

REVIEW OF THE PALAEARCTIC SPECIES OF DIRHINOSIA
REBEL, 1905 (LEPIDOPTERA, GELECHIIDAE)

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The four Palearctic species of the gelechiid genus *Dirhinosia* REBEL, 1905 are reviewed. *D. trifasciella* REBEL, 1905 **syn. n.** is regarded as a junior synonym of *D. cervinella* (EVERSMANN, 1844). With figures of adults, male and female genitalia.

Key words: *Dirhinosia*, Gelechiidae, taxonomy, synonymy, Europe, Palearctic

INTRODUCTION

The small genus *Dirhinosia* belongs to insufficiently known and still unrevised groups of the Gelechiidae. It was described by REBEL (1905) from the female holotype of *Dirhinosia trifasciella* originating from Monastir, Bulgaria. Hitherto only four valid species of this genus have been recognized from the Palearctic region: *Dirhinosia unifasciella* (REBEL, 1929), *D. cervinella* (EVERSMANN, 1844), *D. nitidula* (STANTON, 1867) and *D. arnoldiella* (REBEL, 1905). These species have been collected in an area ranging from the southern zones of Central and Eastern Europe through the Balkan Peninsula and Asia Minor to the Middle East (Fig. 22).

The European checklist of Lepidoptera (KARSHOLT & RAZOWSKI 1996) includes two *Dirhinosia* species: *D. cervinella* (EVERSMANN, 1844) and *D. trifasciella* REBEL, 1905. However, according to the results of our investigation these species must be synonymised. Three specimens of *Dirhinosia arnoldiella* (REBEL, 1905) were collected by the second author in Greece over twenty years ago. These Greek specimens were initially considered to be a different species because of some peculiarities in the external appearance and male genitalia. After examining all available material of *arnoldiella* we concluded that the differences lie within the range of variability of the species. The species is a new European record.

Dirhinosia species are characterized by conspicuous forewing markings, consisting of either one or two white fasciae on a yellow-ochreous to red-brown ground colour, and distinctive genitalic characters, the males having a sacculus with neck-like upper part, and the females having a very long ductus bursae.

All *Dirhinosia* species have been little observed hitherto and no knowledge of their early stages is available.

EXAMINED MATERIAL

We have been able to check the type-material of all known species except the type-series of *D. cervinella* deposited in the Zoological Institute, St Petersburg. They have been kindly examined by Dr Alexandr Lvovsky at our request. Specimens of *Dirhinosia* species were obtained from the following museums, abbreviated as below: HNHM – Hungarian Natural History Museum, Budapest, Hungary, NHMW – Naturhistorisches Museum, Vienna, Austria, TLMF – Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria, TNHM – The Natural History Museum, London, UK, ZIAP – Zoological Institute, Academy of Sciences, St Petersburg, Russia, ZMUC – Zoological Museum, Copenhagen, Denmark.

TAXONOMY

Dirhinosia REBEL, 1905

Type species: *Dirhinosia trifasciella* REBEL, 1905

Description. Rather small to medium-sized gelechiids. Labial palpus long, recurved and slender. Antenna simple. Forewing slender to rather broad with one or two more or less striking fasciae. Colour and pattern are relatively variable. Hindwing rather broad with slightly emarginated termen before short apex.

Male genitalia. Uncus broad basally, triangular, pointed. Tegumen broad. Gnathos absent. Valva elongate, more or less broader medially. Sacculus broad, joined to with valva by narrow rib, with characteristic neck-like process. Saccus pointed, medium in size. Aedeagus long, broad basally, vesica with numerous minute cornuti.

Female genitalia. Papilla analis weakly sclerotized, apophysis posterior long or medium-sized. VIII abdominal segment simple, apophysis anterior shorter than or about as long as VIII segment. Ostium bursae elongate, distally with plicate rotund protrusion, more or less sclerotized and covered with fine spines. Ductus bursae extremely long with colliculum in distal part. Bursa copulatrix oval or egg-shaped, signum serrate, oval or round, with or without lobes.

Systematic position. According to the European checklist of Lepidoptera (KARSHOLT & RAZOWSKI 1996) the *Dirhinosia* group belongs to the subfamily Gelechiinae in the tribe Anomologini. It is placed between the groups of *Deltophora* JANSE, 1950, and *Ornativalva* GOZMÁNY, 1955. Some attributes in external appearance or genitalia characters of *Dirhinosia* species indicate that they are close to those of two other genera, *Aristotelia* HÜBNER, 1825 (discussed also by BIDZILYA & BUDASHKIN 1998) and *Chrysoesthia* HÜBNER, 1825.

Checklist

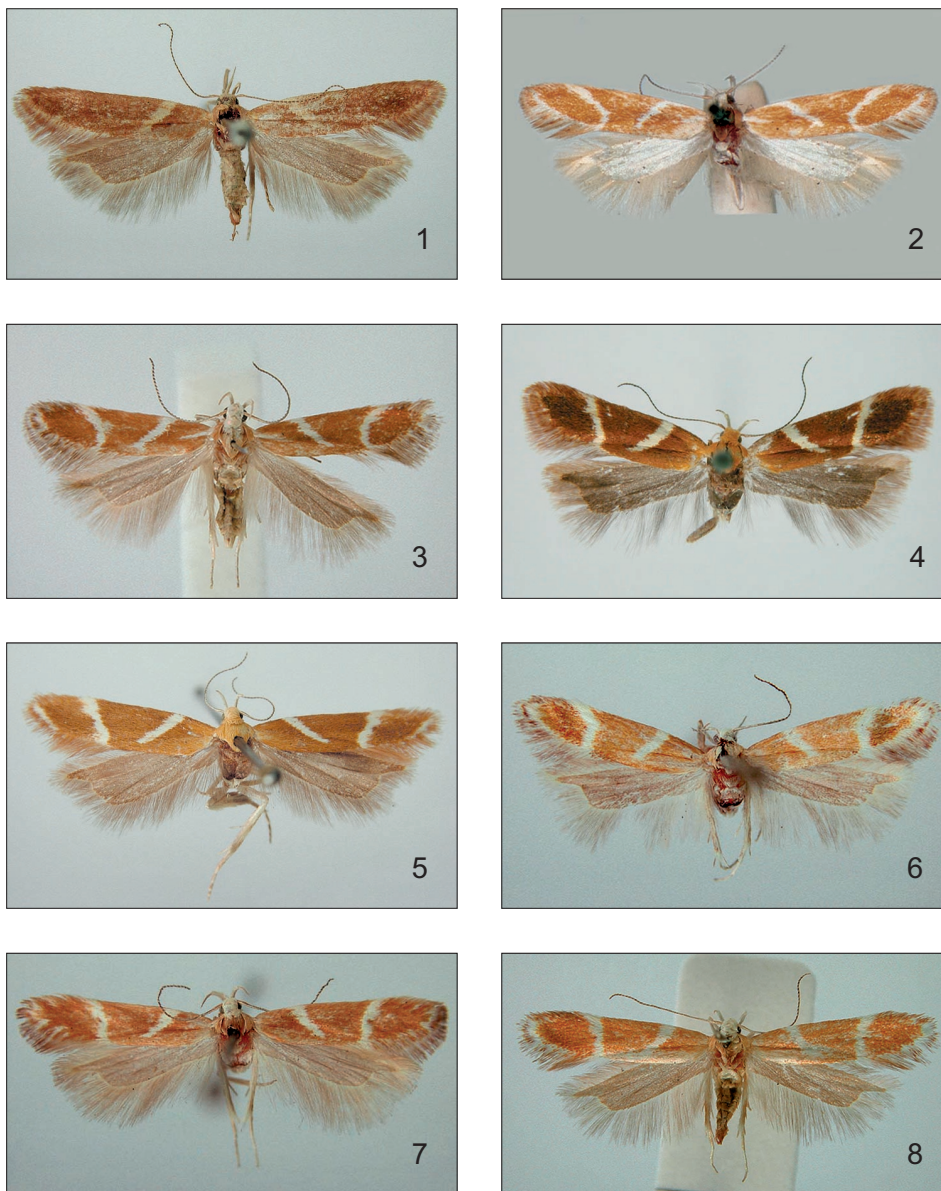
Dirhinosia REBEL, 1905*unifasciella* (REBEL, 1929)*cervinella* (EVERSMANN, 1844)*trifasciella* REBEL, 1905 **syn. n.***nitidula* (STANTON, 1867)*arnoldiella* (REBEL, 1905)

Key to species, based on external characters

- | | | |
|---|---|------------------------|
| 1 | Forewing with one fascia (Fig. 1) | <i>D. unifasciella</i> |
| – | Forewing with two fasciae | 2 |
| 2 | Forewing with basal longitudinal streak (Figs 2-3-) | <i>D. nitidula</i> |
| – | Forewing without basal longitudinal streak | 3 |
| 3 | Larger species, forewing length more than 15 mm, ground colour darker, ochreous-brown (Fig. 4) | <i>D. cervinella</i> |
| – | Smaller species, forewing length less than 13 mm, ground colour lighter, yellowish ochreous (Figs 5-8-) | <i>D. arnoldiella</i> |

Key to species, based on male genitalia

- | | | |
|---|---|------------------------|
| 1 | Sacculus process long, about the same length as sacculus base (Figs 9–10) | <i>D. nitidula</i> |
| – | Length of sacculus process markedly less than length of sacculus base | 2 |
| 2 | Valva tapering distally (Fig. 11) | <i>D. unifasciella</i> |
| – | Valva rounded distally | 3 |
| 3 | Valva relatively the same width throughout (Fig. 12) | <i>D. cervinella</i> |
| – | Valva more or less broadened in distal half (Figs 13–14) | <i>D. arnoldiella</i> |



Figs 1–8. Adults of *Dirhinusia* spp.: 1 = *D. unifasciella* (REBEL, 1929), Type ♂, Turkey, Ciftlik, 20–21.V.1928, coll. NHMW; 2 = *D. nitidula* (STANTON, 1867), lectotype ♂, Israel, Plains of Jordan, 1847, coll. TNHM; 3 = ditto, ♂, Turkey, Prov. Hatay, Iskenderun, 2–3.V.1993, coll. ZMUC; 4 = *D. cervinella* (EVERSMANN, 1844), ♀, Hungary, Gyöngyös, 20.VI.1999, coll. ZT; 5 = *D. arnoldiella* (REBEL, 1905), holotype ♂, Turkey, Erdschias, 6.VI., coll. NHMW; 6 = ditto, ♂, Greece, Monemvasia, 16.V.1979, coll. HNHM; 7 = ditto, ♂, Israel, Haifa, 8.V.1930, coll. NHMW; 8 = ditto, ♀, Turkey, Kizilcahaman, 23–24.VI.1969, coll. TLMF

Key to species, based on female genitalia

- | | | |
|----|--|------------------------|
| 1. | Signum with long wedge-shaped lobe (Figs 15–16) | <i>D. cervinella</i> |
| – | Signum without long lobes | 2 |
| 2. | Apophysis posterior about twice length of segment VIII (Fig. 17) | <i>D. unifasciella</i> |
| – | Apophysis posterior two and a half times length of segment VIII | 3 |
| 3. | Signum sub-oval with a distinct section not covered with spines (Figs 19–20) | <i>D. arnoldiella</i> |
| – | Signum kidney-shaped plate fully covered with spines (Fig. 21) | <i>D. nitidula</i> |

Dirhinosisia unifasciella (REBEL, 1929)

(Figs 1, 11, 17, 22)

Rhinosisia unifasciella REBEL, 1929: 204

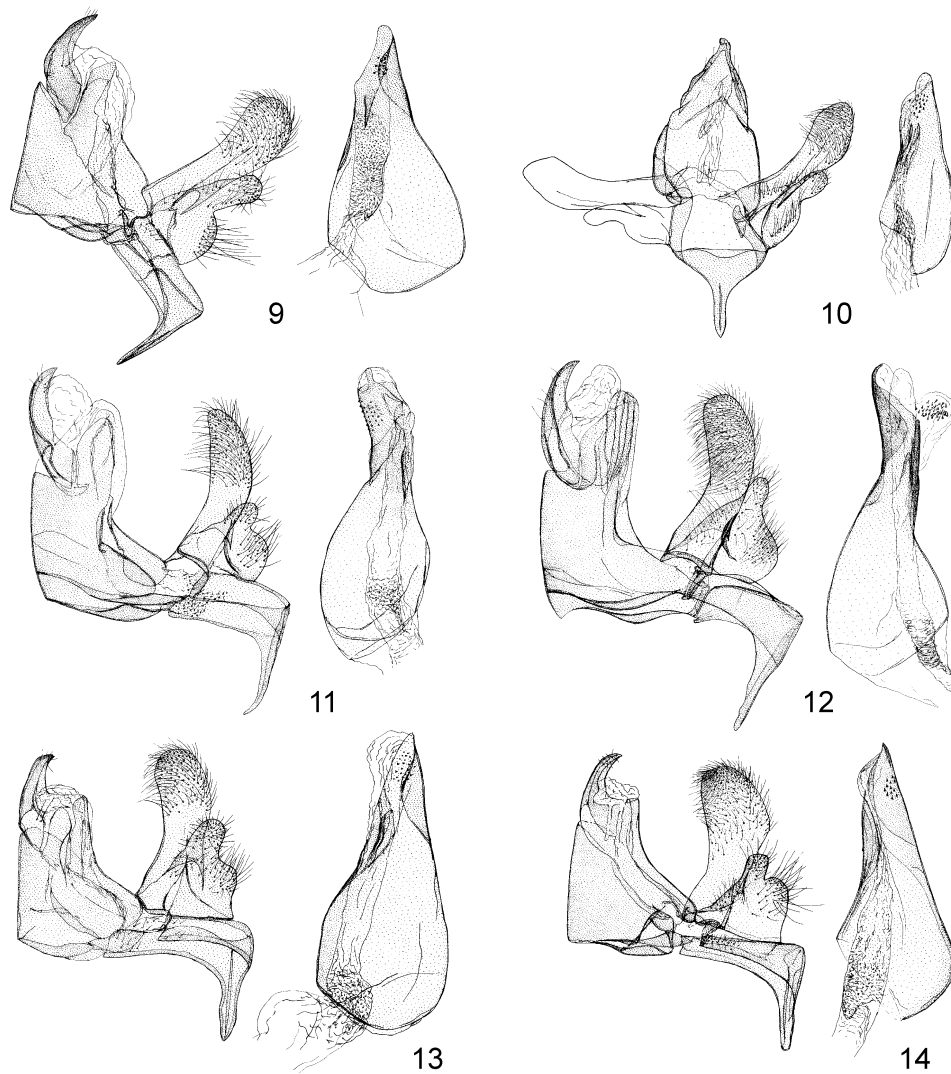
Type material examined. Turkey: ♂, labelled: “*Rhinosisia unifasciella* Rbl, Type, Asia min. c., Ak.-Ch.-Tschiftlik [Ciftlik], 20-21. V. [19]28, coll. Wagner”, gen. prep. no. 7443 ZT (coll. NHMW); ♀, labelled: ditto, gen. prep. no. 7444 ZT (coll. NHMW).

Description (Fig. 1). Wingspan: male 14 mm, female 16 mm. Head, thorax and tegula light ochreous. Labial palpus white, recurved. Apex of third segment mottled with light brown scales. Forewing ochreous brown, a single greyish white fascia with yellowish tint. Fascia oblique from 1/4 of costa toward 1/3 of dorsum, terminating just beyond fold. Fringe the same colour as forewing, with obscure fringe line. Hindwing light greyish brown. Male genitalia (Fig. 11). Uncus broad basally, triangular, pointed. Tegumen broad. Gnathos absent. Valva same width up to about 2/3 its length, upper part tapering towards apex. Sacculus under half length of valva, sacculus process short, about half-length of sacculus base. Saccus pointed, medium in size. Aedeagus long, broad basally, vesica with numerous minute cornuti.

Female genitalia (Fig. 17). Apophysis posterior about twice the length of segment VIII. Apophysis anterior approximately as long as VIII segment. Ostium bursae oval, covered with fine spines, distally with plicate rotund protrusion. Ductus bursae very long. Colliculum elongate, proximally omega-shaped. Bursa copulatrix rounded, signum oval plate with short lobe.

Biology. Host plant and early stages unknown. The only known specimens were collected in late May.

Distribution (Fig. 22). Only known from the type locality in central Turkey.



Figs 9–14. Male genitalia of *Dirrhinosia* spp.: 9 = *D. nitidula* (STANTON, 1867), Turkey, Gen. prep. No. 7290 ZT, coll. ZMUC; 10 = ditto, Lectotype, Israel, B. M. genitalia slide no. 12726, coll. TNHM; 11 = *D. unifasciella* (REBEL, 1929), Type, Turkey, gen. prep. no. 7443 ZT, coll. NHMW; 12 = *D. cervinella* (EVERSMANN, 1844), Turkey, gen. prep. no. 6947 ZT, coll. NHMW; 13 = *D. arnoldiella* (REBEL, 1905), Holotype, Turkey, gen. prep. no. 6946 ZT, coll. NHMW; 14 = ditto, Greece, gen. prep. no. 6896 ZT, coll. HNHM

Dirhinosisia cervinella (EVERSMANN, 1844)
(Figs 4, 12, 15, 16, 22)

Lita cervinella EVERSMANN, 1844: 585

Dirhinosisia trifasciella REBEL, 1905 **syn. n.**

Type material examined. Russia: Syntypes *Lita cervinella* EVM. (Lectotype not designated), 5 ♂♂, 3 ♀♀ (3 ♂♂ and 1 ♀ without abdomen), Spasskoe [Orenburskaya oblast], leg. E. EVERSMANN, teste A. LVOVSKY (coll. ZIAP).

Additional material examined. Bulgaria: "Holotype ♀ *Dirhinosisia trifasciella* Rebel, Rilo Monast[ir], 24.VII.1902, Rebel, teste K. Sattler, 1966, Mus. Vind. Gen. Pröp. 3435" (coll. NHMW); Pirin, Banderica, 1950 m, 26–30.VI.1986, leg. & coll. J. LIŠKA (det. G. ELSNER); Pirin, Liljanovo, 800 m, 23.VII.1933, 1 ♀, H. REISSER (coll. NHMW); Russia: "Ural, Tif. (?)", 30.VI.", 1 ♀; Turkey: "Mann, 1863, 1, Brussa [Bursa]", gen. prep. no. 6947 ZT (coll. NHMW); Hungary: Gyöngyös, Sár-hegy, 11.VI.1997, 1 ♀, 5.VI.1999, 1 ♀, 13.VI.1999, 2 ♂♂, 20.VI.1999, 1 ♀, leg. F. BUSCHMANN, gen. prep. ♂ no. 6942 L. GOZMÁNY, ♀ no. 6359 ZT (coll. HNHM & TOKÁR).

Description (Fig. 4). Wingspan: 16–18 mm. Head, thorax and tegula yellowish to ochreous brown. Labial palpus white, recurved. Apex of third segment more or less mottled with brown scales. Antenna brown ringed with white. Forewing ochreous brown, mottled with yellowish scales near base (worn specimens tend to become more uniform yellowish-brown). Two white fasciae. First fascia oblique from 1/4 of costa towards 1/2 of dorsum, ending beyond fold. Second fascia almost straight, from 3/4 of costa to 3/5 of dorsum. Several white spots near outer margin of wings, either absent or condensed into a narrow streak. Fringe coloured as forewing, with obscure lines. Hindwing brown to dark brown.

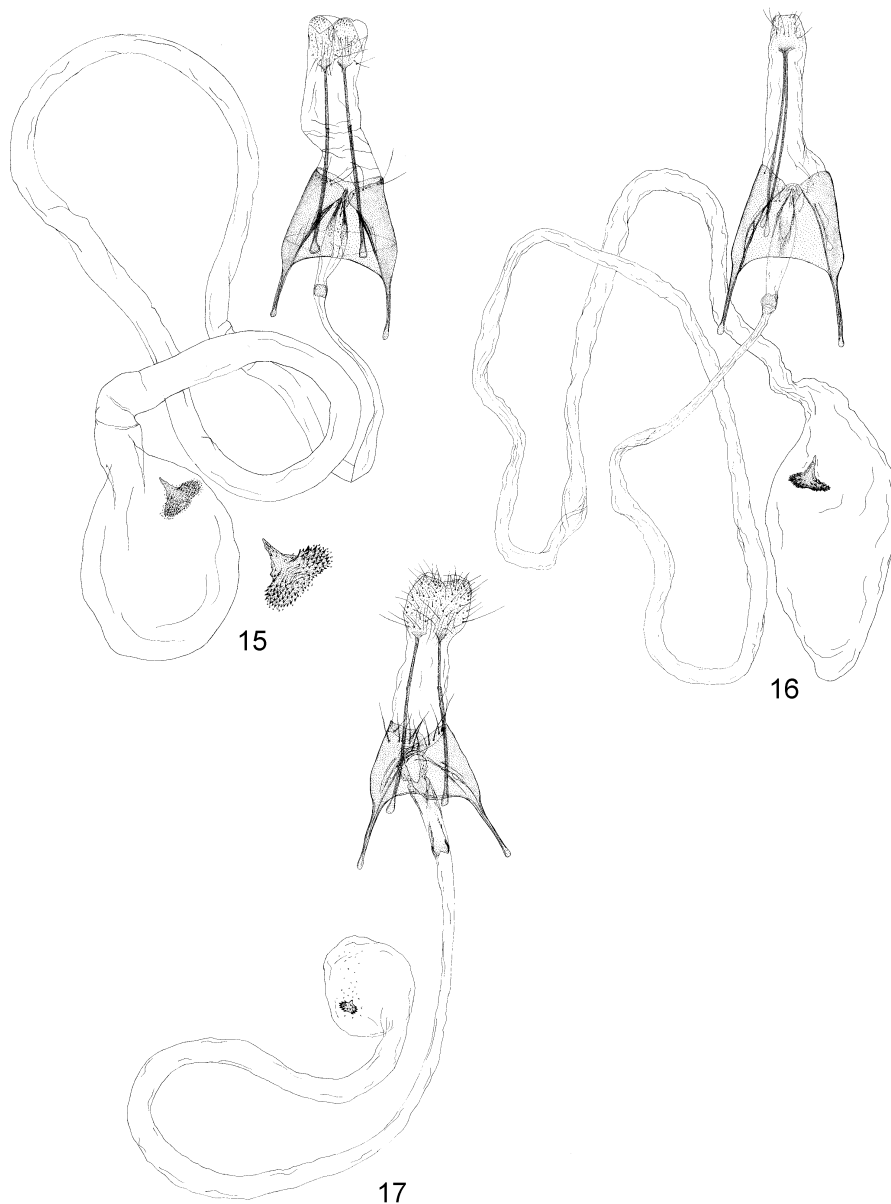
Male genitalia (Fig. 12). Uncus broad basally, triangular, pointed. Tegumen broad. Gnathos absent. Valva almost the same width throughout, rounded distally. Sacculus massive, exceeding half of valva, sacculus process short, about 1/3 length of sacculus base. Saccus pointed, medium in size. Aedeagus long, about as long as entire genitalia, base markedly broader than distal part, vesica with numerous minute cornuti.

Female genitalia (Figs 15–16). Apophysis posterior about twice the length of segment VIII. Apophysis anterior shorter than VIII segment. Ostium bursae elongate, covered with fine spines, distally with plicate rotund protrusion. Ductus bursae extremely long. Colliculum simple. Bursa copulatrix oval, signum oval, serrate plate with long pointed lobe.

Bionomics. Early stages and bionomics are unknown. Adults have been collected in June–July. Hungarian specimens were attracted by a petroleum lamp in a steppe locality of Mt Sár-hegy (Mátra Mts near Gyöngyös) (BUSCHMANN 2000).

Distribution (Fig. 22). Russia (Southern Ural, Lower Volga) (ANIKIN & PISKUNOV 1995), Ukraine (Luganskaya oblast) (BIDZILYA & BUDASHKIN 1998), Hungary, Bulgaria, Croatia (Dalmatia) (MEESS 1910), Turkey.

Remarks. *Dirhinosisia trifasciella* was described by REBEL (1905) from a single female originating from Bulgaria. We were able to examine the holotype whose genitalia are prepared on NHMW slide 3435. After examining this specimen, we considered that *D. trifasciella* and *D. cervinella* were identical. We sent a drawing of the holotype female genitalia to Dr ALEXANDR LVOVSKY at ZIAP for



Figs 15–21. Female genitalia of *Dirrhinosia* spp. 1 = *D. cervinella* (EVERSMANN, 1844), Hungary, gen. prep. no. 6359 ZT, coll. ZT; 16 = ditto (*D. trifasciella* holotype), Bulgaria, Mus. Vind. Gen. Pröp. 3435, coll. NHMW; 17 = *D. unifasciella* (REBEL, 1929), Type, Turkey, gen. prep. no. 7444 ZT, coll. NHMW; 18 = *D. arnoldiella* (REBEL, 1905), Turkey, gen. prep. no. 7793 ZT, coll. NHMW; 19 = ditto, Greece, gen. prep. no. 7446 ZT, coll. HNHM; 20 = ditto, Turkey, gen. prep. no. 7523 ZT, coll. ZMUC; 21 = *D. nitidula* (STANTON, 1867), Syria, gen. prep. no. 7795 ZT, coll. NHMW

comparison with the type material of *cervinella* from the EVERSMANN collection. He confirmed our view that the female genitalia of syntypes of *cervinella* are conspecific with those of *trifasciella*. The first record of *Dirhinosisia cervinella* in Central Europe (Hungary, Gyöngyös) was identified mistakenly as *Chionodes lugubrella* (FABRICIUS, 1794) (BUSCHMANN 2000). *D. cervinella* resembles *lugubrella* externally, but the ground colour of the forewing of the latter is dark brown without any yellowish or reddish tinge.

Dirhinosisia nitidula (STANTON, 1867)
(Figs 2, 3, 9, 10, 21, 22)

Gelechia nitidula STANTON, 1867: 44

Type material examined. Israel: Lectotype ♂, labelled: "Gelechia nitidula / St., Palestine, Plains of Jordan, Cambridge 1865, Tristram J. J. 1847, B. M. genitalia slide ♂ no. 12726, Walsingham Collection, 1910–427" (coll. TNHM).

Additional material examined. Turkey: Prov. Hatay, Iskenderun area, 2–3.V.1993, 0–600 m, 1 ♂, leg. O. KARSHOLT, gen. prep. no. 7737 ZT; Pamphylia, W of Alanya, 2–13. VI.1991, 1 ♂, leg. B. PETERSEN, gen. prep. no. 7290 ZT (coll. ZMUC); 20 km O v. Bingöl, 17.VI.1969, 1 ♂, leg. F. KASY; ditto, 3 ♂♂, leg. ARENBERGER, gen. prep. no. 7791 & 7792 ZT; Syria: 60 km NO v. Latakia [Lathqiyah], 1 ♀, leg. F. KASY & VARTIAN, gen. prep. no. 7795 ZT; Lebanon: O v. Saida [Sidon], 9–16.V.1963, 2 ♂♂, leg. F. KASY & VARTIAN, gen. prep. no. 7794 ZT (coll. NHMW).

Description (Figs 2–3). Wingspan: 11–13 mm; females slightly smaller than males. Head and thorax white mottled slightly with shiny ochreous scales. Antenna light brown to brown ringed with white. Tegula and forewing with a yellowish ochreous sheen. Two white fasciae and a longitudinal streak arising from base; the latter extending from costal base towards centre of first fascia but not reaching it. First fascia oblique, extending from 2/5 of costa to 1/2 of dorsum. Second fascia oblique, extending from 3/4 of costa to 2/3 of dorsum. White marginal dots at termen of wings continued to base of fringe. Hindwing light greyish-brown.

Male genitalia (Figs 9–10). Uncus broad basally, triangular, pointed. Tegumen broad. Gnathos absent. Distal part of valva dilated apically. Sacculus exceeding half length of valva, sacculus process long, about as long as sacculus base. Saccus pointed, medium in size. Aedeagus long, broad basally, vesica with numerous minute cornuti.

Female genitalia (Fig. 21). Apophysis posterior long, about 2.5 times the length of segment VIII. Apophysis anterior a little shorter than VIII segment. Ostium bursae elongate, distally with plicate rotund protrusion, covered with fine spines. Ductus bursae very long. Colliculum very close to ostium bursae. Bursa copulatrix oval, signum a kidney-shaped plate completely covered with spines.

Bionomics. Early stages and bionomics unknown. Adults have been collected in May–June.

Distribution (Fig. 22). Israel, Syria, Lebanon, Turkey.

Remarks. STAINTON (1867) suggested in his description (p. 45) that the unnamed species noted by ZELLER in the "Isis" of 1847, p. 36, is the same species as *Dirhinosisia nitidula*.

Dirhinosisia arnoldiella (REBEL, 1905)
(Figs 5–8, 13, 14, 18–20, 22)

Rhinosisia arnoldiella REBEL, 1905: 212.

Type material examined. Turkey: Holotype ♂, labelled: "Rhinosisia arnoldiella Rbl, Type, Erdschias [Erciyes Dagi], Asia min., Penther leg., 6.VI.", gen. prep. no. 6946 ZT (coll. NHMW)

Additional material examined. Israel: Haifa, 8.V.[19]30, 1 ♂, leg. H. G. AMSEL, gen. prep. no. 6945 ZT (coll. NHMW); Karmel, 7.V.1930, leg. H. G. AMSEL (coll. HNHM) (without abdomen); Turkey: Ankara, Kizilcahaman, 952 m, 23–24.VI.1969, 1 ♂, leg. F. HAHN, gen. prep. no. 7447 ZT;

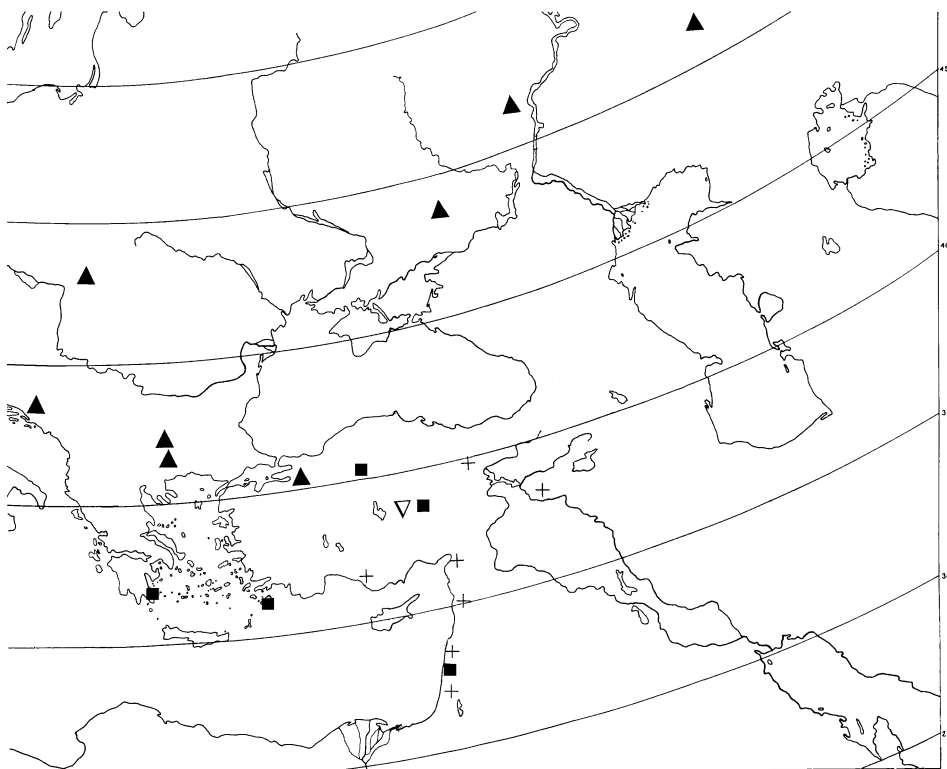


Fig. 22. Geographical distribution of *Dirhinosisia*-species. ▽ = *D. unifasciella* (REBEL, 1929), ▲ = *D. cervinella* (EVERSMANN, 1844), + = *D. nitidula* (STAINTON, 1867), ■ = *D. arnoldiella* (REBEL, 1905)

ditto, 1 ♀, gen. prep. no. 7524 ZT (coll. TLMF); ditto, 1 ♀, leg. G. FRIEDEL, gen. prep. no. 7523 ZT; ditto, 1200 m, 1.VII.1987, 1 ♂, leg. M. FIBIGER, gen. prep. no. 7291 ZT (coll. ZMUC); ditto, 925 m, 19.VI.–6.VII.1965, 1 ♀, leg. M. & W. GLASER, gen. prep. no. 7793 ZT (coll. NHMW); Greece: Lakonia, Monemvasia, 7 km S, 16.V.1979, 1 ♂, leg. L. GOZMÁNY & G. CHRISTENSEN, gen. prep. no. 6896 ZT; ditto, 10.V.1979, 1 ♀, 26.V.1979, 1 ♀, gen. prep. no. 7446 ZT (coll. HNHM); Rhodos, Kalithea, 4.VI.1982, 1 ♂, leg. F. SCHEPLER, gen. prep. no. 7445 ZT (coll. ZMUC).

Description (Figs 5–8). Wingspan: 11–13 mm. Head white to slightly greyish white. First third of antenna greyish white, remainder dark brown ringed with white scales. Thorax, tegula and forewing yellowish ochreous, dull shiny, worn specimens with more yellowish colour. First fascia oblique from 1/3–1/4 of costa to 2/5 (almost to 1/2) of dorsum, more or less straight, slightly tapering toward dorsum. Second fascia extending from 3/4 of costa to 3/5 of dorsum, weakly curved inwards, wider than first fascia. A line along termen, sometimes reduced to dots or even obsolete except at apex. Hindwing light greyish brown to brown.

Male genitalia (Figs 13–14). Uncus broad basally, triangular, apex pointed. Tegumen broad. Gnathos absent. Valva reaching or slightly exceeding uncus, more or less broader in distal half. Sacculus process from 1/3 to 1/2 length of sacculus base. Small depression may occur between process and base. Saccus medium in size, pointed. Aedeagus broad basally. Vesica with numerous minute cornuti.

Female genitalia (Figs 18–20). Apophysis posterior long, about 3 times the length of segment VIII. Apophysis anterior about the same length as segment VIII. Ostium bursae elongate, covered with fine spines, distally with plicate rotund protrusion. Ductus bursae very long. Distal part of ductus bursae with sclerotized colliculum. Bursa copulatrix round, signum sub-oval with a distinct section not covered with spines.

Bionomics. Early stages and bionomics of the species unknown. Adults have been collected in May–July. The type specimen was collected at an altitude of 1100 m. The Greek specimens from Monemvasia were collected at UV light-trap between 21–23 hours. AMSEL (1935) observed that the species was not rare in a locality at Karmal (Israel).

Distribution (Fig. 22). Israel, Turkey, Greece.

Remarks. Small differences exist in genitalia of the males (shape of sacculus and valva) (Figs 13–14) and females (distance between ostium and colliculum) (Figs 18–20) of specimens from known localities. However, after investigation of all available material of the species we assume that these differences are within a variability of the species. The genitalia of the Greek male from Monemvasia (Fig. 14) with a slightly different shape of sacculus might be a result of a singular deformation or mutation. Our assumption may change or be confirmed when more material becomes available and the bionomics of the species in various habitats becomes known.

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Acknowledgements – We are indebted to our colleagues for the loan or donation of material and for information: Mr FERENC BUSCHMANN (Jász Múzeum, Jászberény, Hungary), Mr GUSTAV ELSNER (Prague, Czech Republic), Dr PETER HUEMER (TLMF, Innsbruck, Austria), Mr OLE KARSHOLT (ZMUC, Copenhagen, Denmark), Mr ANDRÁS KUN (HNHM, Budapest, Hungary), Dr

MARTIN LÖDL (NHMW, Vienna, Austria), Dr ALEXANDR LVOVSKY (ZIAP, St Petersburg, Russia) and Mr GABRIEL PASTORÁLIS (Komárno, Slovak Republic).

Our thanks are also due to Dr KEVIN R. TUCK (TNHM, London, UK) for sending us the genitalia slide of the lectotype of *D. nitidula*, to Dr ERIC VAN NIEUKERKEN (National Museum of Natural History Naturalis, Leiden, The Netherlands) for taking photographs of the lectotype (we acknowledge the copyright of the photograph as belonging to the Trustees of the TNHM, used here with permission), to Mr FRANTIŠEK SLAMKA (Bratislava, Slovak Republic) for producing colour photographs of the rest of the species and for helpful technical assistance and to Mr ROBERT HECKFORD (Plympton, UK) who kindly corrected the language.

We are particularly grateful to Mrs NIKI GOULANDRIS (Goulandris Natural History Museum, Kifissia, Greece), who financed the second author's stay and field work in Monemvasia, Greece.

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Revised version received April 23, 2004, accepted August 19, 2004, published September 15, 2004