

A new record and three little-known *Eupithecia* Curtis species from Turkey (Lepidoptera: Geometridae)

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Abstract: In this paper, *Eupithecia opistographata* Dietze, 1906 is reported as new for the fauna of Turkey, and three rare species (*E. brunneata* Staudinger, 1900; *E. dearmata* Dietze, 1904; and *E. marasa* Wehrli, 1932) are presented as second records on the basis of specimens collected in the mountainous areas of Siirt Province and Şirvan District, southeastern Turkey. The adults and the male genitalia of the species are illustrated.

Key words: *Eupithecia*, Larentiinae, Geometridae, Turkey, fauna

The valid genus name *Eupithecia* was established by Curtis in 1825 with the type species *Phalaena absinthiata* Clerck, 1759. This nominate and large genus is in the family of Geometridae and includes nearly 1400 described species (Scoble, 1999; Mironov and Ratzel, 2012) distributed worldwide.

Adult *Eupithecia* species are commonly characterized by being small in size, cryptically colored grayish, having a brownish forewing that is regularly fasciated and with a definite discal spot, and a more weakly fasciated hindwing (Mironov, 2003). The identification of many species in this genus is extremely difficult, requiring dissection of the genitalia, because of very similar external morphological characters.

In Europe, 128 *Eupithecia* species are known (Mironov, 2003); in Turkey, a total of 113 species have been recorded according to the literature consulted (Riemis, 1994; Koçak and Kemal, 2009; Koçak, 2014). In Siirt Province and Şirvan District, 11 *Eupithecia* species are known (Koçak and Kemal, 2009; Seven, 2014). The purpose of the present study is to report on one additional record of *Eupithecia opistographata* Dietze, 1906 and second records of both *E. brunneata* Staudinger, 1900 and *E. dearmata* Dietze, 1904 from Turkey. Additionally, the second faunistic record from southeastern Turkey of *E. marasa* Wehrli, 1932 is presented.

This research is based on the materials collected by the author during 2014 and 2015 in southeastern Turkey. It also includes the results of processing (but not thoroughly diagnosing) the material collected during

work on a doctoral thesis (2011–2013) by using UV light traps. Identification was performed by analyzing external morphological features of adult moths and the structure of the genital armature of males (Staudinger, 1900; Dietze, 1904–1906; Wehrli, 1932; Schütze, 1961; Ratnasingham and Hebert, 2007; Mironov and Galsworthy, 2014). Full information on localities and dates of captured species are given in the results. The materials are deposited in the laboratory of Batman University, Faculty of Science, Department of Biology, Batman, Turkey.

Eupithecia opistographata Dietze, 1906 (Figures 1A and 1B)

Syntypes 3 (MNHU), [China]: Aksu [originally as f. of *Eupithecia ultimaria* Boisduval, 1840].

The species is widely distributed in North Africa, the Middle East, and Asia. It is recorded for the first time in Turkey and known only in the degraded and rocky oak woodlands of Siirt Province.

Material. Siirt, Şirvan, 2♂♂: 1♂ Tahvan crossroad, 600 m, 02.09.2013 (slide no. Gp365♂); Siirt, 1♂ Akyamaç, 700 m, 04.09.2014.

Distribution. Algeria, Saudi Arabia, Iraq, Iran, Turkmenistan, Uzbekistan, Tajikistan, SE Kazakhstan, Mongolia, China (Mironov and Galsworthy, 2014), and Turkey (new record).

Description. Wingspan 11 mm. Antennae filiform. Forewing gray; transverse lines narrow, sinuate; discal dot linear, blackish. Hind wing similarly colored to forewing; transverse lines oblique; discal dot similar to forewing. Underside of fore and hind wings black or blackish. *Male*

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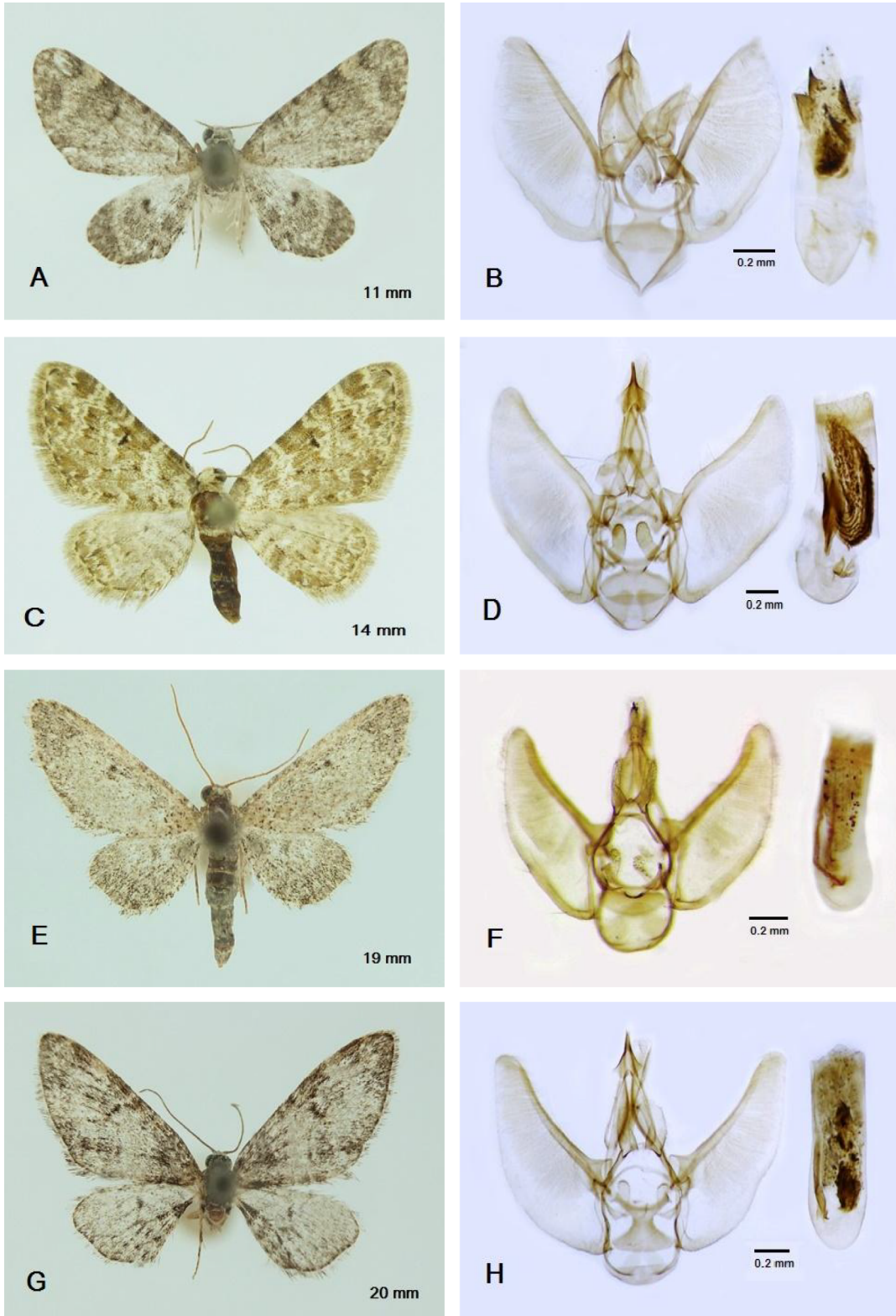


Figure 1. Adults and male genitalia of the species: A, B- *Eupithecia opistographata*; C, D- *Eupithecia brunneata*; E, F: *Eupithecia dearmata*; G, H- *Eupithecia marasa*.

genitalia: Uncus tight, longer than dorsal and biapical with ventral tip rounded. Valve small, equally pointed to narrowly rounded apex. Vinculum semicircular. Valve slightly longer than length of aedeagus. Vesica intensively surrounded by tiny spinules; armed with three short, pointed cornuti. Saccus V-shaped. *Female genitalia*: Unavailable.

Eupithecia brunneata Staudinger, 1900 (Figures 1C and 1D)

Syntype(s) ♂, ♀ (MNHU), Northern Mesopotamia [Turkey]: Mardin.

In Turkey, the distribution of *E. brunneata* has been known solely from Mardin Province (Koçak and Kemal, 2009). It has now been reported in Şirvan District (Siirt Province, SE Turkey), which is its second locality. It flies between altitudes of 600 and 1000 m during the spring months.

Distribution. Iran, Israel, and Turkey (Koçak, 1966–2016; Ratnasingham and Hebert, 2007).

Material. Siirt, Şirvan, 56♂♂ 25♀♀: 14♂♂ 5♀♀ Tahvan crossroad, 600 m, 26.04.2013; 10♂♂ 3♀♀ Bağcılar crossroad, 750 m, 04.06.2011; 3♂♂ 2♀♀ Nergizli, 650 m, 24.05.2012; 1♀ Şirvan city, 1000 m, 4♀♀ 19.05.2012; 29.05.2013; 29♂♂ 10♀♀ Kırtepe, 850 m, 10.05.2013 (slide no. Gp361♂).

Eupithecia dearmata Dietze, 1904 (Figures 1E and 1F)

Syntypes 7♂♀ (MNHU), Mesopotamia [Turkey]: Mardin (Manisadjian).

E. dearmata was described from Mardin Province (southeastern Turkey) by Dietze in 1904. It is also known from North and Central Africa. In the present paper, the species is reported from Siirt as a second provincial record in Turkey. This species inhabits the edges of rivers with *Quercus* and *Paliurus* plant species.

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- Distribution.** Turkey, Algeria, Chad, Tunisia (Koçak, 1966–2016).
- Material.** Siirt, 2♂♂ Akyamaç, 700 m, 05.06.2015 (slide no. Gp2015-69♂).
- Eupithecia marasa* Wehrli, 1932 (Figures 1G and 1H)
- Syntypes 3♂♂, 1♀ (ZFMK; not traced), [Turkey]: Taurus [Toros Daglari], Marasch [Maras], 600–900 m.
- Until recently, this species was known only from the type locality in the Taurus Mountains, Kahramanmaraş Province, Turkey. The second record of this very rare species in the world is in Siirt Province, southeastern Turkey. It shows activity in May at 1250 m a.s.l. in oak woodlands.
- Distribution.** Turkey.
- Material.** Siirt, Şirvan: 1♂ Akgeçit crossroad, 1250 m, 01.05.2013 (slide no. Gp369♂).
- Studies on the Lepidoptera fauna of southeastern Turkey cannot be executed at the desired level due to ongoing security problems in the area. We hope that with the end of these events, the number of Lepidoptera species will increase with research in the field, and we are certain that many new species and new records will be discovered in the future.
- With this study, the number of *Eupithecia* species has risen from 112 (Koçak, 2014) to 113 in Turkey and from 11 species (Koçak and Kemal, 2009; Seven, 2014) to 15 in Siirt Province. Hopefully, these results may improve knowledge about their distribution areas.
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