

Short paper

Eidophasia messingiella (Fischer von Röslerstamm, 1840) (Lepidoptera, Plutellidae), a new genus and species from Iran

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Abstract: The genus *Eidophasia* Stephens, 1840 and *E. messingiella* (Fischer von Röslerstamm, 1840) are newly reported for the fauna of Iran. They were identified based on three and one specimens collected in Kordestan and Tehran Provinces, respectively. Taxonomic characterization of the species, as well as figures of the adult female, collecting data map, and both male and female genitalia are briefly described and illustrated.

Keywords: *Eidophasia messingiella*, distribution, new record, Iran

Introduction

The genus *Eidophasia* Stephens, 1840 with 12 known species worldwide belongs to the family Plutellidae (Zagulyaev, 1981; Dugdale *et al.*, 1998; Baraniak and Sohn, 2015; Sohn and Baraniak, 2016). Members of this genus are heterogeneous in morphology (Baraniak and Sohn, 2015) and restricted to the Holarctic Region (Kyrki, 1984, 1990; Baraniak and Sohn, 2015, 2016). No synapomorphic character has been proposed for *Eidophasia* (Baraniak and Sohn, 2015); however, as stated by Weber (1938) and Zagulyaev (1981), this genus can be distinguished by the following characters: the presence of a long and dense tuft of piliform scales on the second segment of the labial palpe directed downward and forward; partially clubby antennae due to clustered scale cover; veins M_3 and Cu_1 in the hind wing which are connate or at least very close together and rarely very short-stalked; vein M_2 in the hindwing which is more or less straight and

continues almost parallel to M_1 ; and base of veins R_2 and Cu_2 in the forewing which are at the same level or R_2 much closer to base of wing. Their larvae feed on the plants of Brassicaceae (Zagulyaev, 1981).

So far, only two species of the family Plutellidae, namely *Plutella xylostella* (Linnaeus, 1758) and *Rhigognostis annulatella* (Curtis, 1832) have been reported from Iran (Christoph, 1873, 1876-1877; Toll, 1947; Amsel, 1949; Wieser *et al.*, 2001; Koçak and Kemal, 2014).

While sorting out the Yponomeutoidea specimens of the Lepidoptera collection of the Hayk Mirzayans Insect Museum (HMIM), four *Eidophasia* specimens were found. Three of them were collected in Kordestan Province by the author and only one specimen was collected in Tehran Province. All of them were identified as *E. messingiella*. The genus and species are newly reported for the fauna of Iran.

Materials and Methods

The examined specimens were collected using light trap. The genitalia dissection followed that of Robinson (1976). Terminology for genitalia is taken from Klots (1970) and Razowski

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(2008). Photographs were taken using a digital Still camera DSC-F717 and a Dino-Eye Microscope Eye-piece camera. Collecting data map of the species was prepared using the software ARCGIS, Version 10.5.0.6491. The examined material is deposited in the Hayk Mirzayans Insect Museum (HMIM), Iranian Research Institute of Plant Protection (IRIPP).

Results

Eidophasia messingiella (Fischer von Röslerstamm, 1840)

Figures 1A-D

Material examined: Kordestan Prov.: 1 ♀, Sarvābād- Marivān Rd., 29 km. SE. Marivān, N 35°18'51.2", E 046°20'32.7", 1100 m, 1.VI.2012, Ālipanāh, Falsafi leg., 1 ♂ 1 ♀, Marivān, 2 km. E. Sardush vill., N 35°32'00.3", E 046°04'38.4", 1419 m, 2.VI.2012, Ālipanāh, Falsafi leg.; **Tehrān Prov.:** 1 ♂, Damāvand, Ābsard, 1900 m, 3.-7.VII.1978, Pāzuki, Sabzevāri leg.

Diagnosis. Female slightly larger than the male. Wingspan of the examined males \bar{X} = 12.15mm \pm 0.49 (n = 2) and that of the females \bar{X} = 13.30mm \pm 0.42 (n = 2); length of the forewing in males and females \bar{X} = 6.15mm \pm 0.21 (n = 2) and \bar{X} = 5.65mm \pm 0.21 (n = 2), respectively.

Antennae thickened over three-fourth of its length from the base due to erect chocolate brown covering scales which are more prominent in the females. Male and female similar in wing pattern: ground color of the forewing glossy dark brown with a light yellowish-cream transverse band behind the middle part of the wing (Fig. 1A) which in most of the specimens slightly widened towards the tornus, fringes same as the forewing. Hindwing paler than the forewing and without pattern (Fig. 1A), fringes same as the hindwing.

Male genitalia (Fig. 1C). Anal tube long, spindle-shaped, and membranous; socii slightly sclerotized and covered with elongated setae distally; saccus as elongated large triangle with extended apically rounded and finger-shaped tip, its length almost 0.5 times the length of valve; valve elongated, gradually widened

distally with rounded apex, ampulla absent; sacculus strongly sclerotized, its outer margin covered with moderate, scattered spinules which are slightly curved towards distal end and connected to series of short spinules at ventro-distal part of valve (Fig. 1C); phallus long and narrow, 1.1 times longer than the valve, slightly curved medially, without cornuti.

Female genitalia (Fig. 1D). Papillae anales short, wide, and covered with thin setae; Apophyses posteriores and anteriores relatively short and slender, the latter slightly curved; sternite IX with clear paired setose rounded humps; antrum cup-shaped, sclerotized, slightly shorter than the length of apophyses posteriores, and relatively wide; ductus bursae narrow and short (slightly shorter than corpus bursae); copulatrix bursae oval and membranous, signum absent.

Distribution. Most parts of Europe (including Austria, Belgium, Bosnia and Herzegovina, Britain Isles, Bulgaria, Croatia, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Greek mainland, Hungary, Italian mainland, Latvia, Lithuania, Luxembourg, Macedonia, Norwegian mainland, Poland, Romania, Slovakia, Sweden, Switzerland, The Netherlands, Serbia, Ukraine [Transcarpathia]); Asia Minor; Karelia, Caucasus, Transcaucasia, Turkestan, Siberia (Burmans, 1985; Zagulyaev, 1981; Karsholt and Nieuwerkerken, 2013); and Iran (Kordestan and Tehran Provinces (Fig. 1B)).

Host plants: *Cardaria draba* L., *Cardamine amara* L., *Cardamine pratensis* L. and *Lunaria rediviva* L. (De Prins and Steeman, 2018; Anonymous, 2018).

Biology: Young larvae bore through a shoot of their host plants and make holes in the leaves. Older larvae feed on the underside of leaves. Pupation takes place in open network cocoons on the food plants or in detritus on the ground (De Prins and Steeman, 2018). This species is univoltine, being attracted to light and flying in June to July (Kimber, 2018).

Remarks. As stated by Herrich-Schäffer (1853-1855), *E. messingiella* is comparable to *E. syenitella* (Herrich-Schäffer, [1854]) based on

two superficial similarities: a slim body and the presence of scale tuft on the second segment of the labial palpe. In contrast, Staudinger (1870) believed that *E. messingiella* was close to *E. infuscata* Staudinger [1871]1870 with only a

few minor differences from each other; however, Sohn and Baraniak (2016) showed that the latter two species were less closely related and differed in several considerable diagnostic characters.

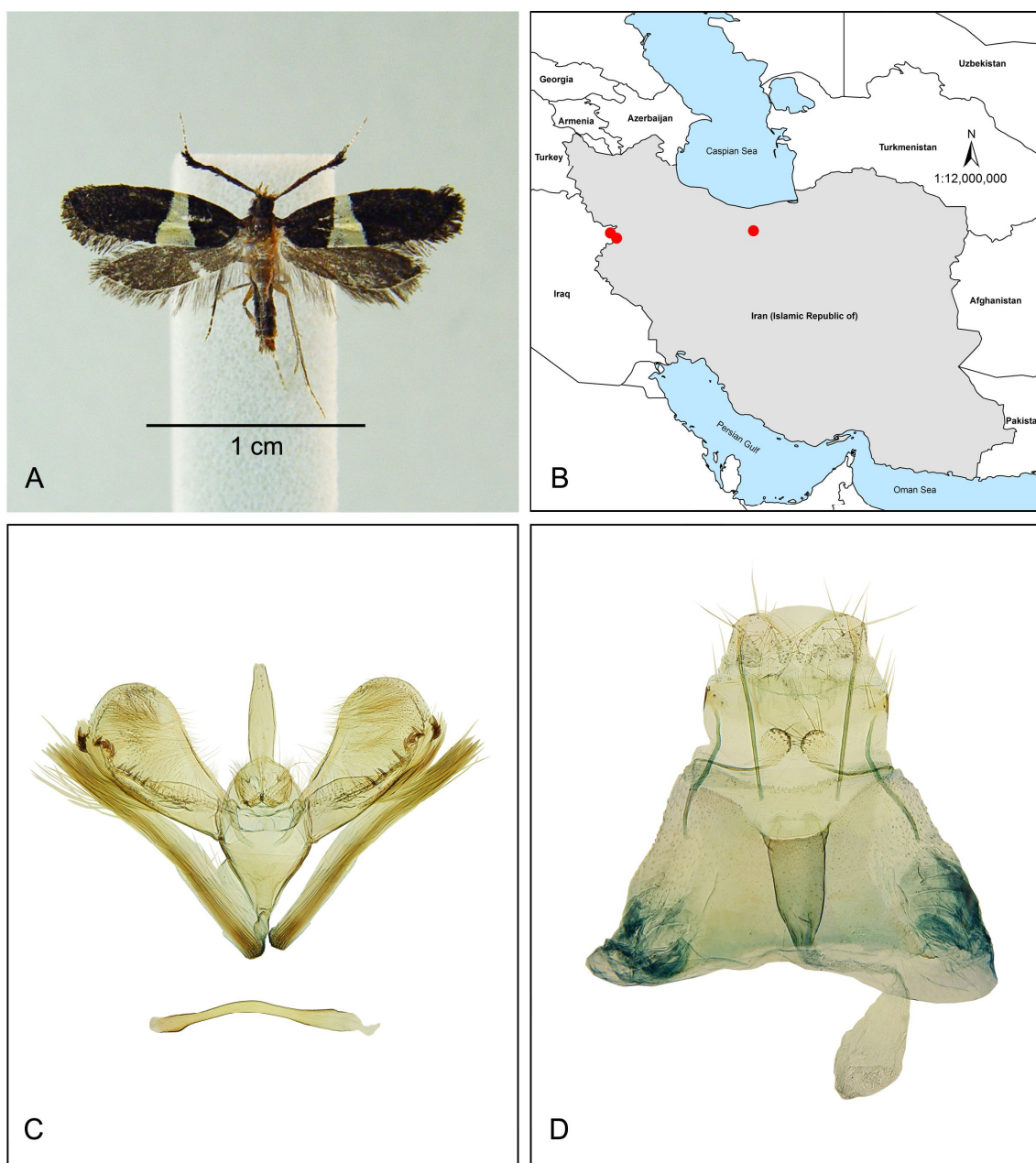


Figure 1 A-D. *Eidophasia messingiella* (Fischer von Röslerstamm). A. Adult female (dorsal view), B. Collecting data map in Iran (red circles), C. Male genitalia, D. Female genitalia.

A total of four specimens of this species were only and surprisingly found among the huge number of material deposited in the Lepidoptera collection of HMIM that were collected from most parts of Iran during the past 75 years. The examined specimens had been collected in the west and north of Iran (Fig. 1B); meanwhile, it is assumed that careful sampling in the northeastern and eastern parts of Iran may reveal the existence of *Eidophasia messingiella* in these parts of the country and extend its distribution towards the eastern Palaearctic. This species seems to be very rare in Iran on the basis of only a small number found from this study.

The genus *Eidophasia* and *E. messingiella* are newly reported for the fauna of Iran.

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***Eidophasia messingiella* (Fischer von Röslerstamm, 1840) (Lepidoptera: Plutellidae)**

گزارش جنس و گونه جدید برای ایران

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چکیده: جنس *Eidophasia* Stephens, 1840 و گونه *E. messingiella* (Fischer von Röslerstamm, 1840)

برای اولین بار از ایران گزارش می‌شوند. گونه *E. messingiella* بر مبنای سه نمونه جمع‌آوری شده از استان کردستان و یک نمونه جمع‌آوری شده از استان تهران شناسایی شد. در این مقاله این گونه به اختصار معرفی شده و تصاویر مربوط به نمونه بالغ ماده، محل‌های جمع‌آوری نمونه‌ها و اندام‌های تناسلی نر و ماده ارائه شده‌اند.

واژگان کلیدی: *Eidophasia messingiella*, پراکنندگی، گزارش جدید، ایران