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Symmoca deprinsi sp. nov. and *Amselina olympi* from Asia Minor (Lepidoptera: Symmocidae)

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László Gozmány

Samenvatting. *Symmoca deprinsi* sp. nov. en *Amselina olympi* uit Klein-Azië (Lepidoptera: Symmocidae)
Uit de provincie Antalya (Turkije) wordt *Symmoca deprinsi* sp. nov. beschreven. Tevens raakte uit dezelfde streek een tweede exemplaar bekend van *Amselina olympi* (Gozmány, 1957).

Résumé. *Symmoca deprinsi* sp. nov. et *Amselina olympi* d'Asie mineure (Lepidoptera: Symmocidae)
Une espèce nouvelle, *Symmoca deprinsi* sp. nov., est décrite de la province d'Antalya (Turquie). Dans la même localité, un deuxième exemplaire de *Amselina olympi* (Gozmány, 1957) fut découvert.

Zusammenfassung. *Symmoca deprinsi* sp. nov. und die Neuentdeckung von *Amselina olympi*, in Kleinasien (Lepidoptera: Symmocidae)
Aus die Provinz Antalya (Türkei) wird *Symmoca deprinsi* sp. nov. beschrieben. Am gleichen Ort wurde das zweite Exemplar von *Amselina olympi* (Gozmány, 1957) entdeckt.

Key words. Lepidoptera – Symmocidae – *Symmoca deprinsi* sp. nov. – *Amselina olympi* Gozmány, 1957 – Turkey – Asia Minor – faunistics

Gozmány, Dr. L.: Hungarian Natural History Museum, Department of Zoology, Baross utca 13, H-1088 Budapest, Hungary.

Introduction

W. De Prins has very kindly submitted some Symmocid specimens for identification; they were captured in the mountainous regions of Asia Minor. Besides several specimens of *Amselina cedestiella* (Zeller, 1868) and *A. emir* (Gozmány, 1961), both nearly ubiquitous in Asia Minor, the material contained a hitherto unknown species of the genus *Symmoca* Hübner, [1825], and an equally important male specimen of *Amselina olympi* Gozmány, 1957.

Symmoca deprinsi **sp. nov.** (plate 1, figs. 1–3)

Holotype ♂, Turkey: Asia Minor: "Turkey St 1988 Antalya 1500 m, Palaz Dağı NE Akseki 18.VII.1994 H.v.Oorschot, H.v.d.Brink, D.v.d.Poorten, W.de Prins" slide 6946 Gozmány. Deposited in Institute for Systematics and Population Biology, Zoological Museum, Amsterdam.

Paratypes 1♂, 1♀, with the same data, slide ♀ 6949 Gozmány, deposited in Institute for Systematics and Population Biology, Zoological Museum, Amsterdam and in the Hungarian Natural History Museum.

Description. Wingspan: 17 mm (♂) and 19 mm (♀).

♂: Antenna white with some yellowish suffusion; labial palp lighter, whitish; head white forward, becoming slightly suffused yellowish; thorax slightly dirty yellowish-white. Forewing ground colour dirty white, yellowish towards all margins, cellular dot, plical dot, discocellular dots minute, all coffee brown, some occasionally absent (paratype ♂), cilia pale yellowish white. Hindwing shiny sericeous white, cilia very slightly yellowish white.

♀: uniformly yellowish, of a deeper tint than in male, head and thorax also slightly greyish, pattern consisting of merely 1–2 light brownish scales.

Male genitalia (fig. 1): base of appendix broad, free part relatively short, about ¾ of valval width, pointed; sacculus long, straight, but terminal part strongly falcate, slender, pointed, reaching valval costa or even middle of appendix; transtillar lobe 3–4× longer than wide; aedoeagus half as long and half as wide as valva, with a group of 7–8 straight, spiniform cornuti.

Female genitalia: unfortunately severely damaged, not interpretable.

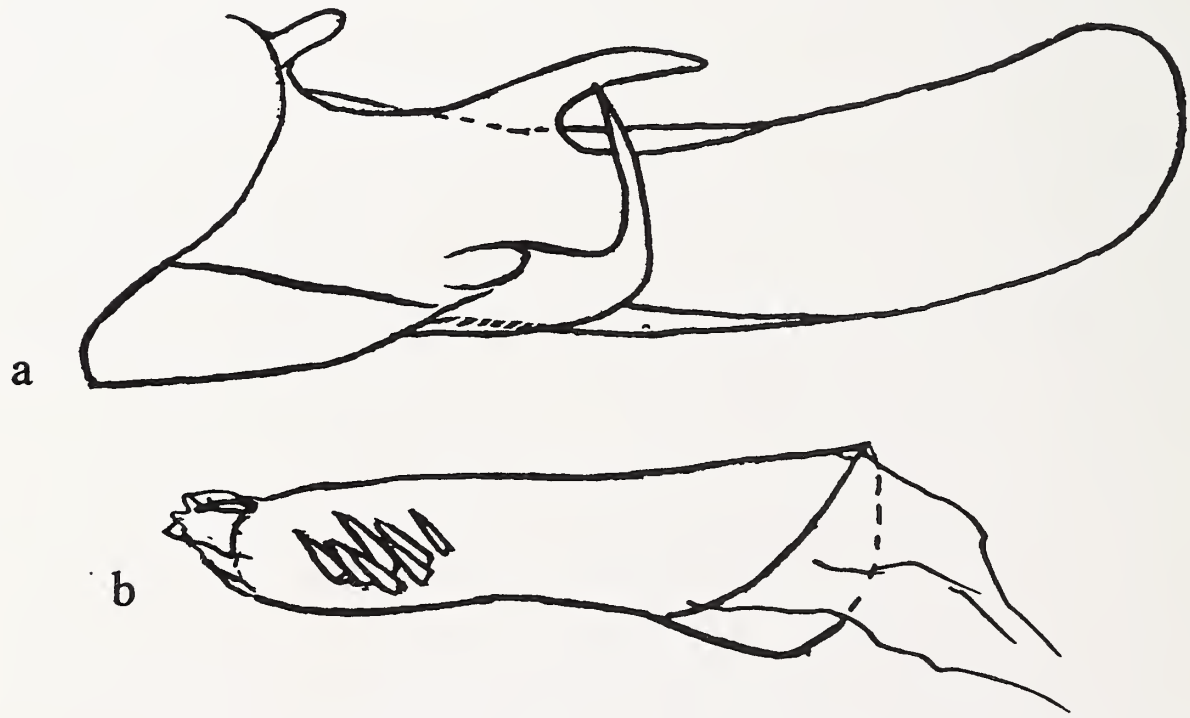

Figure 1: *Symmoca deprinsi* **sp. nov**. Holotype ♂ a.– right valva, b.– aedoeagus (at higher magnification).

Plate 1

Figures 1–3. *Symmoca deprinsi* sp. nov. 1.– holotype ♂, Turkey, Antalya, Palaz Dağı NE Akseki, 18.VII.1994. 2.– paratype ♀, same data. 3.– labels of holotype.

Figure 4. *Amselina olympi* (Gozmány, 1957), second known specimen (a male), Turkey, Antalya, Palaz Dağı NE Akseki, 18.VII.1994 (Photographs by courtesy of A. Kun).

The new species is genitally nearest to *Symmoca attalica* Gozmány, 1957, but in that species the appendix is slightly curved caudad, the head of the sacculus points towards the outer third of the appendix, the transtillar lobe is only as high as wide, the pattern is more heavily outlined, often appearing as widened transverse stripes containing the characteristic dots, ochreous not yellowish. Very similar male genitalia are found in *Symmoca profanella* Zerny, 1936, but the aedoeagus contains many more cornuti in that species, the forewing ground colour is ochreous brown and the species inhabits Morocco.

Etymology: this species is dedicated to Mr. W. De Prins, excellent lepidopterist and long-standing and esteemed friend.

Amselina olympi (Gozmány, 1957) (plate 1, fig. 3)

The genus *Amselina* was based on the type-species *Symmoca olympi* Gozmány, 1957 (cf. Gozmány 1957: 337) originating from Bolu in "Bithynia", NE of the Uludağ or Anatolian Mt. Olympus. Only the holotype specimen was known, despite numerous collecting trips made in Asia Minor, one of the favourite regions of European lepidopterists, especially during the last fifty years. Indeed, I occasionally doubted the specific status of the specimen – could it be an aberrative or perhaps a teratological specimen of *Amselina cedestiella*, common in Anatolia? However, all such doubts and hypotheses must now rest: a true *olympi* specimen was discovered in the material sent by W. De Prins. The male specimen was captured at "Antalya 1500 m, Palaz Daği NE Akseki 18.VII.1994" (slide 6948 Gozmány). A real coup to be proud of!

Acknowledgement

I am indebted to Mr. W. De Prins, of the group of Belgian and Dutch collectors, for the submission of his Symmocid material for identification.

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The status of some genera allied to *Chrysonotomyia* and *Closterocerus* (Hymenoptera: Eulophidae, Entedoninae), with description of a new species from Dominican Amber

Gumovsky, Alex V.

Samenvatting. De status van enkele genera verwant met *Chrysonotomyia* en *Closterocerus* (Hymenoptera: Eulophidae, Entedoninae), met beschrijving van een nieuwe soort uit Dominicaanse amber

De taxonomie van de genera verwant met *Chrysonotomyia* Ashmead en *Closterocerus* Westwood wordt besproken. Uit Dominicaanse amber (Mioceen) wordt een nieuwe soort beschreven: *Chrysonotomyia dominicana* n. sp. Een ander specimen, eveneens bewaard in Dominicaanse amber, blijkt te behoren tot het genus *Achrysocharoides* maar kan verder niet beschreven worden.

Résumé. Le statut de quelques genres alliés à *Chrysonotomyia* et *Closterocerus* (Hymenoptera: Eulophidae, Entedoninae), avec description d'une espèce nouvelle de l'ambre dominicain

La taxonomie des genres alliés à *Chrysonotomyia* Ashmead et *Closterocerus* Westwood est discutée. Une espèce nouvelle, trouvée dans de l'ambre dominicain (Miocène), est décrite: *Chrysonotomyia dominicana* n. sp. Une deuxième espèce, également incluse dans de l'ambre dominicain, semble appartenir au genre *Achrysocharoides*, mais ne peut pas être décrite plus en détail.

Key words: ***Chrysonotomyia dominicana* sp. n. – *Chrysonotomyia* – *Closterocerus* – *Entedon* – *Ladna* – *Mangocharis* – *Asecodes* – *Eulophus* – *Achrysocharis* – *Neochrysocharis* – *Hispinocharis* – *Achrysocharella* – *Pediobius* – *Achrysocharoides* – *Emersonella* – *Pleurotroppopsis* – *Eprhopalotus* – Dominican amber**

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Preface

Chalcidoid wasps (Hymenoptera: Chalcidoidea) represent a group rather poorly known from the fossils. The amber inclusions are probably the only source for such fossil data because of minute size and weak body sclerotization of these insects.

There are many reasons for the comparatively modest progress in this area: poor condition of the amber samples, minute diagnostic characters not visible in amber specimens, poor representation of the chalcids in amber fossils (in comparison with other groups of insects), to list some.

The most comprehensive data were published by Yoshimoto (1975) who listed Torymidae, Ormyridae, Tetracampidae, Chalcididae, Perilampidae, Eurytomidae, Pteromalidae, Eupelmidae and Agaonidae from Canadian ambers. Rasnitsyn (1980) mentioned Torymidae from the Taimyr amber (Russia). More attention was paid to the description of fossil chalcids from ambers in the recent years (for instance, Grissell 1980, Darling 1997 etc.).

The only record of the amber Eulophidae is a reference to *Entedon* sp. from Dominican amber (Bouček & Askew 1968). Identification of these chalcid wasps is still rather difficult despite the serious attention devoted to their systematics in the last years. In part this can be explained by the imperfectness in entedonine diagnoses. This paper deals, in particular, with amelioration of some generic diagnoses and discovery of two specimens of Entedoninae (Hymenoptera: Eulophidae) found during our study of the Dominican amber collection of the Natural History Museum, London (BMNH). One specimen represents a new species which belongs to one of the genera discussed below.

Discussion

The genera *Chrysonotomyia* Ashmead, *Ladna* Bouček, *Asecodes* Förster and *Closterocerus* Westwood have never been properly compared to each other (with partial exception of the revision of Schauff (1991), but this comparison was based on rather superficial characters used in the diagnoses of some of these genera). It is interesting that taxonomical status of the genera (except *Ladna*) was discussed often in the same paper, but without or with rather brief mutual comparison (Hansson 1994a, 1994b, 1995, 1996).

Eulophus auripunctata Ashmead, 1894 was removed into the newly described genus *Chrysonotomyia* by Ashmead (1904). There were no clear generic characters for the genus, and Bouček (1977) proposed synonymy of *Achrysocharis* Girault and *Chrysonotomyia* Ashmead and mentioned 2-segmented funicle and 3-segmented clava as key characters. This concept was accepted so far for the genus *Chrysonotomyia* (Bouček & Graham 1978, Bouček 1988, Hansson 1990, Schauff 1991, etc). *Closterocerus* and *Chrysonotomyia* had been supposed to be the synonyms till Hansson discovered them to be separate genera, and placed *Achrysocharis* under synonymy with *Closterocerus* (Hansson 1994b, 1996).

Hansson (1994b, 1995) regarded the genus *Chrysonotomyia* as separate from both *Closterocerus* and *Neochrysocharis*, while it has been misinterpreted and confused with two latter ones for a long period. The same author (1994a) characterized this genus by the well delimited clypeus; occiput without vertical furrow or weak fold between occipital margin and foramen magnum; midlobe of the mesoscutum with one pair of setae; well advanced axillae, forewing with two hairlines radiating from the stigmal vein, bare radial cell; transverse petiole and gaster being broadly attached to the propodeum. Since many of these characters vary within certain genera (in *Closterocerus* and *Asecodes*, in particular: Hansson 1996), the well delimited clypeus and midlobe of mesoscutum with one pair of setae, were of most phylogenetic importance.

The genus *Closterocerus* has been characterized mainly by the wing coloration and flattened antennae (Graham 1959, 1963, Bouček 1988, Schauff 1991) till Hansson showed these characters to be variable and moved most species treated previously in *Chrysonotomyia* into *Closterocerus* (Hansson 1994b). *Neochrysocharis* was supposed to be a sister group to *Closterocerus* (in having 2-segmented funicle and 3-segmented clava), but differing in straight or

almost straight trans-epimeral suture (curved in *Closterocerus*, Hansson 1990, 1994b, 1995). This character works poorly in large series of specimens, and its application for the separation purposes requires careful treatment.

The genus *Teleopterus* was synonymised with the genus *Asecodes* by Hansson (1996) as having subtorular grooves and complete occipital median furrow. The degree of the expression of the latter is varying even within certain species, so that it also requires very careful treatment as a generic character.

Fig 1. *Chrysonotomyia picta* (Bouček), comb. n., ♀ paratype (BMNH), a.– habitus, b.– head.

The genus *Ladna* was described by Bouček (1988) for the single species *picta* from Australia (Fig. 1a–b). There were no exact apomorphies proposed for this monotypic genus. Surekha and Narendran (1992) described a second species, *L. bengalica*, from India. I have not seen the type of the latter, and it is not quite clear from the description whether this species was placed in the proper genus.

It was Hansson (1996) who emphasized the role of the subtorular grooves in the systematics of Entedoninae. Presence of these grooves was recorded as a diagnostic character for the genus *Asecodes*, supporting monophyly of this genus (Hansson 1996). It was mentioned that these grooves are also present in some *Chrysoharis*, but there were no records of any other genera having this character.

A special attention was paid by me to this character when studying the phylogeny of the World entedonine genera. I have found that these grooves are present in some other genera of Entedoninae and can not be used for their separation from each other. There are certain differences between the subtorular grooves in *Asecodes* and *Closterocerus* (Fig. 2, 3). In the "true" *Asecodes* these grooves represent a continuation of the scrobal grooves (Fig. 2), while in the "true" *Closterocerus* these grooves are stretching downwards from the bottom of the antennal toruli (Fig. 3).

Fig. 2. *Closterocerus turcicus* (Nees), comb. n. (formerly places in the genus *Asecodes*), face; st– subtorular grooves.

The occipital groove (incomplete in *Asecodes* and missing or poorly visible in *Closterocerus*, according to Hansson 1995) and the structure of the sensory pore on the male scape (restricted to a small apicoventral group on the scape in *Closterocerus* [rare within Entedoninae] and situated along the major part of the ventral edge of the scape [more common] in *Asecodes*) were used for separation of these genera (Hansson 1996, etc.).

The genus *Hispinocharis* was described by Bouček (1988) for *Achrysocharella orientalis* Ferrière, 1933. Then Ikeda and Kamijo (1993) described another species, *H. nigrescens*. This genus was characterized mainly by two-segmented antennal funicle and deeply channeled posterior notauli. In regard to the grooves on the face, it was stated "frontal grooves X-shaped, as in *Pediobius*, also lower face as in that genus" (Bouček 1988). Subtorular grooves were not mentioned for this genus, although they are present in both described species (type materials studied).

Fig. 3. *Closterocerus* sp., face; st–subtorular grooves.

The genus *Mangocharis* (Fig. 4) was described by Bouček (1986) for a single species *longiscapus* reared from leaf galls of *Procontarinia matteianna* Kieffer & Cecconi (Cecidomyiidae) on the mango tree *Mangifera indica* L. The main character separating this genus from the closest *Closterocerus* and *Neochrysocharis* was the elongate scape (rather long in male, Fig. 3b, and reaching above the median ocellus in female, Fig. 3a).

Both, *Mangocharis* and *Hispinocharis*, differ from *Asecodes*+*Closterocerus* in rather quantitative (number of funicular joints and length of scape) or subtle (delimitation of posterior notauli) characters. However, both genera represent a monophyletic lineage with *Asecodes*+*Closterocerus*+*Neochrysocharis* in possessing the subtorular grooves.

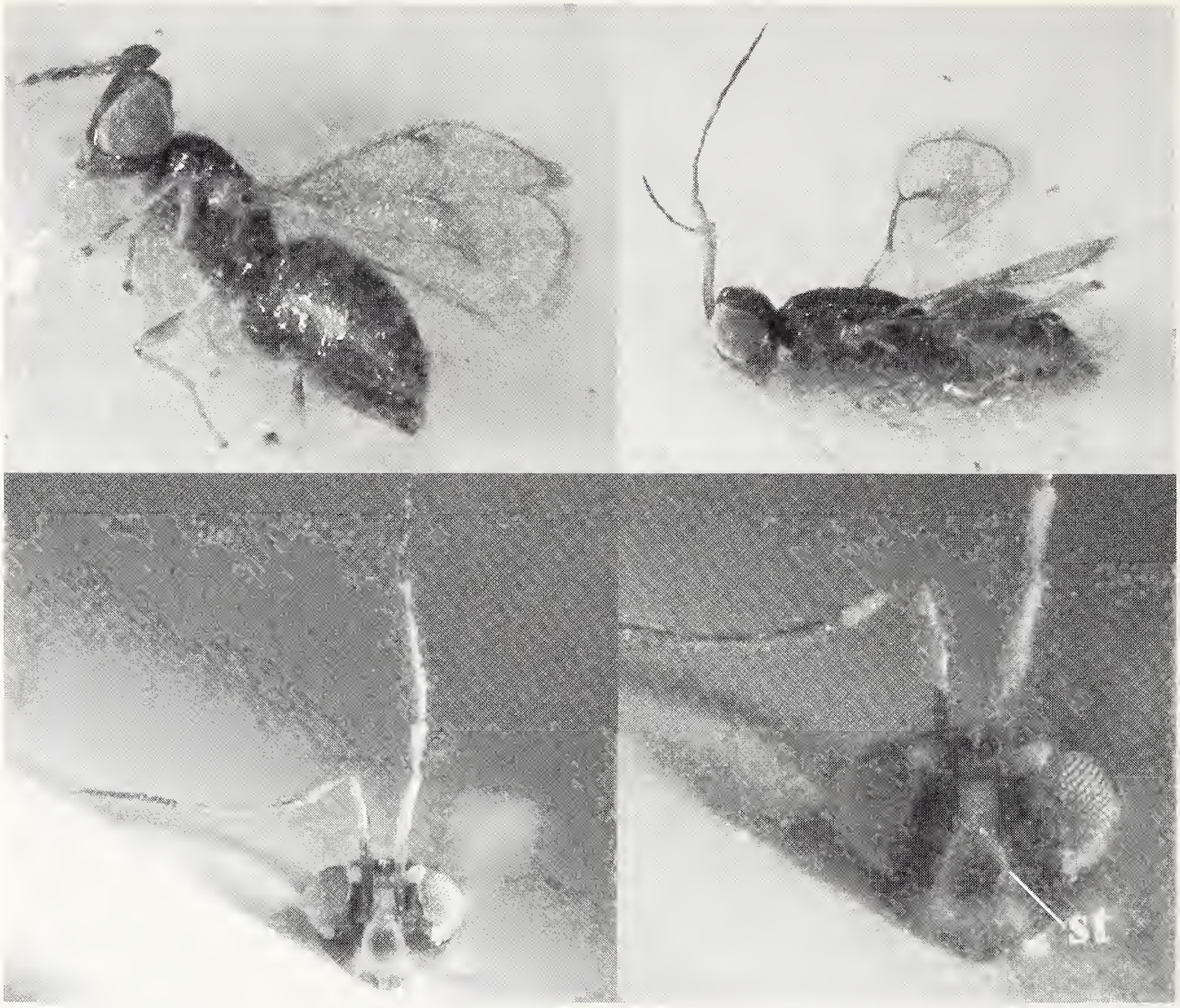

Fig. 4. *Closterocerus longiscapus* (Bouček), comb. n., habitus: a.– ♀; b.– ♂; c–d ♂ face ; st– subtorular groove.

The genus *Chrysonotomyia* (Figs. 5–8) is clearly separable from both *Asecodes* and *Closterocerus* in having delimited clypeus (Fig. 6, 8, cly). The genus *Ladna* was not characterized by the subtorular grooves, but rather by the delimited clypeus; however, this delimitation is hard to see. For a long time this genus was characterized by three-segmented antennal clava (Graham 1959, 1963, Bouček 1988, Schauff 1991, Trjapitzin 1978), so that many species were described in this genus erroneously. However, occasionally this placement was correct, for example, in the case of *Ch. postmarginaloides* (Saraswat) (Figs. 7, 8). This species has both subtorular grooves and delimited clypeus, the unique combination for *Chrysonotomyia*.

Careful study of paralectotypes of *Chrysonotomyia auripunctata* (Ashmead) (BMNH) and paratype of *Ladna picta* Bouček (BMNH, Fig. 1) led me to the conclusion of synonymy for these two genera. Although the subtorular grooves are not so clear in *L. picta*, they are visible in special light.

Fig. 5. *Chrysonotomyia* sp., face; scg–scrobal groove, fs–frontal sulcus.

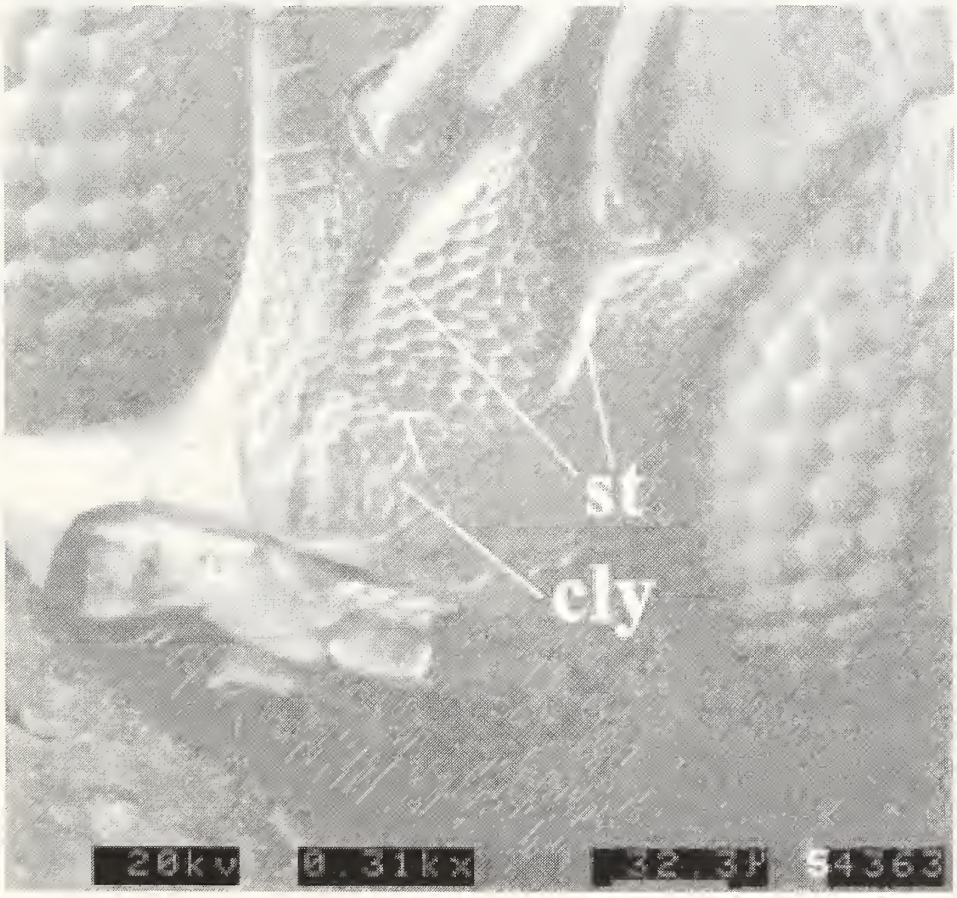

Fig. 6. *Chrysonotomyia* sp., lower face; st–subtorular grooves, cly–clypeus.

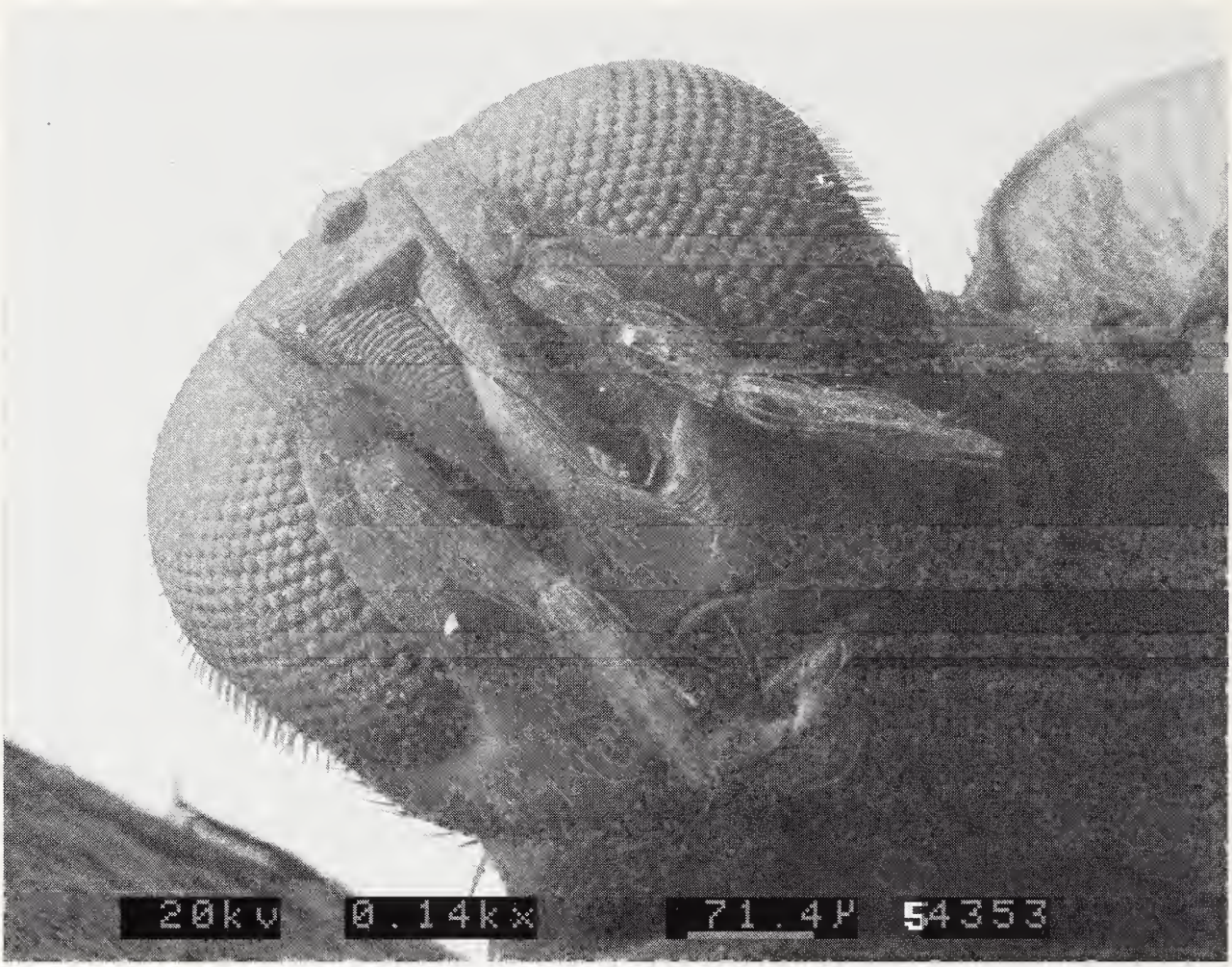

Fig. 7. *Chrysonotomyia postmarginaloides* (Saraswat), face.

All the consideration set forth above have eventually confirmed me in the opinion that of the seven discussed only two genera represent separate entities, i. e. *Closterocerus* and *Chrysonotomyia*. These two genera, sharing the subtorular grooves, differ from each other in the shape of scrobal grooves and of frontal sulcus, and in clypeus being delimited or not (see Table 1).

Genus *Closterocerus* Westwood

Closterocerus Westwood, 1833: 419. Type species: *Closterocerus trifasciatus* Westwood. By monotypy.

Neochrysocharis Kurdjumov, 1912: 234. Type species: *N. immaculata* Kurdjumov, 1912: 234 (= *Cirrospilus aratus* Walker, 1838: 453), by original designation. **Syn. n.**

Asecodes Förster, 1856: 79. Type species: *Asecodes fuscipes* Förster (= *coronis* Walker). By monotypy. **Syn. n.**

Hispinocharis Bouček, 1988: 718. Type species *Achrysocharella orientalis* Ferrière. Subseq. desig. (Bouček, 1988). **Syn. n.**

Mangocharis Bouček, 1986: 403. Type species: *Mangocharis longiscapus* Bouček. By monotypy. **Syn. n.**

For a full list of synonyms see Hansson 1996, and Bouček 1988.

Remark: in regard to the new concept proposed here some synonyms established earlier require a confirmation (A. A. Girault's genera, in particular).

Diagnosis. Clypeus not delimited, subtorular grooves present; scrobal grooves traced by sutures, short, converging, meeting frontal sulcus midway between torulus and anterior ocellus, frontal sulcus angulate, without a ridge above.

Biology. Wide spectrum of egg to pupal parasitoids mostly attacking holometabolous insects, and occasionally some Hemimetabola as well (Hansson 1990, 1994b, 1995).

Distribution. Cosmopolitan.

Genus *Chrysonotomyia* Ashmead

Chrysonotomyia Ashmead, 1904: 344. Type species: *Eulophus auripunctatus* Ashmead. By original designation.

Ladna Bouček, 1988: 718. Type species: *Ladna picta* Bouček, by original designation. **Syn. n.**

Diagnosis. Clypeus delimited; subtorular grooves present as short sutures not reaching clypeal sutures; scrobal grooves traced by sutures, long, meeting frontal sulcus at a point much closer to anterior ocellus than to torulus; frontal sulcus short, straight transverse and with overhanging ridge.

Supporting characters. Radial cell bare, mesoscutum with one pair of setae.

Remark. Most references to *Chrysonotomyia* concern *Closterocerus*.

Biology. The species with known biology are larval endoparasitoids of gall midges (Cecidomyidae) (Hansson 1994a, Saraswat 1975).

Distribution. Neotropical (Ashmead 1904), Oriental (Saraswat 1975, Bouček 1986), Australasian (Bouček 1988).

Key to the known species of *Chrysonotomyia*

1. All antennal segments free, speculum open ..... *Ch. dominicana* sp. n.
—At least two apical antennal segments fused 2

2. Two apical antennal segments fused ..... *Ch. auripunctata* (Ashmead)
—Three apical antennal segments fused 3

3. Mandible bidentate, with two large subequal teeth ..... *Ch. postmarginaloides* (Saraswat)
—Mandible multidentate, with one larger and several small teeth ..... *Ch. picta* (Bouček), comb. n.

Table 1. Character matrix.

Genus	subtorular grooves	scrobal grooves	frontal sulcus	frontal ridge	clypeus	trans-epimeral sulcus	setae on midlobe of mesoscutum
Chrysonotomyia	present	long, subparallel in upper part, almost reaching anterior ocellus	transverse	present	delimited	curved-straight	one pair
Ladna	present	long, subparallel in upper part, almost reaching anterior ocellus	transverse	present	delimited	somewhat curved	one pair
Closterocerus	present	short, not parallel, distant from anterior ocellus	angulate	absent	not delimited	curved	one or two pairs
Neochrysocharis	present	short, not parallel, distant from anterior ocellus	angulate	absent	not delimited	straight or weakly curved	two pairs
Asecodes	present	short, not parallel, distant from anterior ocellus	angulate	absent	not delimited	straight or weakly curved	two pairs
Hispinocharis	present	short, not parallel, distant from anterior ocellus	angulate	absent	not delimited	somewhat curved	two pairs
Mangocharis	present	short, not parallel, distant from anterior ocellus	angulate	absent	not delimited	curved	one pair

Chrysonotomyia dominicana sp. n.

Type material. Holotype ♀, BMNH Pal. PI II 335, Dominican amber, Dominican Republic, purchased McCallum, Marcus, 1993 (BMNH, Fig. 9).

Description [all dimensions 50×20]. Length 1.2 mm (70). Light white, but original body color probably lost when preserved in amber, legs and antennae seem to be darkened; setae on head and mesosoma have darkened bases.

Head in dorsal view about 2.3 (16/7) times as broad as long, with narrow temples. Ocelli large, POL:OOL:OCL:MDO in ratio 3:1:1:4. Head in frontal view 1.3 (17/13) times as broad as high. Oral fossa 2.5 (5/2) times as long as malar space. Eye large, with just few short setae, its height 6 (12/2) times longer than malar space; malar sulcus appears as a short line. Anterior margin of clypeus truncate, with delimitation of clypeus weakly traced. Frontal sulcus short, situated closely to anterior ocellus, with distinct short ridge above and long, subparallel scrobal grooves below. Subtorular grooves short. Combined length of pedicel and flagellum as long as head breadth. Antennae inserted barely above lower eye margin, with 1 narrow anellus and flagellum having all segments free. Scape 5 times as long as broad (10/2); pedicel 1.5 times as long as broad (3/2). Flagellar segments tapering gradually, all segments about twice as long as broad, their length/breadth ratio as follows: first 3/1.5, second 2.5/1.2,

third 2/1, fourth and fifth 2/0.9, the latter with long spine being as long as its segment.

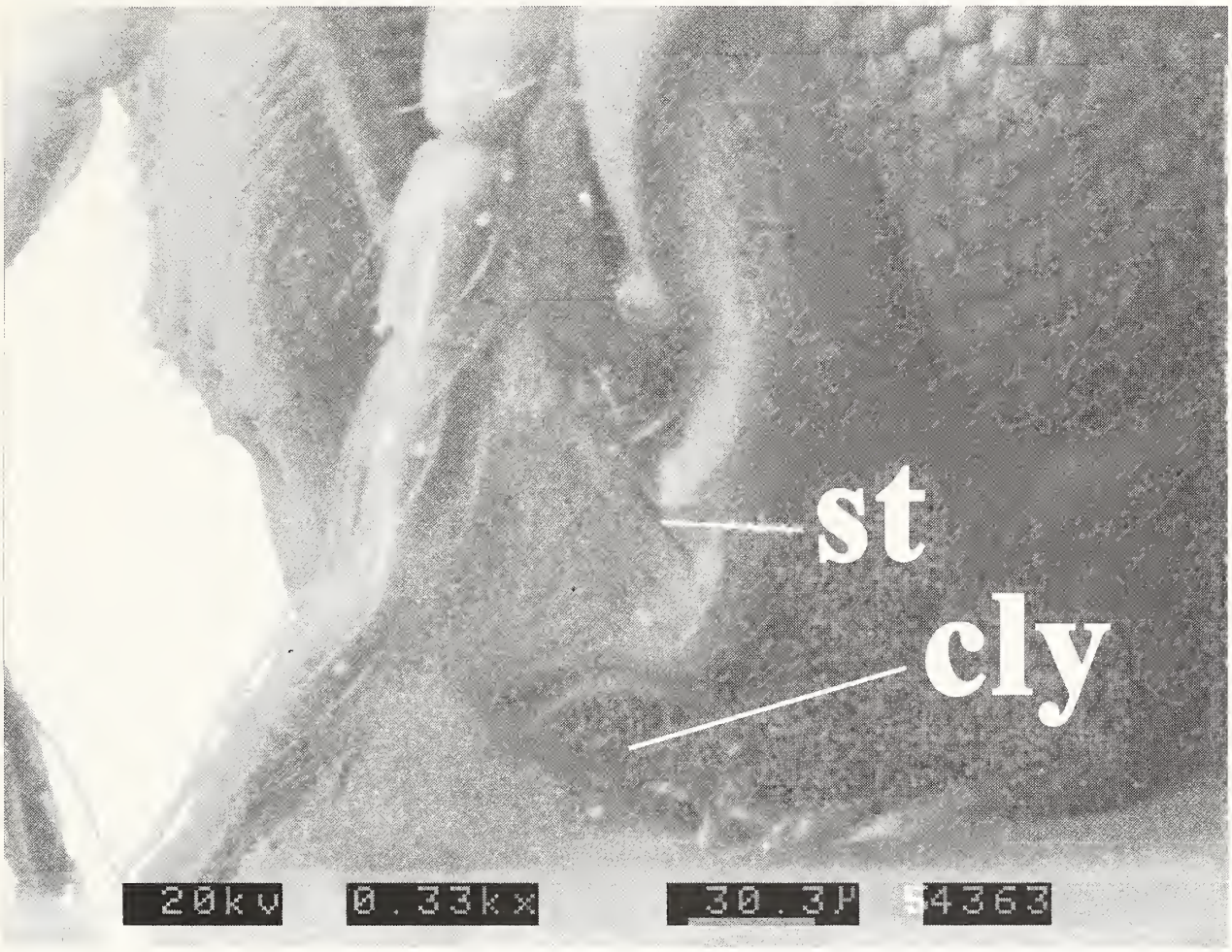

Fig 8. *Chrysonotomyia postmarginaloides* (Saraswat); st–subtorular grooves, cly–clypeus.

Mesosoma about 2.4 (27/11) times as long as broad. Pronotum conical, without collar, with some short setae along its posterior margin. Mesoscutum slightly broader than long (11/10); scutellum 1.66 times as long as broad. Propodeum without specific sculpture. Legs slender, with 4-segmented tarsi. Fore wing slightly more than twice (48/22) as long as broad, costal cell bare, narrow, subcosta of submarginal vein with 2 setae on its dorsal surface before distinct "break" where it meets praestigma; marginal vein 5 times (55/11) longer than costal cell, postmarginal vein and stigmal veins about subequal in length, radial sector bare; intercubital vein present as a row of 5 setae, speculum closed; fringe of apical margin about twice as long as breadth of marginal vein in its basal (broadest) part.

Metasoma. Petiole not visible (artifact), but obviously short, reduced. Gaster ovate, twice (30/15) as long as broad, slightly shorter than head+mesosoma. Ovipositor reaching along major part of gaster.

Male. Unknown.

Biology. Unknown.

Origin. Dominican amber (Miocene).

Fig. 9: *Chrysonotomyia dominicana* sp. n., ♀ holotype: a.– total view of the amber sample, b.– fore wing, c.– habitus, d.– line construction of some bodyparts.

Generic placement. It was not easy to place this species. Despite tiny sclerotization and peculiar specific characters, I feel this to be a *Chrysonotomyia* species. The character combination present in Table 2 demonstrates the background of our choice.

Achrysocharoides sp.

Material. ♀, BMNH Pal. PI II 437 (2), Dominican amber, Dominican Republic, purchased McCallum, Marcus, 1993 (BMNH), Fig. 10.

Morphological notes. There are several characters which may be seen in this eulophid specimen: frontal fork transverse, antennal flagellum with 5 segments, two apical fused, dorsal mesosoma evenly finely alveolate, notauli weakly depressed anteriorly, median propodeum flat, with no sculpture, postmarginal and stigmal veins short, subequal in length.

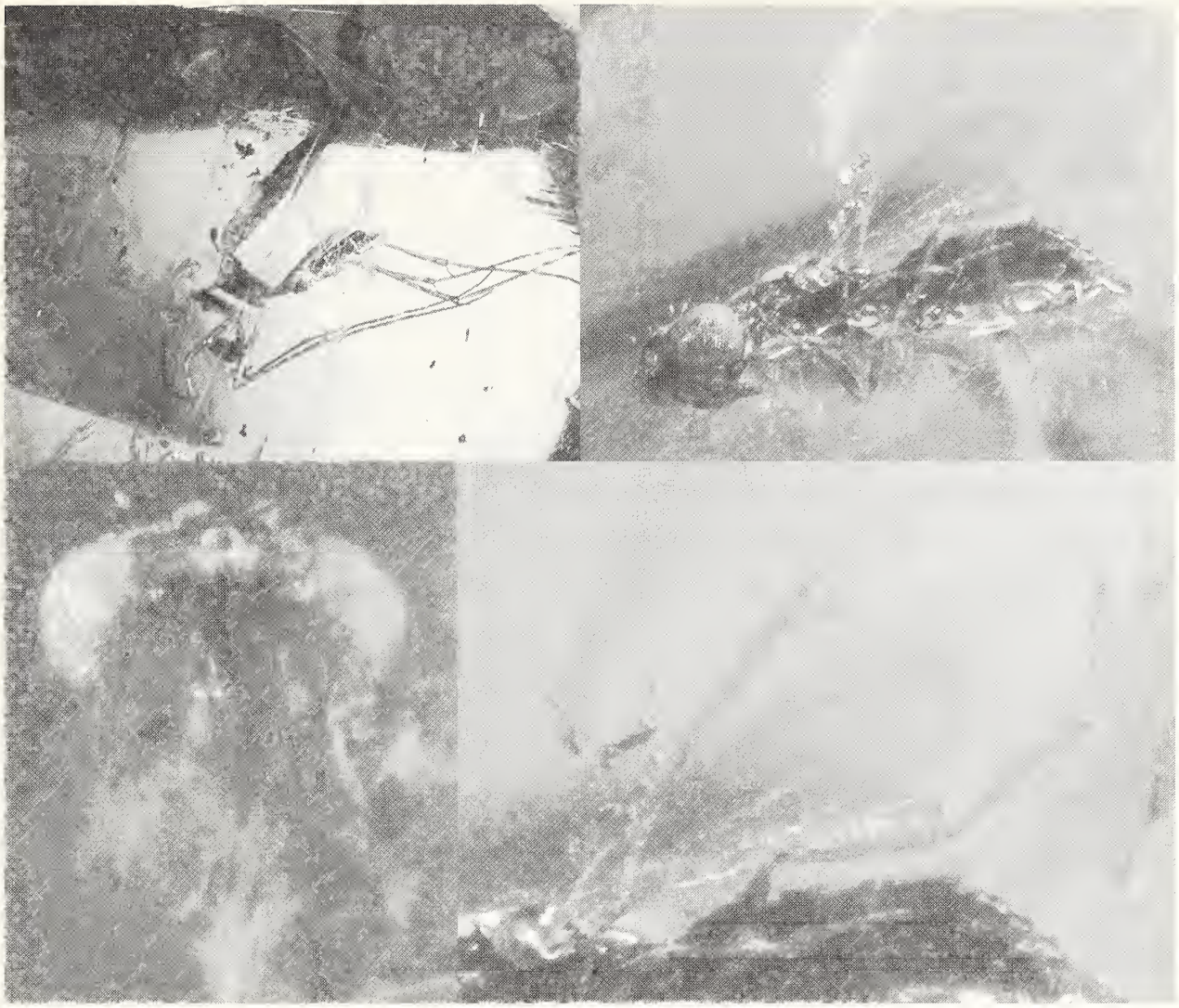

Fig. 10: *Achrysocharoides* sp., ♀, a.– total view of the amber sample, b.– habitus, c.– face, d.– forewing.

Generic placement. This eulophid species is recognized by the characters mentioned in Table 3. Other genera characterized by the transverse frontal sulcus and considered for the generic placement of this species are *Emersonella*, *Pleurotroppopsis*-complex and *Eprhopalotus*. *Emersonella* has peculiar structure of propodeum with two crescent median carinae and with foveae adjacent to them. Species of the *Pleurotroppopsis*-complex (*Pleurotroppopsis*, *Apleurotropis*, *Zaommomenedon*, *Platocharis* etc.) are easily recognizable by the channeled anterior notauli, pronotal shoulders present as lateral protrusions of pronotal collar, and mostly by the postmarginal vein much longer than stigmal, all these characters being absent in the amber specimen. *Eprhopalotus* has characteristic robust body, reduced pronotum and notauli sutured along their entire length, which clearly rules this genus out. In general aspect the amber species is close to *Closterocerus* and *Chrysocharis*. *Closterocerus* has angulate frontal sulcus, while the frontal sulcus is transverse in the amber specimen). Some species of *Chrysonocharis* have frontal sulcus nearly transverse, but then the last anellus is enlarged and postmarginal vein longer than stigmal: none of these characters is seen in the amber specimen.

Table 2. The background for the generic placement of *Chrysonotomyia dominicana* sp. n.

Amber specimen, BMNH Pal. PI II 335	**Characters**	**Taxonomic level**
+	Antenna with no more than 10 segments: 8 segments	EULOPHIDAE
+	Foretibial spur considerably reduced	
+	Tarsi 4- or 3-segmented: 4 segmented	
+	Scutellum with 1 pair of setae	Entedoninae
+	Face with frontal sulcus	
+	Gaster with 7 segments only (no separation between segments behind cerci)	
+	First pair of mesosomal spiracles covered by the overlapping margin of the pronotum, no pronotal emargination around spiracle	
+	Frontal grooves represent a special pattern with long subparallel scrobal grooves ended by short, transverse frontal sulcus traced above by a short ridge	Genus *Chrysonotomyia*
+	Scutellum with 1 pair of setae	
+	Clypeus delimited	
+	Radial sector of fore wing bare	
+	Subtorular grooves present	
+	Two apical flagellar segments free	Specific characters
+	Speculum closed	

Table 3. The background for the generic placement of *Achrysocharoides* sp.

EULOPHIDAE	**Entedoninae**	***Achrysocharoides***	**Amber specimen, BMNH Pal. PI II 437 (2)**
Antenna with no more than 10 segments: 8 segments	Scutellum with 1 pair of setae	Frontal sulcus transverse	+
Foretibial spur considerably reduced	Face with frontal sulcus	Notauli not channeled anteriorly	+
Tarsi 4- or 3-segmented: 4 segmented	Gaster with 7 segments only	Last anellus not enlarged	+
	First pair of spiracles covered by the overlapping margin of the pronotum, no pronotal emargination around spiracle	Postmarginal vein as long as or very slightly longer than stigmal vein	+
		Median propodeum either with no sculpture or with thin median carina	+
		Lateral panel of pronotum with semicircular plica	?

One of the most peculiar characters for *Achrysocharoides* is the semicircular plica on the lateral panel of pronotum (the character shared by *Entedon* and, to some extent, by *Pleurotroppopsis*-complex). Unfortunately, the pronotal structure is a bit deformed in the amber specimen, so we can not properly examine its lateral panel. But even without data on this character the generic placement of the specimen is still possible.

Species recognition. There are many morphological features (e. g. coloration, exact measurements of the antennal joints etc.) playing a significant role in identification of species of this genus. The condition of the amber specimen does not allow to see them, so we avoid any further speculation.

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Boekbespreking

Laštůvka, Z. & Laštůvka, A.: *The Sesiidae of Europe.*
24 × 17 cm, 245 p., 9 kleurenplaten, 107 tekstfiguren. Apollo Books Aps., Kirkeby Sand 19, DK-5774 Stenstrup, Denmark, 2001. Hardback. DKK 370,- (ISBN 87-88757-52-8).

Dit boek is een grondig bijgewerkte editie van *An Illustrated Key to European Sesiidae* (1995). Deze maal is het ook een echt boek geworden en werd de kwaliteit grondig aangepakt zodat een intensief gebruik beduidend beter zal worden doorstaan dan door de vorige uitgave.

Het is echter niet alleen aan "de buitenkant" die onder handen werd genomen: ook de inhoud is grondig herwerkt. De talrijke taxonomische, biologische en verspreidingsgegevens van de laatste jaren zijn mee opgenomen. Ook enkele belangrijke wijzigingen worden in dit boek aangevoerd: zes soorten worden hier nu als ondersoort beschouwd en twee soorten en één genus worden gesynonymiseerd, zodat ook een aantal nieuwe combinaties ontstaat. Uiteraard zijn ook alle sinds de vorige uitgave nieuw ontdekte Europese soorten opgenomen.

De inleidende hoofdstukken omvatten een korte historiek, informatie over de morfologie, biologie, fylogenie en verspreiding. Tevens wordt dieper ingegaan op verzamel- en kweekmethoden en wordt een volledige lijst van alle Europese Sesiidae en hun voedselplanten gegeven.

Het eigenlijke werk bestaat uit vier delen: de determinatiesleutels voor subfamilies, tribes en genera, de soortbesprekingen, de kleurenplaten en de talrijke zeer gedetailleerde tekstfiguren.

De differentiërende kenmerken in de sleutels zijn met zorg gekozen maar beletten niet dat men soms toch nog "vastloopt". De Sesiidae vormen nu eenmaal geen echt "gemakkelijke" familie.

De overzichtelijke soortbesprekingen vermelden steeds waar het typemateriaal en de typelokaliteit zich bevinden en in welke publicatie een soort voor het eerst werd beschreven. Vervolgens worden steeds de diagnostische kenmerken, de structuur van de genitalia, de biologie en habitat en de verspreiding behandeld en worden, per soort, speciale opmerkingen toegevoegd.

De kleurenplaten zijn, hoewel ze gebaseerd zijn op die uit de vorige uitgave, van beduidend betere kwaliteit en werden aangevuld met de afbeeldingen van nieuw beschreven soorten.

Voor de talrijke tekstfiguren is in deze editie een volledige pagina per soort gereserveerd. Deze illustreren, indien relevant, de meest karakteristieke kenmerken van het behandelde taxon: een (detail) van de vleugels, het abdomen, de palpen, enz. Bij bijna elke soort worden tevens prima pentekeningen van de genitaalapparaten van beide geslachten afgebeeld. Een verspreidingskaartje voor elke soort vervolledigt het geheel.

Tenslotte biedt dit boek dat, net als zijn "voorganger", onmisbaar is voor elke "Sesiidoloog" in tabelvorm een overzichtelijke checklist van elke soort per land en sluit het af met een zeer uitgebreide literatuurlijst en een alfabetische index.

Theo Garrevoet

The Skippers and Butterflies of the Greek part of the Rodópi massif (Lepidoptera: Hesperioidea & Papilionoidea)

John G. Coutsis & Níkos Ghavalás

Abstract. The hitherto recorded species of Skippers and Butterflies from the Rodópi massif in N Greece are being listed and the zoogeographic importance of this area unique for Greece is being discussed.

Samenvatting. De dagvlinders van het Griekse deel van de Rodopen (Lepidoptera: Hesperioidea & Papilionoidea)
Alle soorten dagvlinders, tot nu toe bekend van het Rodopengebergte in Noord-Griekenland, worden opgesomd en het zoögeografische belang van dit gebied, uniek voor Griekenland, wordt besproken

Key words: Hesperioidea – Papilionoidea – Greece – Rhodopi – faunistics – distribution

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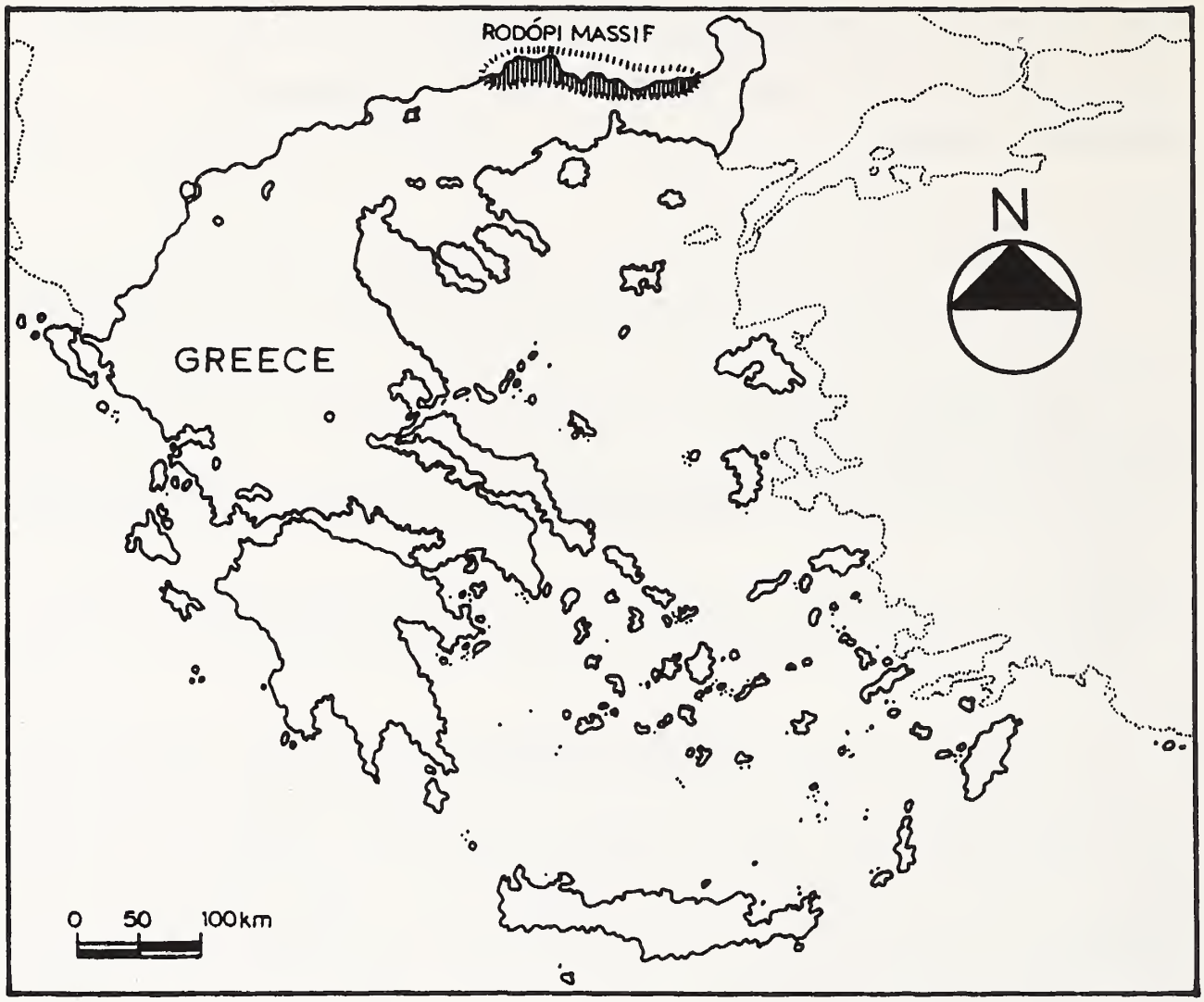
Introduction

The Greek part of the Rodópi massif lies immediately south and along a substantial length of the Greek-Bulgarian border, following an east to west general direction. To the west it is bordered by the Néstos river valley, to the east by the Évros river basin and to the south by the plains of eastern Greek Macedonia and Greek Thrace. Its overall length is about 160km and its highest peak is approximately 1950m.

This mountain system is a very ancient landmass, with little evidence of having ever been submerged and with the probability that it may have been further uplifted and folded during the Alpine upheaval of the Tertiary period. It is mainly composed of ancient igneous and metamorphic rock and also includes much crystalline limestone.

The individual mountains of the western half of this mountain system rise wave upon wave to heavily forested, rounded summits, rarely exceeding 1500m in altitude. These are separated by equally heavily forested gorges and ravines, at the bottom of which flow a good number of streams and a few small rivers, many of these being tributaries to the Néstos river. The eastern half, though heavily forested in some areas, has a lot of open spaces, some of which, at low elevations, are agricultural.

The high precipitation, the overall relatively cool weather and the abundance of water from melting snows, all help to give these mountains a high humidity for much of the year. Locally and mostly at lower elevations, there are also areas of a more xeric nature.



Map: Situation of the Rodópi massif in Greece.

The forests of this massif are to a greater extent deciduous and to a lesser one coniferous, but in many instances they are a mixture of both. As a rule there is also a rich undergrowth of a multitude of low plant species, amongst which there are many grasses that persist throughout the warm period of the year.

The roads cutting through the Rodópi massif are few and, in general, unpaved and the whole area is almost devoid of human habitations. Lumbering is light and strictly controlled by the Ministry of Agriculture. The grazing areas are restricted in size and they too are likewise controlled by the same Ministry. A sizeable section of the western part of the massif, named Fraktó, is partially prohibited to visitors, while an area named Parthéno Dásos (=Virgin forest) is totally prohibited to visitors, a special permission, seldom given, being required from the Ministry of Agriculture in order for one to enter it. All these conditions constitute a positive situation for the present and future survival of this precious habitat and it is hoped that they will be made permanent.

Collecting history

The first data on the lepidoptera of this area were published in the 70's and early 80's by the English lepidopterist Dr. J. V. Dacie and his wife, together with their Greek friend and companion, Dr. P. Grammaticós and, on some occasions, together also with Dr. L. G. Higgins, his wife and the first of the present authors. Further data were published in the 80's by the Belgian lepidopterist D. van der Poorten. In the late 80's and in the 90's our knowledge of the lepidopterological fauna of the Rodópi massif was further enriched by the published records of the present authors, while in the 90's new and important faunistic additions were published by the Greek lepidopterist and agricultural scientist A. Koutroúbas. During this last-mentioned period, a number of unpublished records were also carried out and made available to us, by the Greek lepidopterists S. Ichtiároglou and A. Mastorákis. The total amount of data now available seemed to us definitive enough to justify the publication of the present paper.

Lepidopterological fauna

The lepidopterological fauna of these mountains is of particular importance, as it contains several central European elements that reach here their southernmost distribution limit, being found nowhere else in Greece. All this attests to the importance of preserving at all cost this habitat unique for Greece. Unfortunately, in the name of progress, a number of areas have already been irrevocably destroyed by the construction of dams, as part of a more general and ambitious program for the production of electricity through hydroelectric energy.

List of Skippers and Butterflies

The list of skippers and butterflies now being presented is derived mostly from personal collecting experiences, extending over a period of more than ten years. The recorded dates and altitudes that are being listed in no way represent flight periods and altitude ranges for the species of the Rodópi massif, but, instead, personal collecting data. Most taxa, unless otherwise stated, inhabit open spaces, such as prairies, fields, meadows, forest clearings and rides.

Hesperiidae

1. *Erynnis tages* (Linnaeus, 1758). Recorded as common in May, June, July and August at altitudes of 150–1600m.

2. *Carcharodus alceae* (Esper, [1780]). Recorded locally in rather small numbers in April, May, July and August at altitudes of 100–1500m.

3. *Carcharodus flocciferus* (Zeller, 1847). Recorded as rather scarce in June and July at altitudes of 1000–1600m. Identification confirmed by the genitalia. This species has also been recorded from Mt. Varnoús, as well as from Mt. Vóio, both in NW Greece, where, in both localities, it is syntopic and synchronous with *Carcharodus orientalis* Reverdin, 1913, a species so far never recorded from the Rodópi massif.

4. *Carcharodus lavatherae* (Esper, [1783]). Recorded in fair numbers in June and July at altitudes of 1000–1400m. During hot days often found congregating on mud-puddles. All recorded specimens, yellowish-brown on upperside, quite in contrast with populations from NW Greece that are greyish-brown instead.

5. *Pyrgus malvae* (Linnaeus, 1758). Recorded as fairly common in May, June and July at altitudes of 400–1600m. Identification confirmed by the genitalia.

6. *Pyrgus alveus* (Hübner, [1803]). Recorded in rather restricted numbers in June and July at altitudes of 600–1600m. All recorded specimens without light spots on hindwing upperside and devoid of any whitish suffusion on upper surfaces. Identification confirmed by the genitalia.

7. *Pyrgus armoricanus* (Oberthür, 1910). Recorded as fairly numerous in May, June, July and August at altitudes of 200–1600m. Identification confirmed by the genitalia, which appear to have the blunt apex of the cucullus (*persicus* (Reverdin, 1913)-type sensu de Jong 1972).

8. *Pyrgus cinarae* (Rambur, 1839). Only once recorded in early July at an altitude of about 600m. Identification confirmed by the genitalia.

9. *Pyrgus carthami* (Hübner, [1813]). Only once recorded in early July at the Rodópi foothills, ca. 600m. Identification confirmed by the genitalia. First record for Greece by van der Poorten (1981).

10. *Pyrgus serratulae* (Rambur, [1839]). Recorded in fair numbers in June and July at altitudes of 800–1500m. Identification confirmed by the genitalia.

11. *Pyrgus sidae* (Esper, 1784). Recorded in fair numbers in June and July at altitudes of 400–1500m.

12. *Spialia orbifer* (Hübner, [1823]). Recorded locally in fair numbers in May, June, July and August at altitudes of 200–1500m.

13. *Carterocephalus palaemon* (Pallas, 1771). Recorded in fair numbers in June and July at altitudes of 1200–1600m. Often found in damp places, near streams and in forest clearings. First record for Greece by Coutsis, van der Poorten and Ghavalás (1989). **Within Greek territory confined to the Rodópi massif only**.

14. *Thymelicus acteon* (Rottemburg, 1775). Recorded in fair numbers in June and July at altitudes of 200–1000m.

15. *Thymelicus sylvestris* (Poda, 1761). Recorded as common in June and July at altitudes of 200–1500m.

16. *Thymelicus lineola* (Ochsenheimer, 1808). Recorded in good numbers in July at altitudes of 400–1600m. Not as common as *sylvestris*.

17. *Hesperia comma* (Linnaeus, 1758). Recorded sparsely in July and August at altitudes of 500–1600m.

18. *Ochlodes faunus* (Turati, 1905). Recorded as quite common in late June, July and August at altitudes of 100–1600m.

Papilionidae

19. *Zerynthia polyxena* ([Denis & Schiffermüller], 1775). Recorded locally and in small numbers at the Rodópi foothills in April and early May at altitudes of 100–250m.

20. *Zerynthia cerisy* (Godart, [1824]). Recorded in good numbers in late May, June and early July at altitudes of 100–500m.

21. *Archon apollinus* (Herbst, 1798). Recorded very locally in small numbers in the eastern Rodópi in April at about 200m altitude.

22. *Parnassius mnemosyne* (Linnaeus, 1758). Recorded as locally plentiful in late May, June and July at altitudes of 400–1800m. A single female, probably a stray, captured at 100m altitude.

23. *Parnassius apollo* (Linnaeus, 1758). Recorded in late June and July at altitudes of 1000–1500m. Locally abundant in places with rocky outcrops.

24. *Papilio machaon* Linnaeus, 1758. Recorded in small numbers in June, July and August at altitudes of 100–1300m.

25. *Iphiclides podalirius* (Linnaeus, 1758). Recorded in fair numbers in April, May, June, July and August at altitudes of 100–1300m.

Pieridae

26. *Leptidea sinapis* (Linnaeus, 1758). Recorded as quite abundant, especially near streams, in May, June, July and August at altitudes of 100–1200m.

27. *Leptidea duponcheli* (Staudinger, 1871). Recorded by Ichtiároglou (pers. com.) at the Rodópi foothills in June, below 500m, in rather dry situations, where it was found to be locally fairly abundant.

28. *Colias crocea* (Fourcroy, 1785). Recorded as quite common in April, May, June, July and August at altitudes of 100–1600m.

29. *Colias erate* (Esper, [1805]). Few specimens recorded in June and July at altitudes of 400–1400m. This species has an erratic appearance in N Greece, where most records have been carried out from late June till September and are probably attributable either to migration or to precarious and short-lived colonization. Hybridizes readily with *crocea*, producing an array of intermediate forms.

30. *Colias alfacariensis* Ribbe, 1905. Recorded in fair numbers in May, June, July and August at altitudes of 150–1500m.

31. *Gonepteryx cleopatra* (Linnaeus, 1767). Only once recorded from the Rodópi foothills, at an altitude of about 800m. As this butterfly is generally considered to be absent from NE Greece, it may very well be that the single recorded male was a straggler.

32. *Gonepteryx rhamni* (Linnaeus, 1758). Recorded in fair numbers in April, May, June and July at altitudes of 250–1500m.

33. *Anthocharis cardamines* (Linnaeus, 1758). Recorded in rather small numbers in April, May, June and July at altitudes of 200–1500m.

34. *Euchloe ausonia* (Hübner, [1804]). Recorded in April and June at altitudes of 100–400m. Found in relative abundance, mostly in fields and flowery meadows.

35. *Aporia crataegi* (Linnaeus, 1758). Recorded in May, June and July at altitudes of 400–1600m. Often very common.

36. *Pontia edusa* (Fabricius, 1777). Recorded in small numbers in April, May, June, July and August at altitudes of 100–1500m.

37. *Pontia chloridice* (Hübner, [1813]). Recorded as very local, but quite abundant where found, in the eastern part of the massif, at an altitude of just under 1000m. Observed flying over dry river and stream beds, strewn with boulders. First record for Greece by Dacie *et al.* (1979).

38. *Pieris brassicae* (Linnaeus, 1758). Recorded in abundance in May, June, July and August at altitudes of 100–1600m.

39. *Pieris rapae* (Linnaeus, 1758). Recorded in large numbers in April, May, June, July and August at altitudes of 100–1600m.

40. *Pieris mannii* (Mayer, 1851). Recorded locally and in fair numbers in June, July and August at altitudes of 300–1600m.

41. *Pieris napi* (Linnaeus, 1758). The name *napi* is used here collectively to include also the taxon *balcana* Lorkovic, 1970, as we have found it impossible to tell the two apart on superficial grounds, since the external characters given for their separation do not seem to work in a good number of cases. Recorded in April, May, June, July and August at altitudes of 100–1600m. In fair abundance mostly in damp areas.

42. *Pieris ergane* (Geyer, [1828]). Recorded in rather small numbers in July at altitudes of 400–1600m. Encountered primarily in the drier parts of the massif.

Lycaenidae

43. *Hamearis lucina* (Linnaeus, 1758). Recorded locally and in small numbers, mostly in humid situations, in April, May, June and August at altitudes of 200–1500m.

44. *Lycaena phlaeas* (Linnaeus, 1761). Recorded commonly in April, May, June, July and August at altitudes of 100–1600m.

45. *Lycaena dispar* ([Haworth], 1802). Recorded locally, in a few colonies that are being encountered at the base of the massif along the Néstos river, in June and August at an altitude of about 400m. One of the sites, in the vicinity of Potamí, has been irrevocably destroyed by the construction of a dam.

46. *Lycaena virgaureae* (Linnaeus, 1758). Recorded as common in June and July at altitudes of 550–1600m. Found primarily in flowery places and often in dampish clearings.

47. *Lycaena ottomana* (Lefebvre, [1830]). Recorded in small numbers in the drier parts of the eastern half of the massif, in April and May at altitudes of 200–300m.

48. *Lycaena alciphron* (Rottemburg, 1775). Recorded in fair numbers in June and July at altitudes of 400–1600m. As a rule encountered in flowery places.

49. *Lycaena tityrus* (Poda, 1761). Recorded in fair numbers in May, June, July and August at altitudes of 100–1600m. Inhabits diverse habitats, such as flowery meadows, damp clearings and dry scrubland.

50. *Lycaena thersamon* (Esper, [1784]). Recorded in small numbers in July at altitudes of 400–500m. Usually found in relatively xeric situations.

51. *Lycaena candens* (Herrich-Schäffer, 1844). Recorded in June and July at altitudes of 1200–1600m. Found predominantly in humid situations where it may be quite numerous. Identification established on the basis of the genitalia.

52. *Thecla betulae* (Linnaeus, 1758). Recorded in small numbers (due to its cryptic habits) in July and August at altitudes of 150–200m. During very hot days found resting on low vegetation, under the dense canopy of tall deciduous trees.

53. *Favonius quercus* (Linnaeus, 1758). Recorded as common in the vicinity of *Quercus* trees in July and August at altitudes of 600–1200m.

54. *Callophrys rubi* Linnaeus, 1758). Recorded in fair numbers in April, May, June and July at altitudes of 200–1500m.

55. *Satyrium pruni* (Linnaeus, 1758). Recorded in late May, June and July at altitudes of 400–1400m. Abundant on certain mature *Prunus* bushes, which it seldom leaves, thus being easily overlooked. First record for Greece by Dacie *et al.* (1972), between Flórina and Édessa, in NW Greece.

56. *Satyrium w-album* (Knoch, 1782). Recorded in small numbers in June and July at altitudes of 400–500m. Often seen nectaring on bramble blossoms.

57. *Satyrium spini* (Fabricius, 1787). Recorded in fair numbers in June and July at altitudes of 400–1400m.

58. *Satyrium acaciae* (Fabricius, 1787). Recorded in fair numbers in June and July at altitudes of 400–1500m.

59. *Satyrium ilicis* (Esper, [1779]). Recorded in large numbers in June and July at altitudes of 400–800m. Always found in association with *Quercus* bushes.

60. *Lampides boeticus* (Linnaeus, 1767). Recorded singly in August at altitudes of 400–500m.

61. *Leptotes pirithous* (Linnaeus, 1767). Recorded in small numbers in July and August at altitudes of 100–1600m.

62. *Cupido decoloratus* (Staudinger, 1886). Recorded in fair numbers in May and July at altitudes 400–1300m.

63. *Cupido alcetas* (Hoffmansegg, 1804). Recorded in fair numbers in May, June, July and August at altitudes of 300–1000m.

64. *Cupido osiris* (Meigen, [1829]). Recorded in small numbers in May at altitudes of 500–600m.

65. *Cupido minimus* (Fuessly, 1775). Recorded in fair numbers in July and August at altitudes of 400–1500m.

66. *Celastrina argiolus* (Linnaeus, 1758). Recorded in fair numbers in June, July and August at altitudes of 300–1600m.

67. *Pseudophilotes vicrama* (Moore, 1865). Recorded locally in fair numbers in May, June, July and August at altitudes of 100–1600m. It is predominantly met with in xeric situations.

68. *Scolitantides orion* (Pallas, 1771). Recorded locally, nearly always in the vicinity of *Sedum*, in May, June, July and August at altitudes of 150–1200m.

69. *Glaucopsyche alexis* (Poda, 1761). Recorded in fair numbers in May and July at altitudes of 250–600m.

70. *Iolana iolas* (Ochsenheimer, 1816). Recorded locally and in fair numbers, at the foothills of eastern Rodópi in May and June at an altitude of about 100m.

71. *Maculinea rebeli* Hirschke, 1904. Recorded locally in small numbers in rather wet situations in June and July at altitudes of 400–1500m.

72. *Maculinea arion* (Linnaeus, 1758). Recorded in fair numbers in June and July at altitudes of 600–1600m.

73. *Plebeius argus* (Linnaeus, 1758). Recorded, often in large numbers, in May, June, July and August at altitudes of 200–1500m.

74. *Plebeius pylaon* (Fischer von Waldheim, 1832). Recorded in small numbers only once by a stream at the Rodópi foothills in June at an altitude of about 600m.

75. *Plebeius idas* (Linnaeus, 1761). Recorded in fair numbers in June and July at altitudes of 400–1600m. Identification confirmed by the genitalia.

76. *Plebeius argyrognomon* (Bergsträsser, 1779). Recorded locally in small numbers in June and August at altitudes of 400–800m. Identification confirmed by the genitalia.

77. *Eumedonia eumedon* (Esper, [1780]). Recorded locally in small numbers, over rich patches of *Geranium*, in June at altitudes of 1000–1500m.

78. *Aricia agestis* ([Denis & Schiffermüller], 1775). Recorded commonly in May, June, July and August at altitudes of 100–1600m.

79. *Aricia artaxerxes* (Fabricius, 1793). Recorded in fair numbers in June and July at altitudes of 600–1600m.

80. *Ultraaricia anteros* (Freyer, [1838]). Recorded in small numbers, in the vicinity of *Geranium*, in May, June and July at altitudes of 500–1500m.

81. *Cyaniris semiargus* (Rottemburg, 1775). Recorded in fair numbers in May, June and July at altitudes of 400–1600m. A relatively large form (as is the case with other populations from northern Greece), and very rarely having traces of orange-brown lunules on underside of hindwing.

82. *Polyommatus escheri* (Hübner, 1823). Recorded in small numbers in June and July at altitudes of 600–1000m. Colour of males on upperside silvery-blue, placing it in ssp. *dalmaticus* (Speyer, 1882).

83. *Polyommatus dorylas* ([Denis & Schiffermüller], 1775). Recorded in small numbers in July and August at altitudes of 400–1000m.

84. *Polyommatus thersites* (Cantener, [1835]). Recorded in fair numbers in May, June, July and August at altitudes of 300–1200m.

85. *Polyommatus amandus* (Schneider, 1792). Recorded in fair numbers, especially in the vicinity of *Vicia* bushes, in May, June and July at altitudes of 600–1500m.

86. *Polyommatus eroides* (Frivaldszky, 1835). Recorded in fair numbers in late June and July at altitudes of 1000–1600m.

87. *Polyommatus icarus* (Rottemburg, 1775). Recorded in large numbers in May, June, July and August at altitudes of 100–1600m.

88. *Polyommatus daphnis* ([Denis & Schiffermüller], 1775). Recorded in fair numbers in June, July and August at altitudes of 400–1300m. Females on upperside always with blue suffusion.

Plate 1

Figs. 1–4 : 1.– General view of the deciduous forest, 2.– An opening within the coniferous forest, composed mainly of *Picea abies*, 3.– A meadow edged by a mixture of *Picea abies* and *Abies alba*, 4.– *Erebia aethiops* (Esper, [1777]) together with a single male *Plebeius argus* (Linnaeus, 1758) sipping moisture.

89. *Polyommatus bellargus* (Rottemburg, 1775). Recorded in fair numbers in May, June, July and August at altitudes of 400–1200m.

90. *Polyommatus coridon* (Poda, 1761). Recorded in fair numbers, but often locally common, in July and August at altitudes of 300–1150m. The haploid chromosome number for NE Greek populations of this species was found to be *n*=90 (Coutsis, De Prins & De Prins 2001).

91. *Polyommatus ripartii* (Freyer, 1830). Recorded locally in small numbers in late June and July at altitudes of 800-1200m. The haploid chromosome number for this species in Greece was found to be *n*=90 (Coutsis, Puplesiene & De Prins, 1999).

92. *Polyommatus aroaniensis* (Brown, 1976). Recorded only once by Ghavalás and Ichtiároglou at the foothills of the massif, in the vicinity of Potamí, near Néstos river, at about 500m, in July.

93. *Polyommatus admetus* (Esper, [1783]). Recorded only once by Ghavalás and Ichtiároglou at the foothills of the massif, in the vicinity of Potamí, near Néstos river, at about 500m, in July.

Nymphalidae

94. *Libythea celtis* (Laicharting,1782). Recorded in April, May, June and July at altitudes of 100–1600m. Can be very numerous right after emergence, becoming scarcer later, probably as a result of aestivation.

95. *Pararge aegeria* (Linnaeus, 1758). Recorded in May, June, July and August at altitudes of 100–1300m. Found locally in fair numbers in wet and dense situations. In Rodópi ssp. *tircis* (Butler, 1867) is encountered, with yellow or creamy-white spots on all wings upperside, instead of the orange-buff ones of the nominate ssp.

96. *Lasiommata megera* (Linnaeus, 1767). Recorded in fair numbers in April, May, July and August at altitudes of 150–1200m. It is met with, as a rule, in relatively xeric conditions.

97. *Lasiommata maera* (Linnaeus, 1758). Recorded in rather small numbers in May, June and July at altitudes of 150–1300m.

98. *Lasiommata petropolitana* (Fabricius, 1787). Recorded locally in large numbers in May and June at altitudes of 1200–1600m.

99. *Kirinia roxelana* (Cramer, [1777]). Recorded in June, July and August at altitudes of 300–1200m. This is a cryptic butterfly, seldom seen in large numbers.

100. *Coenonympha arcania* (Linnaeus, 1761). Recorded commonly in June and July at altitudes of 400–1600m.

101. *Coenonympha glycerion* (Borkhausen, 1788). Recorded in July at altitudes of 1200–1600m. At higher elevations it can be locally quite numerous. First record for Greece by van der Poorten (1984). **In Greece restricted to the Rodópi massif only**.

102. *Coenonympha leander* (Esper, [1784]). Recorded in fair numbers in May and June at the Rodópi foothills, near Néstos river, at about 600m. This population belongs to the nominate form, having no white band on hindwing

underside, although very rarely vestiges of such a band are slightly apparent in some individuals.

103. *Coenonympha pamphilus* (Linnaeus, 1758). Recorded commonly in May, June, July and August at altitudes of 100–1500m.

104. *Coenonympha rhodopensis* Elwes, 1900. Recorded in fair numbers in June and July at altitudes of 1400–1600m. Primarily found in subalpine meadows.

105. *Pyronia tithonus* (Linnaeus, 1767). Recorded locally in fair numbers in July and August at altitudes of 150–1300m. Encountered primarily in wet situations.

106. *Maniola jurtina* (Linnaeus, 1758). Recorded in large numbers in May, June, July and August at altitudes of 100–1600m.

107. *Hyponephele lycaon* (Rottemburg, 1775). Recorded in rather small numbers in July and August at altitudes of 400–1300m. Prefers xeric situations.

108. *Hyponephele lupina* (Costa, [1836]). Recorded singly in July at altitudes of 400–500m in xeric situations.

109. *Aphantopus hyperantus* (Linnaeus, 1758). Recorded in June, July and August at altitudes of 100–1500m. Found locally in wet situations in fairly large numbers. One year found in astronomical numbers inside a *Betula* forest.

110. *Erebia aethiops* (Esper, [1777]). Recorded in large numbers in July and early August at altitudes of 600–1600m. First record for Greece by Dacie *et al.* (1982). **In Greece restricted to the Rodópi massif only**.

111. *Erebia ligea* (Linnaeus, 1758). Recorded in fair numbers in June and July at altitudes of 600–1600m. In Greece this species is to be met with only on the Rodópi massif, and on Mt. Varnoús and Mt. Vítsi, the latter two localities being situated in NW Greece in the vicinity of the town of Flórina.

112. *Erebia euryale* (Esper, [1805]). Recorded in fair numbers in July at altitudes of 600–1600m. In Greece this species flies on a number of mountains, all situated along, or near the country's northern borders, its southern distribution limit being Mt. Falakró, just N of the town of Dráma. The Rodópi population is represented by a relatively large form, individuals of which are often as large as *ligea*.

113. *Erebia medusa* ([Denis & Schiffermüller], 1775). Recorded in fairly large numbers in May, June and July at altitudes of 400–1600m. In Greece this species has a range extending southwards all the way to the southern Píndos mountains.

114. *Erebia oeme* (Hübner, 1804). Recorded in fair numbers in July at altitudes of 1400–1600m, most often in damp meadows. Identification confirmed by the genitalia. First record for Greece by Dacie *et al.* (1979). **In Greece restricted to the Rodópi massif only**.

115. *Erebia ottomana* Herrich-Schäffer, 1847. Recorded in fair numbers in July at altitudes of 1400–1600m. The Rodópi population is represented by a relatively small form, with dark grey hindwing underside. In Greece this insect has a range extending all the way south to Mt. Timfristós and Mt. Íti, both situated in central Greece. Identification confirmed by the genitalia.

116. *Melanargia galathea* (Linnaeus, 1758). Recorded commonly in June, July and August at altitudes of 100–1600m. As is the case with other areas in Greece, the Rodópi population is likewise represented by dark specimens.

117. *Melanargia larissa* (Geyer, [1828]). Recorded, as locally numerous in relatively xeric situations, in July at altitudes of 150–600m.

118. *Satyrus ferula* (Fabricius, 1793). Recorded in fair numbers in June and July at altitudes of 100–1400m.

119. *Minois dryas* (Scopoli, 1763). Recorded in July at altitudes of 600–1200m. It is found, as a rule, in relatively damp places, where it may be locally numerous. First record for Greece by van der Poorten (1984). This taxon is restricted in Greece to areas close to its northern borders, being also found in the vicinity of lake Doiráni, as well as in Livaderó, a few km N of Dráma.

120. *Hipparchia fagi* (Scopoli, 1763). Recorded in fair numbers in June, July and August at altitudes of 300–1500m. Identification based on the genitalia.

121. *Hipparchia syriaca* (Staudinger, 1871). Recorded in small numbers in July and August at altitudes of 200–800m, as a rule within the *Quercus* zone. Identification based on the genitalia.

122. *Hipparchia senthes* (Fruhstorfer, 1908). Recorded in fair numbers in June and July at altitudes of 400–1400m. Identification based on the genitalia. The Rodópi population, as well as those from adjacent localities, consists of a relatively small and drab-coloured form, quite in contrast to those from central and southern Greece, as well as to those from the Aegean islands, which are relatively large and brightly coloured.

123. *Hipparchia fatua* Freyer, 1843. So far recorded only in xeric habitats at the foothills of the eastern part of the Rodópi massif, where it is locally quite numerous in August at altitudes of 150–300m.

124. *Chazara briseis* (Linnaeus, 1764). Recorded in July in the eastern part of the Rodópi massif at altitudes of 600–1000m.

125. *Arethusana arethusa* ([Denis & Schiffermüller], 1775). Recorded in fair numbers in July and August at altitudes of 300–1000m.

126. *Brintesia circe* (Fabricius, 1775). Recorded in fair numbers in June, July and August at altitudes of 300–1500m.

127. *Apatura iris* (Linnaeus, 1758). Recorded commonly in June and July inside the deciduous, or mixed deciduous/coniferous forest, especially near streams lined with *Salix*, at altitudes of 600–1400m. A single recorded male was found lacking the white markings on upperside («form *iole*»). This taxon has been found in Greece as far south as the southern part of the Píndos Mts.

128. *Apatura metis* Freyer, 1829. Recorded in June, July and August at altitudes of 100-500m, being common on *Salix* at the foothills of the massif, near, or by the Néstos river. In N Greece this taxon extends along most river systems eastwards all the way to Évros river and westwards all the way to Doiráni lake, where, in the latter mentioned locality, it has been found to be syntopic and synchronous with the closely related *A. ilia* ([Denis & Schiffermüller], 1775). Isolated populations of it have also been recorded in the

vicinity of Kónitsa, in NW Greece. First published record for Greece by Coutsis & Ghavalás (1991).

129. *Limenitis camilla* (Linnaeus, 1764). Recorded in fair numbers in late June and July at altitudes of 1000–1500m. This butterfly is cryptic in its habits and may be easily overlooked, but at noon and in the early afternoon, during the hottest part of the day, it may be observed flying low, in and out of the dense cover of trees, in search of wet spots and mud puddles. White bands on upperside narrower than in central and northern European individuals. First record for Greece by Koutroubas (1992). **In Greece restricted to the Rodópi massif only**.

130. *Limenitis reducta* Staudinger, 1901. Recorded in fair numbers in May, July and August at altitudes of 200–1300m.

131. *Limenitis populi* (Linnaeus, 1758). Recorded in good numbers in June and July at altitudes of 600–1200m and is usually observed either feeding on excrement, or mud-puddling. First record for Greece by Van der Poorten (1984). Males upperside melanic, with practically no trace whatsoever of white bands («form *tremulae*»). In Greece also found on Mt. Varnoús, near Flórina.

132. *Neptis sappho* (Pallas, 1771). Recorded in fair numbers in May, July and August at altitudes of 150–1200m. Many colonies found at the Rodópi foothills, by the Néstos river, where some of the butterfly's better-known habitats have now been destroyed by the construction of a dam. First record for Greece by Dacie *et al.* (1977). In Greece this taxon is restricted to the Rodópi massif as well as to certain areas close to the foothills of Mt. Falakró, N of Dráma.

133. *Neptis rivularis* (Scopoli, 1763). Recorded in June and July at altitudes of 600-1500m, almost exclusively inside the deciduous forest. First record for Greece by Coutsis & Ghavalás (1988). **In Greece restricted to the Rodópi massif only**.

134. *Araschnia levana* (Linnaeus, 1758). Recorded locally in fair numbers in April, May, June, July and August at altitudes of 100–500m. First record for Greece by Koutroubas (1991). In Greece this taxon is presently only known from the Rodópi area, as well as from near lake Doiráni. One of its better known localities, near Potamí, by the Néstos river, is now completely destroyed by the construction of a dam. In Greece, this butterfly has been recorded in all its known seasonal forms.

135. *Vanessa atalanta* (Linnaeus, 1758). Recorded commonly in April, May, June, July and August at altitudes of 100–1600m.

136. *Vanessa cardui* (Linnaeus, 1758). Recorded, often in large numbers, in April, May, June, July and August at altitudes of 100–1600m.

137. *Inachis io* (Linnaeus, 1758). Recorded in fair numbers in May, June, July and August at altitudes of 400–1500m.

138. *Aglais urticae* (Linnaeus, 1758). Recorded in fair numbers in May, June, July and August at altitudes of 400–1600m.

139. *Polygonia c-album* (Linnaeus, 1758). Recorded in fair numbers in May, June, July and August at altitudes of 100–1500m, as a rule in forested areas.

140. *Polygonia egea* (Cramer, [1775]). Recorded only once at the foothills of eastern Rodópi in August at an altitude of 200m. This species favours xeric situations.

141. *Nymphalis polychloros* (Linnaeus, 1758). Recorded in rather small numbers in April, May, June and July at altitudes of 100–1600m.

142. *Nymphalis xanthomelas* (Esper, [1781]). Two specimens recorded by Ichtiároglou and Mastorákis in late June at Vathírema, at an altitude of about 1000m.

143. *Nymphalis antiopa* (Linnaeus, 1758). Recorded, often in fair numbers, in April, May, June and July at altitudes of 100–1600m.

144. *Euphydryas aurinia* (Rottemburg, 1775). A single colony of this taxon has so far been recorded from the eastern part of the Rodópi massif at an altitude of about 300m. The butterfly is on the wing from May till mid-July. First records for Greece by Koutsaftikis (1973) and Dacie *et al.* (1977). The butterfly is also found on Mt. Vítsi and Mt, Varnoús, both situated in the Flórina area.

145. *Melitaea cinxia* (Linnaeus, 1758). Recorded in May, June and July, flying in fluctuating numbers from year-to-year, but often quite common, at altitudes of 150–1600m.

146. *Melitaea phoebe* ([Denis & Schiffermüller], 1775). Recorded in fair numbers in May, June, July and August at altitudes of 100–1600m.

147. *Melitaea trivia* ([Denis & Schiffermüller], 1775). Recorded in fair numbers in April, May, June, July and August at altitudes of 100–1300m.

148. *Melitaea didyma* (Esper, [1778]). Recorded in fair numbers in May, July and August at altitudes of 100–1300m.

149. *Melitaea athalia* (Rottemburg, 1775). Recorded, often in large numbers, in June and July at altitudes of 400–1500m. This species is found predominantly in the forest.

150. *Melitaea aurelia* Nickerl, 1850. This taxon has been reported from the Rodópi area by Tolman & Lewington (1997) and has also been recorded during the same year by van der Poorten & Cuvelier (1997) from the foothills of Mt. Varnoús, in the vicinity of Flórina; the latter authors based their identification on the genitalia, which constitute the only reliable means of telling this taxon apart from the often very similar *athalia*.

151. *Argynnis paphia* (Linnaeus, 1758). Recorded in numbers in June, July and August at altitudes of 100–1500m.

152. *Argynnis pandora* ([Denis & Schiffermüller], 1775). Recorded in fair numbers in June, July and August at altitudes of 100–1300m.

153. *Argynnis aglaja* (Linnaeus, 1758). Recorded in fair numbers in June, July and August at altitudes of 400–1500m.

154. *Argynnis adippe* ([Denis & Schiffermüller], 1775). Recorded in fair numbers in June and July at altitudes of 500–1500m. The predominant form in this area is *cleodoxa*, but the typical form has also often been taken in the vicinity of Mikroklisoúra, at the Rodópi foothills.

155. *Argynnis niobe* (Linnaeus, 1758). Recorded in rather small numbers in June and July at altitudes of 400–1500m. The form flying in Greece is *eris*.

156. *Issoria lathonia* (Linnaeus, 1758). Recorded in numbers in April, May, June, July and August at altitudes of 100–1600m .

157. *Brenthis daphne* (Bergsträsser, 1780). Recorded in numbers in June and July at altitudes of 400–1500m.

158. *Brenthis hecate* ([Denis & Schiffermüller], 1775). Recorded in rather restricted numbers in July at altitudes of 600–1300m. This butterfly favours more xeric situations than does *daphne*.

159. *Boloria euphrosyne* (Linnaeus, 1758). Recorded in fair numbers in May, June and July at altitudes of 400–1500m.

160. *Boloria dia* (Linnaeus, 1767). Recorded in small numbers in May, June, July and August at altitudes of 400–1000m.

Discussion

The 160 so far recorded skippers and butterflies from the Rodópi massif represent about 70% of the total number of species from all of Greece (presently recognized as amounting to 228), thus attesting to the lepidopterological richness and importance of this area. Out of these 160 species, six are restricted within Greece to the Rodópi massif only (*C. palaemon*, *C. glycerion*, *E. oeme*, *E. aethiops*, *L. camilla* and *N. rivularis*), while four are shared only by Mt. Varnoús/ Mt. Vítsi, a mountain complex situated near Flórina, in NW Greece, that supports an extensive deciduous forest analogous to that of Rodópi (*E. ligea*, *L. populi*, *E. aurinia* and *M. aurelia*). The number of taxa that have been recorded from Rodópi, but not from Varnoús/Vítsi, amount to 27 (*P. carthami*, *C. palaemon*, *A. apollinus*, *P. apollo*, *G. cleopatra*, *C. erate*, *P. chloridice*, *L. ottomana*, *S. pruni*, *L. boeticus*, *C. decoloratus*, *S. orion*, *I. iolas*, *M. rebeli*, *P. pylaon*, *C. glycerion*, *E. aethiops*, *E. oeme*, *M. dryas*, *H. syriaca*, *H. fatua*, *A. metis*, *L. camilla*, *N. sappho*, *N. rivularis*, *A. levana* and *P. egea*), while the number of taxa that have been recorded from Varnoús/Vítsi, but not from Rodópi, amount to 14 (*C. orientalis*, *Spialia phlomidis* (Herrich-Schäffer, [1845]), *Muschampia tessellum* (Hübner, [1803]), *Colias caucasica* Staudinger, 1871, *Gonepteryx farinosa* (Zeller, 1847), *Erebia epiphron* (Knoch, 1783), *Melanargia russiae* (Esper, [1783]), *Hipparchia volgensis* (Mazochin-Porshnjakov, 1952), *Hipparchia statilinus* (Hufnagel, 1766), *Pseudochazara anthelea* (Hübner, [1824]), *A. ilia*, *Melitaea arduinna* (Esper, [1783]) and *Boloria graeca* (Staudinger, 1870).

These data reveal the lepidopterological richness of the Rodópi area as well as its uniqueness for Greece, clearly suggesting that this area deserves protection and preservation at all cost.

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Phyllonorycter robiniella, een nieuwe soort voor de Belgische fauna (Lepidoptera: Gracillariidae)

Willy De Prins & Frans Groenen

Abstract. *Phyllonorycter robiniella*, a new species for the Belgian fauna (Lepidoptera: Gracillariidae)
In the Autumn of 2001, some leaf mines of *Phyllonorycter robiniella* (Clemens, 1859) were found on *Robinia pseudoacacia* in the area of Lommel (Belgium, Limburg). This species is mentioned here for the first time from Belgium.

Résumé. *Phyllonorycter robiniella*, une espèce nouvelle pour la faune belge (Lepidoptera: Gracillariidae)
Pendant l'automne de 2001, quelques mines de *Phyllonorycter robiniella* (Clemens, 1859) furent trouvées sur *Robinia pseudoacacia* dans la région de Lommel (Belgique, Limbourg). Cette espèce est mentionnée ici pour la première fois de Belgique.

Key words: *Phyllonorycter robiniella* – *Robinia pseudoacacia* – faunistics – Belgium – first record

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Inleiding

In het najaar van 2001 werden enkele bladmijnen van *Phyllonorycter robiniella* (Clemens, 1859) gevonden op *Robinia pseudoacacia* in het noordwesten van de Belgische provincie Limburg, in de omgeving van Lommel. Deze soort wordt hier voor het eerst uit België vermeld.

Fig. 1: *Phyllonorycter robiniella* (Clemens, 1859), Nederland, Limburg, Posterholt, e.l. *Robinia pseudoacacia* 29.IX.2000, leg. Stiphout (foto: Jurate De Prins).

Verspreiding

De oorsprong van *P. robiniella* is te zoeken in Noord-Amerika, vanwaar de soort ook beschreven is. Zij werd geïntroduceerd in Italië en heeft zich van

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daaruit over Centraal-Europa verspreid. Momenteel is ze bekend uit Duitsland, Frankrijk, Italië, Oostenrijk, Slowakije, de Tsjechische Republiek en Zwitserland (Buszko 1996: 53). Tijdens de vergadering van de sectie "Snellen" op 11 maart 2000 werd een bladmijn op *Robinia pseudoacacia* gemeld uit Kerkrade (Nederlands Limburg) en tijdens de vergadering van dezelfde sectie op 28 oktober 2000 werd duidelijk dat de soort zich gevestigd had in Nederland; er werden in de loop van 1999 reeds een tiental mijnen gevonden en tijdens 2000 werden talrijke mijnen op verschillende vindplaatsen aangetroffen in Midden- en Zuid-Limburg. Vanuit deze populaties heeft de soort zich waarschijnlijk tot in België verspreid, al leverde een onderzoek van talrijke *Robinia* bomen in de Voerstreek (net ten zuiden van de Nederlandse vindplaatsen) geen enkel resultaat op.

Biologie

P. robiniella komt uitsluitend voor op *Robinia* spp. Deze boom is niet inheems in Midden-Europa, maar werd vanuit Noord-Amerika aangeplant op tal van plaatsen en is nu een gewone verschijning in parken, langs wegranden en in tuinen. De rups maakt een witachtige mijn aan de onderzijde van de blaadjes. De bovenzijde van het blad is meestal bruin verkleurd. Het bijzondere van deze *Phyllonorycter*-soort is dat in één mijn verschillende rupsen kunnen voorkomen. Uit de mijnen gevonden in Nederland, kweekte men tot vier exemplaren uit één enkele bladmijn.

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