyla (Linnaeus, 1758)

Syn: *sibiricus* Caradja, 1920. Material examined: Balıkesir, Edremit, Kazdağı, Zeytinli, 0150 m, 06.06.2005, 1♂ (GP2059♂).

Pyralidae

Synaphe moldavica (Esper, 1794)

Syn: *schmidti* Hartig, 1941. Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0800 m, 04.06.2005, 9♂; Hasanboğuldu, 0200 m, 06.06.2005, 3♂.

Endotricha flammealis ([Denis & Schiffermüller], 1775)

Syn: *carnealis* De Lattin, 1951. Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0750 m, 29.08.2004, 1♂.

Isauria dilucidella (Duponchel, 1836)

Syn: *ilignella* Zeller, 1839; *laternella* Eversmann, 1844; *crepusculella* Lederer, 1870; *incredibilis* Staudinger, 1879; *subsortitella* Ragonot, 1887; *satanella* Ragonot, 1887; *odontella* Ragonot, 1893; *ledereri* Ragonot, 1893. Material examined: Balıkesir, Edremit, Kazdağı, Tozlu mevkii, 1200 m, 05.06.2005, 1♂ (GP2072♂).

Lamoria ruficostella Ragonot, 1888

Material examined: Balıkesir, Edremit, Kazdağı, Zirve, 1700 m, 17.07.2005, 1♂.

Crambidae

Pyrausta ostrinalis (Hübner, 1796) (First record for the Turkish fauna)

Material examined: Balıkesir, Edremit, Kazdağı, Zirve, 1700 m, 17.07.2005, 1♂ 1♀.

Loxostege sticticalis (Linnaeus, 1761)

Syn: *lupulina* Clerk, 1756 nec Linnaeus, 1758; *miana* Müller, 1764; *sylvata* Panzer, 1804; *tetragonalis* Haworth, 1811. Material examined: Balıkesir, Edremit, Kazdağı, Zirve, 1700 m, 17.07.2005, 1♂.

Heliothela wulfeniana (Scopoli, 1763)

Syn: *atralis* Hübner, 1788 nec Fabricius, 1775; *coerulealis* Caradja, 1917; *hübneri* Koçak, 1980. Material examined: Balıkesir, Edremit, Kazdağı, Zirve, 1700 m, 17.07.2005, 24♂♀.

Eudonia mercurella (Linnaeus, 1758)

Syn: *mercuri* Fabricius, 1798; *mercurea* Haworth, 1811; *mercurialis* Hübner, [1825]; *portlantica* Westwood, 1845; *frequentella* Stainton, 1849; *concinella* Curtis, 1850; *frequentalis* Herrich-Schäffer, 1862. Material examined: Balıkesir, Edremit, Kazdağı, Tozlu mevkii, 1200 m, 05.06.2005, 1♂. (GP2060♂).

Chrysocrambus craterella (Scopoli, 1763)

Syn: *rorella* Linnaeus, 1767; *klimeschi* Toll, 1938; *alpinus* Bleszynski, 1958; *abruzzellus* Bleszynski, 1958. Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0800 m, 04.06.2005, 1♀.

Agriphila latistria (Haworth, 1811)

Syn: *gueneellus* Duponchel, 1836; *monotaeniellus* Herrich-Schäffer 1852; *vectifer* Zeller, 1863; *vallicolella* Costa, 1885. Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0750 m, 29.08.2004, 1♂.

Agriphila paleatellus (Zeller, 1847)

Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0750 m, 29.08.2004, 1♀ (GP2071).

Geometridae

Camptogramma bilineata (Linnaeus, 1758)

Syn: *brocatella* Fourcroy, 1785; *dumetata* Schrank, 1802; *bilineararia* Boisduval, 1840; *musauria* Freyer, 1846; *testaceolata* Staudinger, 1871. Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0800 m, 04.06.2005, 1♂.

Chlorissa cloraria (Hübner, [1813])

Material examined: Balıkesir, Edremit, Kazdağı, Hasanboğuldu, 0200 m, 06.06.2005 1♂.

Eupithecia breviculata (Donzel, 1837)

Syn: *anatolica* Schwingenschuss, 1939; *georgica* Vojnits, 1977. Material examined: Balıkesir, Edremit, Kazdağı, Tozlu mevkii, 1200 m, 05.06.2005, 1♂.

Chiasmia clathrata (Linnaeus, 1758)

Syn: *almacola* Wehrli, 1943. Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0800 m, 04.06.2005, 1♂.

Hylaea fasciaria (Linnaeus, 1758)

Syn: *prosapiaria* Linnaeus, 1758; *neustriaria* Hufnagel, 1767; *prasinaria* [Denis & Schiffermüller], 1775; *biliosata* Villers, 1789; *viridifasciosa* Esper, 1794; *cleui* Leraut, 1993. Material examined: Balıkesir, Edremit, Hasanboğuldu, 0200 m, 06.06.2005, 1♂.

Noctuidae

Autographa gamma (Linnaeus, 1758)

Syn: *messmeri* Schadewald, 1992; *voelkeri* Schadewald, 1992. Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0800m, 04.06.2005, 1♀; Tozlu mevkii, 1000m, 05.06.2005 1♂; 1200 m 1♂.

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Ephesia disjuncta (Geyer, 1828)

Syn: *separata* Freyer, 1848; *luctuosa* Staudinger, 1901 nec Hulst, 1884; *fumigata* Kuznetsov, 1903. Material examined: Balıkesir, Edremit, Kazdağı, Kampalrı, 0800m, 04.06.2005, 1♀; Tozlu mevkii, 1200 m, 05.06.2005 1♂.

Hadula trifolii (Hufnagel, 1766)

Syn: *chenopodii* [Denis & Schiffermüller], 1775; *verna* Esper, [1787]; *saucia* Esper, [1790]; *infraina* Haworth, 1809; *contribulis* Duponchel, 1827; *farkasii* Treitschke, 1835; *inquieta* Walker, 1857; *albifusa* Walker, 1857. Material examined: Balıkesir, Edremit, Kazdağı, Zirve, 1700 m, 17.07.2005, 1♂.

Lymantriidae

Lymantria dispar (Linnaeus, 1758)

Material examined: Balıkesir, Edremit, Kazdağı, Kamp alanı, 0800 m, 16.07.2005, 1♂.

Sphingidae

Hyles livornica (Esper, 1780)

Syn: *koechlini* Fuessly, 1781; *tatsienluica* Oberthür, 1916; *saharae* Gehren, 1936; *malgassica* Denso, 1944; *tatsienluica* Oberthür, 1944; *renneri* Eitschberger, Danner & Surholt, 1998. Material examined: Balıkesir, Edremit, Kazdağı, Tozlu mevkii, 1067 m, 03.07.2004, 1♂ (leg. Y. Durmuş).

Sphinx pinastri Linnaeus, 1758

Syn: *asiaticus* Butler, 1875; *saniptri* Strecker, 1876; *cenisius* Jordan 1931; *medialis* Jordan 1931; *euxinus* Derzhavets, 1979; according to De Freina & Witt, 1987. Material examined: Balıkesir, Edremit, Kazdağı, Zeytinli Deresi, 0150 m, 28.08.2004 1♂.

Macroglossum stellatarum (Linnaeus, 1758)

Syn: *nigra* Cosmovici, 1892. It was observed between 0150–1700 m altitude in almost all localities.

Results and Discussion

From Kazdağı National Park, 32 species belonging to 12 moth family are identified. All these species are here recorded for the first time from the Kazdağı National Park and 31 of them for the first time from the Balıkesir province. *Pyrausta ostrinalis* is recorded here for the first time for the Turkish Crambidae fauna. In the following, some of the important and rare species discussed.

Heliothela wulfeniana is distributed in Europa except the British Islands (Parenti 2000). It has been known from Turkey only from five localities up to now. In the research area, it was found in the subalpine zone at 1700 m altitude, where it occurs locally but abundantly.

Huemer & Karsholt (2005) stated that *Eudonia mercurella* is distributed in Turkey (Taurus coll., Staudinger, ZMHB). Koçak & Kemal (2006) mentioned that this species was recorded from the Trabzon province in Turkey without stating an exact locality. It seems that this taxon is distributed in two different zoogeographic regions in Turkey. The taxon identified from the Kazdağı National Park is an important record for the Turkish Crambidae fauna. From

Khalkidhiki (Greece) subspecies *puella* Leraut, 1982 was described new record for Aegean Region in Turkey. It has been thought that comparing differences and resemblance with the taxon determined from Balıkesir province and ssp. *puella* add new distribution data to the distributional area belonging to this species by collecting more specimens.

Pancalia schwarzeella: wing span 14–15 mm. It is one of the important and rare species in Turkey. From the same genus, also *P. leuwenhoekella* (Linnaeus, 1761) is known to occur in Turkey (Koçak & Seven 2003). Sinev (1985) mentioned that *P. schwarzeella* is distributed on high hills in the shore zone of Turkey. Turkey is also indicated in the distribution catalogue by Koster & Sinev (2003: 203). This taxon is present in the Kazdağı National Park and so its distribution in Turkey has been extended to Bursa and Balıkesir. In the research area, specimens have been observed in the subalpine zone at 1700 m, covered with *Astragalus*, while they were flying near *Lotus corniculatus* and only four specimens were caught.

Agriphila latistria: this species is known as rare and local in Turkey (Koçak & Seven 1997). It is here recorded for the first time from the Balıkesir province and also from the Aegean region. In the National Park, it flies in the grassy, open places in pine forests with *Juniperus*, *Berberis*, *Dipsacus*, *Echinops*, *Salvia*, *Verbascum*, and *Festuca* and near water patches.

Syndemis musculana: the larva of this species lives in woody plants. It is distributed in the Palaearctic region and known in Central Europe as widely spread (Razowski 2001). Koçak & Seven (2003) mentioned this species from Turkey with uncertain locality. In the present paper, it has been given with an exact locality record for the first time in Turkey. The species was caught in Pinus forest but it is local and rare in the Kazdağı National park.

Chlorissa cloraria: this species is confused with *Chlorissa viridata* (Linnaeus, 1758) because of the resemblance of their external morphology. It is distinguished from *C. viridata* by the dark outer margin of the costa and the sinuous edge of the hind wing (Hausmann 2001). The Turkish Geometridae list in Koçak & Seven (2003) does not include any data about *C. cloraria*. In Özdemir (2004) it is recorded from the provinces Bolu and Konya (Düzce). The taxon, identified from the Kazdağı National Park, is the first record for both the Balıkesir province and the Aegean Region. Specimens recorded from Turkey before as *C. viridata* should be studied again to establish their true identity.

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