

Eidophasia infuscata Staudinger, [1871] 1870, status nova with the first description of male and female genitalia (Lepidoptera: Plutellidae)

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Abstract

Eidophasia infuscata Staudinger from Greece, previously regarded as an infrasubspecies or a subspecies of *Eidophasia messingiella*, is proposed as a full species based on the differences in the coloration of the head, the forewing patterns, and the male and female genitalia. *Eidophasia infuscata* is reported from Turkey for the first time. The first descriptions of the genitalia of both sexes are provided for *E. infuscata*. A diagnostic summary is provided with illustrations for three similar congeners, *Eidophasia messingiella*, *E. infuscata*, and *E. albifasciata*.
KEY WORDS: Lepidoptera, Plutellidae, *Eidophasia infuscata*, redescription, taxonomy, Greece.

Eidophasia infuscata Staudinger, [1871] 1870, nuevo estatus con la primera descripción
de la genitalia del macho y de la hembra
(Lepidoptera: Plutellidae)

Resumen

Eidophasia infuscata Staudinger de Grecia, considerada hasta ahora como una infrasubespecie o una subespecie de *Eidophasia messingiella*, se propone como una nueva especie, basándose en las diferencias en la coloración de la cabeza, el diseño de las alas anteriores y las genitales del macho y de la hembra. *Eidophasia infuscata* se cita de Turquía por primera vez y se aportan las primeras descripciones de las genitales de ambos sexos. Se aporta también un diagnóstico de tres especies similares, *Eidophasia messingiella*, *E. infuscata* y *E. albifasciata*.
PALABRAS CLAVE: Lepidoptera, Plutellidae, *Eidophasia infuscata*, redescrpcion, taxonomía, Grecia.

Introduction

The plutellid genus *Eidophasia* currently comprises 11 species, most of which occur in the Holarctic Region (ROBINSON & SATTLER, 2001). Many species of *Eidophasia* are locally restricted, but one congener, *E. messingiella* (Fisher von Röslerstamm) is widespread across the Palearctic Region from Europe to Korea (SONH, 2012). *Eidophasia messingiella* include a few unique variations in the forewing patterns, some of which were considered as infrasubspecies (STAUDINGER, 1871; SCHILLE, 1907; CARADJA, 1920; DOETS, 1950). STAUDINGER (1871) noticed that *E. messingiella* from Greece differ from the conspecific populations from other European countries in the forewing median line. Regarding this difference, he described the Greek populations as a variety of *E. messingiella*, namely var. *infuscata*. FRIESE (1966) noted that the larvae of subspecies *infuscata* feed on *Aubretia*, differing from those of the nominal *messingiella* which feed on *Cardamine*. Despite these

differences, *Eidophasia messingiella* var. *infuscata* has never been regarded as a separate species from *E. messingiella* (ROBINSON & SATTLER, 2001).

The aims of this article are to clarify the taxonomic status of *Eidophasia messingiella* var. *infuscata* and to re-describe it with male and female genitalia. Diagnostic differences between three confusing species, *E. messingiella*, *E. infuscata*, and *E. albifaciata* Issiki, are provided.

Materials and methods

Specimens were obtained from the following institutions.

MNHU: Museum für Naturkunde, Berlin, Germany;

USNM: United States National Museum of Natural History, Washington, DC, USA;

ZMC: Zoologisk Museum, Copenhagen, Denmark;

ZSM: Zoologische Staatssammlung München, Munich, Germany.

Genitalia slides were prepared following CLARKE (1941), except that Chlorazol black was used for staining and Euparal resin for permanent mounting. Terms for genitalia follow KLOTS (1970). Verbatim label data are given for the lectotype of *Eidophasia messingiella* var. *infuscata*. The mark “|” in the label data indicates line breaks; additional information given by the present authors is provided in brackets. The ‘GSN’ stands for the genitalia slide number.

Systematic accounts

Eidophasia infuscata Staudinger, [1871] 1870, **stat. nov.** (Figs. 3-7, 10, 15)

Eidophasia messingiella var. *infuscata* Staudinger, [1871] 1870: 238. Type locality: Greece, Mount Parnassus [central Greece near Delphi, north of the Gulf of Corinth, elevation 2457 m, prominence 1590 m, coordinates 38° 32' 09"N, 22° 37' 27"E].

Eidophasia messingiella ssp. *infuscata*; Friese, 1966: 450.

Eidophasia messingiella; Meyrick, 1914: 48; Robinson & Sattler, 2001: 25.

Types: Lectotype (designated here): male, “Origin” [pink label], “Graecia | Kr.” [yellow label; hand-written], “Parnass | 12/5 66.” [hand-written], “ex coll. 5/5 | STAUDINGER”, “Zool. Mus. | Berlin” [pale yellow label], “U. Roesler | ♂ | GU: 5083”, “infuscala [sic] Sgr.” [hand-written with blue ink], deposited in MNHU. Paralectotypes (1 ♂, 3 ♀♀, 1 ex.): GREECE, Delphi, Mount Parnassus, 1 ♀, 12 May 1866, GSN: A 215; 1 ♂, 1 ♀, 13 May 1866; Macedonia, 1 ex., no date (Staudinger), all in MNHU.

Materials examined: GREECE, Peloponnese, Mts. Aroania (= Chelmos), 1400 m, 2 ♂♂, 10-VI-1958 (J. Klimesch), reared from *Aubrieta deltoidea* (= *A. intermedia*), GSN: SJC-715, coll. ZSM; Kalavryta, Zachlorou, 1 ♀, 13-30-VI-1958 (J. Klimesch), coll. ZSM; Central Macedonia, Litochoro, 300-400 m, 1 ♀, 14-22-VI-1957 (J. Klimesch), GSN: SJC-716, coll. ZSM; Macedonia, Thessaly, Mount Olympus, 700-2100 m, 1 ♂, 21-26-V-1990, coll. ZMC. TURKEY, Kazi Bell, Denizli, Mount Honaz, 1250 m, 1 ♂, 1 ♀, 9-VI-1964 (J. Klimesch), coll. ZSM.

Redescription: Head - Vertex and frons dark brownish gray or dark brown. Antenna 2/3 as long as forewing; scape dark brownish gray, with awning forward; flagellomeres dark brown, with denser scales on first five flagellomeres in males and all but last 9-10 flagellomeres in females; most of the remaining flagellomeres with white annulation distally. Labial palpus slightly upcurved to middle of frons; 1st segment dark brown dorsally, white ventrally, 1/2 as long as 2nd; 2nd segment as long as 3rd, dark brown, tinged with white ventrobasally, with dark brown, elongate-scale tuft ventrally; 3rd segment dark brown on outer surface, pale brownish gray on inner surface. Thorax - Patagium, tegula, and mesonotum dark brown. Fore- and midleg with coxa, femur and tibia dark brown; tarsomere dark brown, with a pale yellow ring distally. Hindleg with coxa and femur dark brownish gray; tibia pale brownish gray; tarsomere dark brown with a pale yellow ring distally. Forewing length 5.1-6.5 mm (n =

4), dark brown, densely irrotated with brownish gray scales after antemedian line; termen more oblique in female; antemedian line nearly straight, pale yellow, of variable width, depending on individuals, inner margin sharp, outer margin diffused to pale orange; fringe dark brown, tinged with brownish gray basally. Hindwing and fringe brownish gray. Abdomen - Tergites and sternites dark brownish gray.

Male genitalia (Figs. 5-6): Tegumen semi-elliptical, with a pair of processes ('teguminal process') on apical 1/4; teguminal process right-subtriangular, setose, with acute projection apically. Tuba analis 1.4x longer than tegumen, with weak subscapium. Valva obovate, setose, with dense setal zone around apex; costa slightly convex at basal 1/3; a semicircular lobe above sacculus with spiniform setae in variable size along ventral margin; sacculus curved medially, broadened in basal half, with two sets of spiniform setae distally, dorsal set comprising one large and several short spiniform setae, ventral set comprising four curved spiniform setae in variable size and several short ones; a row of long setae along the basal 2/3 of sacculus. Vinculum triangular; saccus short, narrowly round apically. Phallus slightly curved at middle, slightly broadened in distal 1/6, bulbous basally. Female abdomen VIII with a zone of swirling wrinkles anterolaterally; caudal margin of sternite emarginated medially.

Female genitalia (Fig. 7): Papilla analis broad, subtriangular, setose. Abdomen IX with long setae along posterolateral margin and a pair of setose lobes ventromedially. Apophysis posterioris 3.2x longer than apophysis anterioris. A pair of semicircular, shallow depressions above ostium bursae. Ductus bursae with conical antrum in posterior half, slender in anterior half; inception of ductus seminalis near antrum; bulla seminalis obovate, as long as corpus bursae. Corpus bursae elliptical, as long as antrum.

Distribution: Greece and Turkey.

Host plant: Brassicaceae, *Aubrieta deltoidea* (L.) DC.

Discussion

STAUDINGER (1870) noticed a few differences between *Eidophasia messingiella* and *E. infuscata*, including the coloration of the labial palpus, the ground color of the forewing, and the forewing patterns. My examination of additional specimens of *E. infuscata* revealed that the difference from *E. messingiella* in the forewing patterns is stable. The forewing median line of *E. messingiella* can be variable in width and continuity, but always has a sharp outer margin. In *E. infuscata*, the character is not present and instead, the outer margin of the forewing median line becomes gradually worn off. Further, the dark brown head of *E. messingiella* is tinged with pale brown along the lateral edges of the vertex. Differing from this, the vertex of the head of *E. infuscata* is entirely dark brown. More importantly, there are a few differences in the genital structures between *E. messingiella* and *E. infuscata* (Table 1). Regarding all these differences, both are better regarded as two distinctive species. Therefore, the records of *E. messingiella* from Greece (e.g. KARSHOL & RAZOWSKI, 1996) need to be reconsidered. Another congener, *E. albifasciata*, occurs in Japan and Korea (SOHN, 2012). The characters in the forewing patterns alone make it feasible to distinguish three species, *E. messingiella*, *E. infuscata*, and *E. albifasciata*. The genital features further support their distinctiveness as summarized in Table 1.

Table 1.— A summary of the genital character differences between *Eidophasia messingiella*, *E. infuscata*, and *E. albifasciata*.

Characters	<i>messingiella</i>	<i>infuscata</i>	<i>albifasciata</i>
Costa of valva (male)	nearly straight	convex at basal 1/3	convex at basal 1/3
Dorsal set of spiniform setae on distal end of sacculus (male)	not greatly variable in size (Figs. 8, 9)	including one very large spiniform setae (Fig. 10)	not greatly variable in size (Figs. 11, 12)
A lobe above sacculus (male)	semicircular (Figs. 8, 9)	semicircular (Fig. 10)	semielliptical (Figs. 11, 12)
Antrum (female)	long, cup-shaped (Figs. 13, 14)	conical (Fig. 15)	short, cup-shaped (Figs. 16-17)
Membranous part of ductus bursae (female)	narrow	narrow	slightly broad

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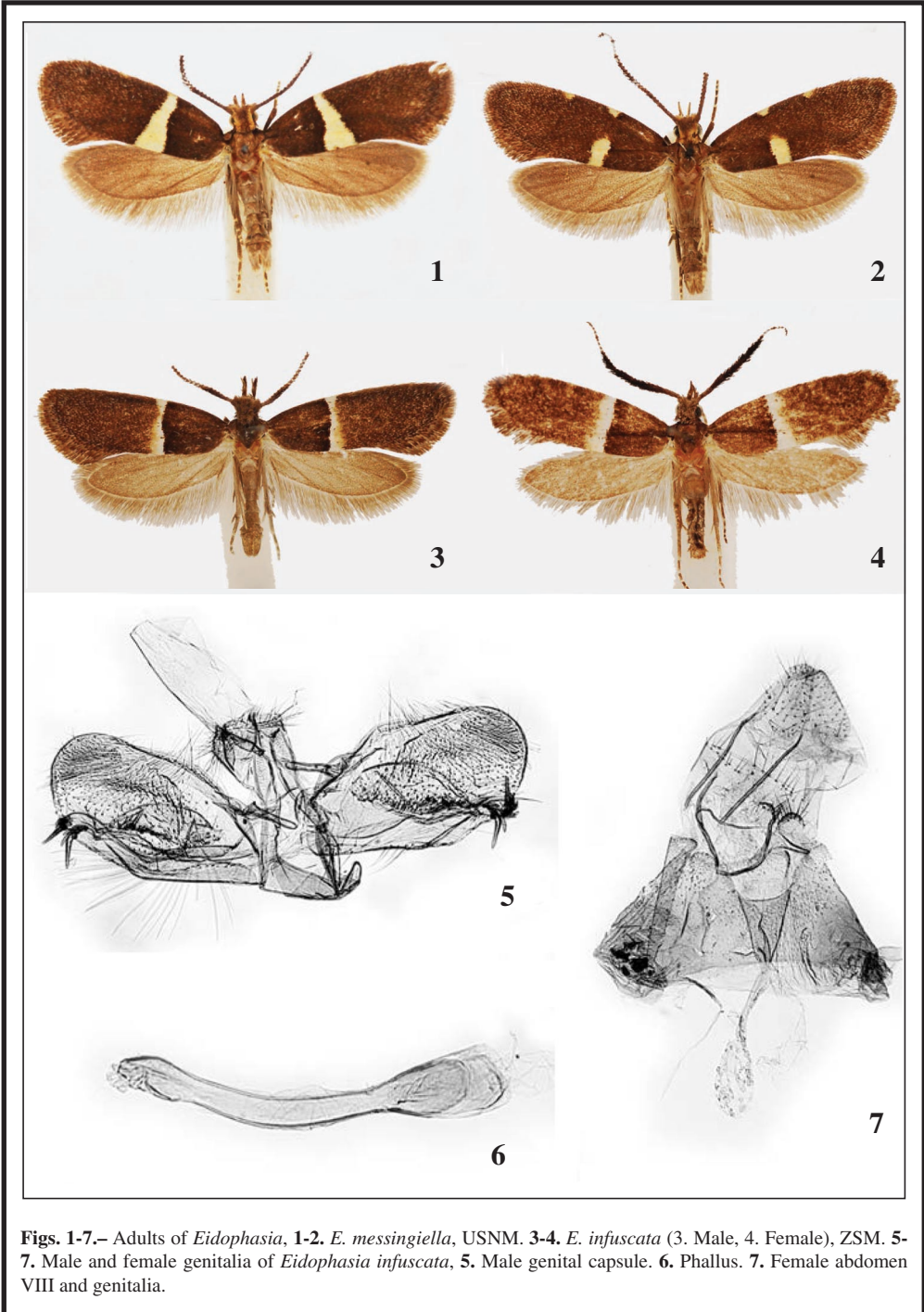
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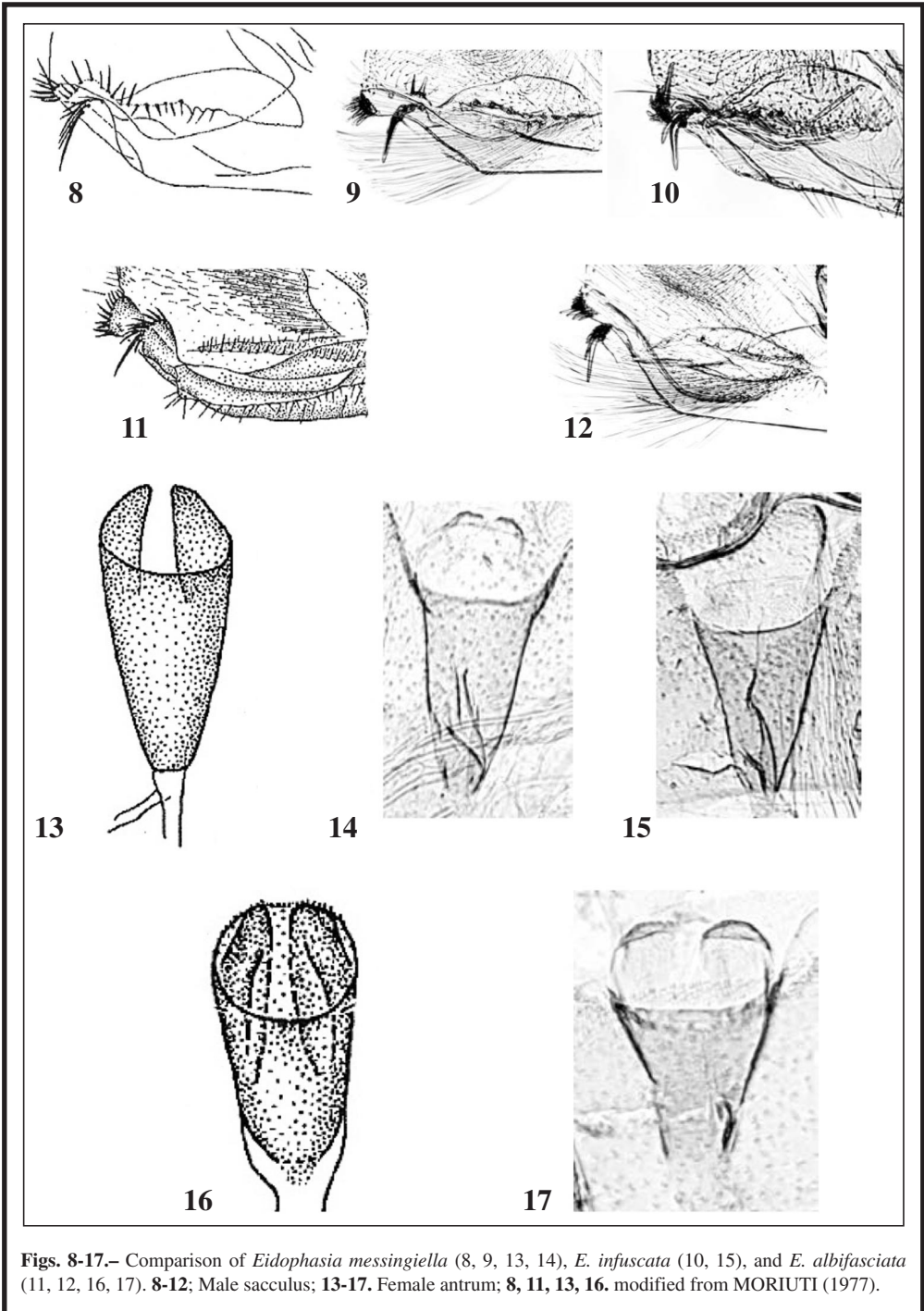
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Figs. 1-7.— Adults of *Eidophasia*, **1-2.** *E. messingiella*, USNM. **3-4.** *E. infuscata* (3. Male, 4. Female), ZSM. **5-7.** Male and female genitalia of *Eidophasia infuscata*, **5.** Male genital capsule. **6.** Phallus. **7.** Female abdomen VIII and genitalia.



Figs. 8-17.— Comparison of *Eidophasia messingiella* (8, 9, 13, 14), *E. infuscata* (10, 15), and *E. albifasciata* (11, 12, 16, 17). **8-12:** Male sacculus; **13-17:** Female antrum; **8, 11, 13, 16,** modified from MORIUTI (1977).