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Short paper

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

**Helen Alipanah**

Iranian Research Institute of Plant Protection (IRIPP), Agricultural Research, Education and Extension Organization (AREEO), Tehran, Iran.

**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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* **Corresponding author**, e-mail: alipanah@iripp.ir
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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 ± 0.49 (n = 2) and that of the females $\bar{X}$ = 13.30mm ± 0.42 (n = 2); length of the forewing in males and females $\bar{X}$= 6.15mm ± 0.21 (n = 2) and $\bar{X}$ = 5.65mm ± 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 (Burmann, 1985; Zagulyaev, 1981; Karsholt and Nieukerken, 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





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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.

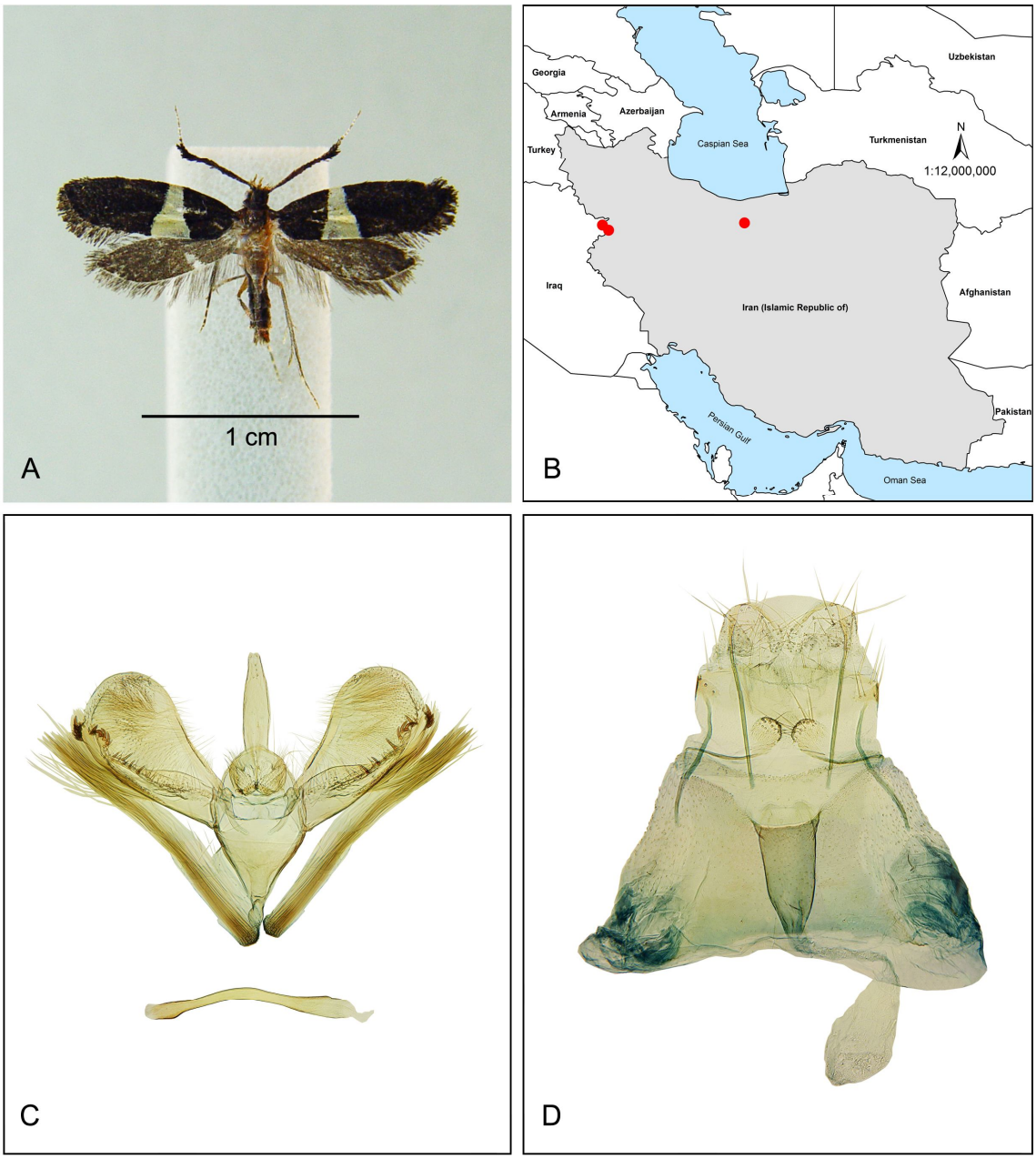


**Figure 1** A-D. *Eidophasia messingiella* (Fischer von Röslerstamm). A. Adult female (dorsal view), B. Collecting data map in Iran (red circles), C. Male genitalia, D. Female genitalia.





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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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**References**

Amsel, H. G. 1949. On the Microlepidoptera collected by E. P. Wiltshre in Irak and Iran in the years 1935 to 1938. Bulletin de la Société Fouad 1er d'Entomologie, 33: 271-351.

Anonymous, 2018. Lepiforum: Bestimmung von Schmetterlingen (Lepidoptera) und ihren Präimaginalstadien. Available at: http://www.lepiforum.de/lepiwiki.pl?Eidophasia_Messingiella (Accessed May 5th, 2018).

Baraniak E. and Sohn, J.-C. 2015. Redescription of *Eidophasia syenitella* (Herrich-Schäffer, [1854]) (Lepidoptera, Plutellidae). Zootaxa, 4057 (4): 585-589. http://dx.doi.org/10.11646/zootaxa.4057.4.9.

Baraniak, E. and Sohn, J.-C. 2016. Revised taxonomic status of *Eidophasia zukowskyi* Amsel, 1938 (Lepidoptera, Plutellidae) with first description of its male and female genitalia. Zootaxa, 4162 (1): 164-172. http://dx.doi.org/10.11646/zootaxa.4162.1.8.

Burmann, K. 1985. Beiträge zur Microlepidopteren-Fauna Tirols) VIII. Plutellinae (Insecta: Lepidoptera, Yponomeutidae). Ber. Nat.-med. Verein Innsbruck, 72: 223-230.

Christoph, H. T. 1873. Weiterer Beitrag zum Verzeichnisse der in Nord-Persien einheimischen Schmetterlinge. Horae Societatis entomologicae Rossicae, St. Petersbourg, 10: 3-55.

Christoph, H. T. 1876-1877. Sammelergebnisse aus Nordpersien, Krasnowodsk in Turkmenien und dem Daghestan. Horae Societatis entomologicae Rossicae, St. Petersbourg, 12: 181-299, pls. 5-8.

De Prins, W. and Steeman, C. 2018. Catalogue of the Lepidoptera of Belgium. Available at: http://www.phegea.org/Checklists/Lepidoptera/Lepmain.htm (Accessed May 5th, 2018).

Dugdale, J. S., Kristensen, N. P., Robinson, G. S. and Scoble, M. J. 1998. The Yponomeutoidea. *In*: Kristensen NP (Ed.), Lepidoptera, Moths and Butterflies. Vol. 1. Evolution, Systematics and Biogeography, Handbook of Zoology 4, Arthropoda: Insecta 35. Walter de Gruyter, Berlin & New York, pp.: 119-130.

Herrich-Schäffer, G. A. W. 1853-1855. Systematische Bearbeitung der Schmetterlinge von Europa, zugleich als Tekst und supplement zu Jacob Hubner's Sammlung europaischen Schmetterlinge, Funfter Band Die Schaben und Federmotten, 394 pp.

Karsholt, O. and van Nieukerken, E. J. 2013. Lepidoptera, Moths. Fauna Europaea version 2017.06. Available at: https://fauna-eu.org (Accessed May 2nd, 2018).

Koçak, A. O. and Kemal, M. 2014. Lepidoptera of Iran based upon the Info-system of the Cesa. Priamus Suppl., 31: 1-487.

Kimber, I. 2018. UK Moths. Available at: http://www.ukmoths.org.uk/ (Accessed May 2nd, 2018).

Klots, A. B. 1970. Lepidoptera. In: Tuxen, S. L. (Ed.), Taxonomist's Glossary of Genitalia in





[ DOR: 20.1001.1.22519041.2019.8.1.4.4 ]

Insects. Skandinavian University Books, Munksgaard, Copenhagen, pp: 115-129.

Kyrki, J. 1984. The Yponomeutoidea: a reassessment of the superfamily and its supergeneric groups (Lepidoptera). Entomologica Scandinavica, 15: 71-84. http://dx.doi.org/10.1163/187631284X00064 s.

Kyrki, J. 1990. Tentative reclassification of Holarctic Yponomeutoidea (Lepidoptera). Nota Lepidopterologica, 13: 28-42.

Razowski, J. 2008. Tortricidae (Lepidoptera) of the Palaearctic Region. Volume 1. General Part and Tortricini. Frantisek Slamka, Bratislava, Kraków, 152 pp.

Robinson, G. S. 1976. The preparation of slides of Lepidoptera genitalia with special reference to the microlepidoptera. Entomologist's Gazette, 27: 127-132.

Sohn, J.-C. and Baraniak, E. 2016. *Eidophasia infuscata* Staudinger, [1871] 1870, status nova [sic] with the first description of male and female genitalia (Lepidoptera: Plutellidae). SHILAP Revista de Lepidopterología, 44 (174): 259-264.

Staudinger, O. [1871] 1870. Beitrag zur Lepidopterenfauna Griechenlands. Horae Societatis Entomologicae Rossicae, 7: 3-304.

Toll, S. 1947. Beitrag zur Mikrolepidopterenfauna von Nordost-Persien. Zeitschrift der Wiener entomologischen Gesellschaft, 32: 107-116, pls. 4-6.

Weber, P. 1938. Zur Systematik der Plutellinae-Gattungen *Eidophasia* Stph. und *Plutella* Schrk. Aufstellung eines neuen Genusnamens Subeidophasia Wbr. (Mikrolepidopteren). Mitteilungen der Schweizerischen Entomologischen Gesellschatt, 17 (6): 217-220.

Wieser, C., Humer, P. and Stangelmaier, G. 2001. Schmetterlinge (Lepidoptera). *In*: Gutleb, B. and Wieser, C. (Eds). Nordiran. Ergebnisse einer Zoologischen Exkursion. Carinthia II (Klagenfurt), 192 (112): 52-81.

Zagulyaev, A. K. 1981. Yponomeutidae, Plutellidae. *In*: Medvedev GS (Ed.), Key to Insects of the European Part of USSR. Vol. 4. Lepidoptera. Part 2. Leningrad, Nauka, pp.: 359-397.



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# *Eidophasia messingiella* (Fischer von Röslerstamm, 1840) (Lepidoptera: Plutellidae)
# گزارش جنس و گونهٔ جدید برای ایران

**هلن عالی‌پناه**

مؤسسه تحقیقات گیاه‌پزشکی کشور، سازمان تحقیقات، آموزش و ترویج کشاورزی، تهران، ایران.
پست الکترونیکی نویسنده مسئول مکاتبه: alipanah@iripp.ir
دریافت: ۲۶ تیر ۱۳۹۷؛ پذیرش: ۱۶ دی ۱۳۹۷

**چکیده:** جنس *Eidophasia* Stephens, 1840 و گونـه *E. messingiella* (Fischer von Röslerstamm, 1840) برای اولین بار از ایران گزارش می‌شوند. گونه *E. messingiella* برمبنـای سـه نمونـه جمـع‌آوری شده از استان کردستان و یک نمونه جمع‌آوری شده از استان تهران شناسایی شـد. در ایـن مقالـه ایـن 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*، پراکندگی، گزارش جدید، ایران



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