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Stigmella magdalенаe (Lepidoptera: Nepticulidae), new to the Belgian fauna

Jean-Yves Baugnée & Ben van As

Abstract. *Stigmella magdalенаe* (Klimesch, 1950) is mentioned here for the first time from Belgium. On 23 August 2009, several leaf mines were found on *Sorbus aucuparia* L. at Arlon (province of Luxembourg), in the military camp Lagland, leg. J.-Y. Baugnée. On 28 August 2010, five mines were found on *Sorbus aucuparia* in a second Walloon locality, at Bévercé (province of Liège), in the valley Trôs Marets, leg. B. van As. Information on the biology and the distribution of this species are presented.

Résumé. *Stigmella magdalенаe* (Lepidoptera: Nepticulidae), espèce nouvelle pour la faune belge *Stigmella magdalенаe* (Klimesch, 1950) est signalé pour la première fois en Belgique. Le 23 août 2009, plusieurs mines ont été trouvées sur *Sorbus aucuparia* L. à Arlon (Province de Luxembourg), dans le camp militaire de Lagland, leg. J.-Y. Baugnée. Le 28 août 2010, cinq mines sont observées également sur *Sorbus aucuparia* dans une seconde localité wallonne, à Bévercé (Province de Liège), dans la vallée du Trôs Marets, leg. B. van As. Les informations relatives à la biologie et à la répartition du papillon sont résumées.

Samenvatting. *Stigmella magdalенаe* (Lepidoptera: Nepticulidae), een nieuwe soort voor de Belgische fauna *Stigmella magdalенаe* (Klimesch, 1950) wordt hier voor het eerst gemeld voor België. Op 23 augustus 2009 werden enkele bladminnen op *Sorbus aucuparia* L. gevonden te Arlon (provincie Luxemburg), in het militair kamp Lagland, leg. J.-Y. Baugnée. Op 28 augustus 2010 werden ook vijf minnen op wilde lijsterbes waargenomen te Bévercé (provincie Luik) in de vallei van Trôs Marets, leg. B. van As. Details over de levenswijze en de verspreiding van deze kleine vlinder worden gegeven.

Key words: *Stigmella magdalенаe* – Lepidoptera – Nepticulidae – Belgium – Faunistics – Leafminer – *Sorbus*.

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Introduction

Stigmella Schrank, 1802 (Lepidoptera: Nepticulidae) is one of the largest leafminer moth genera which includes 107 known species in Europe (van Nieukerken 2011a). At present, 48 species have been recorded from Belgium (De Prins & Steeman 2011). Like many other leafminer moths, faunistical knowledge about Belgian *Stigmella* species has, for a long time, remained poor, but the situation has strongly improved in recent years in response to intensive surveys by the Leaf Miners Group. In addition, several papers have been published, including that of van Nieukerken (2006) which provides many interesting data for 30 species of *Stigmella*. However, in regard to neighbouring countries, a number of additional species are expected, particularly in Wallonia.

One of these expected species, *Stigmella magdalенаe* (Klimesch, 1950), has recently been recorded in two localities from southern and eastern Belgium. On 23 August 2009 some vacated mines were observed on Rowan, *Sorbus aucuparia* L., at Arlon (province of Luxembourg), in the military camp of Lagland, at the edge of the Landbruch marshland nature reserve, leg. J.-Y. Baugnée (figs. 1–2). Later, on 28 August 2010, five mines were found on Rowan at Bévercé (province of Liège), in a valley of the river Trôs Marets, leg. B. van As. In both localities, mines of two other moths were also observed on Rowan, namely *Stigmella nylandriella* (Tengström, 1848) and *Phyllonorycter sorbi* (Frey, 1855). The identification of the mines was kindly confirmed by Willem Ellis.

Life cycle and biology

Stigmella magdalенаe is a univoltine species. Adults are very small ochreous moths of 3.9–4.6 mm in wingspan, flying mainly in May–June (Schoorl *et al.* 1985; Johansson *et al.* 1990). The egg is laid at the underside of the leaf. The green larva occurs from late June to August and mines mainly *Sorbus aucuparia*, more rarely other woody Rosaceae such as *Sorbus intermedia* (Ehrh.) Pers., *Sorbus torminalis* (L.) Crantz, *Cotoneaster integerrimus* Med., *Malus sylvestris* (L.) Mill., and *Amelanchier spicata* (Lam.) Koch (Schoorl *et al.* 1985, Johansson *et al.* 1990, see also Ellis 2010 and Pitkin *et al.* 2011).

The mine is a quite short tortuous corridor with frass arranged in a narrow central black line, but its shape is rather variable. The most frequent is like that shown on fig. 1: a very contorted mine occupying a small area of the leaflet between two lateral veins (Schoorl *et al.* 1985, Johansson *et al.* 1990, Ellis 2010). It may also resemble that of *Stigmella nylandriella* and follow for some distance the outline of the marginal teeth of the leaflets, as shown for example, in pictures on British leafminers (Edmunds 2011). This complicates the specific identification of the mine. However, the gallery of *S. magdalенаe* is narrower and shorter than *S. nylandriella* and has usually linear frass throughout. In addition, the larvae of both species are distinct in their chaetotaxy, particularly on the abdominal segment 10 with three setae in *S. magdalенаe* and only one in *S. nylandriella* (Schoorl *et al.* 1985). On *Malus*, the mine of *S. magdalенаe* can be confused with that of *S. desperatella* (Frey, 1856), a species unknown from Belgium, which

also has green larvae (see Ellis 2010). However, the first has never been confirmed on apple trees outside Fennoscandia (E. van Nieukerken in litt. 2011).

In addition to *Stigmella magdalenae* and *S. nylandriella*, two other *Stigmella* species can mine Rowan: *S. oxyacanthella* (Stainton, 1854) which is widespread in Belgium, and *S. sorbi* (Stainton, 1861), not yet found in this country (De Prins & Steeman 2011).

Many other moth species are reported as leafminers from *Sorbus* spp. in Europe. They belong mainly to the families Gracillariidae, Nepticulidae and Coleophoridae (Hering 1957, Ellis 2010, Pitkin *et al.* 2011).



Fig. 1. *Stigmella magdalenae* (Klimesch, 1950). Belgium, Luxembourg, Arlon, 23.viii.2009, mine on *Sorbus aucuparia*, leg. and photo J.-Y. Baugnée.

Distribution

Stigmella magdalenae is a European species, which was previously recorded from Austria, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Russia, Slovakia, Slovenia, Sweden, Switzerland, the Netherlands, and Ukraine (van Nieukerken 2011a). A distribution map is given by Schoorl *et al.* (1985) and a country presence map by van Nieukerken (2011b).

After Schoorl *et al.* (1985), it is a northern species common in Fennoscandia, the British Isles and mountains of central Europe, but it is rare and very local in the lowland countries.

Stigmella magdalenae seems rather local in Germany, where it is only recorded from Bavaria, Baden-Württemberg, Brandenburg, Saxony and Thuringia (Schoorl *et al.* 1985, Gaedike & Heinicke 1999). For the British Isles, Emmet (1983, sub *S. nylandriella*) indicates that this species is especially common in the north and west of Britain and also occurs in western Ireland. For the

latter country, however, the map presented by the MothsIreland Project (Tyner 2007) has only two southern data entries. In France, it is a montane species that is known from the Ardennes, Alpes and Pyrénées, and to be also expected in the Massif Central (van Nieukerken *et al.* 2006). In the Netherlands, *S. magdalenae* is regarded as a quite common species with most records from the northern half of the country (Corver 2010). Here, mines can be locally extremely abundant in some years, for example in forests in the province of Drenthe (Huisman *et al.* 2009). The moth is not yet known from the Grand-Duchy of Luxembourg (M. Hellers in litt. 2011).



Fig. 2. *Stigmella magdalenae* (Klimesch, 1950). Belgium, Luxembourg, Arlon, 23.viii.2009, another mine on *Sorbus aucuparia*, leg. and photo J.-Y. Baugnée.

The discovery of *Stigmella magdalenae* in Belgium appears not surprising, since it is reported from several neighbouring countries. The two observations described here are respectively situated in Lorraine and Haute Ardenne, in localities with a relatively cold continental climate, at 350 and 550 m a.s.l. In the country, the species is probably rarer than *S. nylandriella* and confined to colder stations, in agreement with indications of the literature, but this requires confirmation. Due to the size of the tiny adult moth, research on this species will preferably be conducted in the summer, by searching for mines on Rowan and other Rosaceae. The breeding of these mines would be useful in obtaining adults, which would then definitely confirm the regional occurrence of *S. magdalenae*.

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Paysandisia archon, new to Páros Island, Greece (Lepidoptera: Castniidae)

John G. Coutsis

Abstract. The S American Castniid moth *Paysandisia archon* (Burmeister, 1800), which was accidentally introduced to several S European localities, is now also being recorded for the first time from the Greek island of Páros. This record is the first ever published for Greece as a whole by a lepidopterological journal, all past Greek records having been either in the form of announcements in the local press, or having been included in a doctorate thesis.

Samenvatting. *Paysandisia archon*, nieuw voor Páros eiland, Griekenland (Lepidoptera: Castniidae)
De Zuid-Amerikaanse mot *Paysandisia archon*, die toevallig ingevoerd werd in enkele Zuid-Europese lokaliteiten, wordt hier voor het eerst van het Griekse eiland Páros vermeld en daarmee tevens voor heel Griekenland in een entomologisch tijdschrift. De overige meldingen bestonden uit lokale krantenartikels in het Grieks of een melding in een doctoraatsthesis.

Résumé. *Paysandisia archon*, espèce nouvelle pour l'île grecque de Páros (Lepidoptera: Castniidae)
L'espèce sud-américaine, *Paysandisia archon* (Burmeister, 1800), est mentionnée ici de l'île grecque de Páros et ainsi également pour la totalité de la Grèce, puisque les autres mentions étaient publiées seulement dans des journaux locaux en grec et dans une thèse doctorale.

Key words: Castniidae – *Paysandisia archon* – Greece - Páros Island – Accidental introduction.

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Introduction

Paysandisia archon (Burmeister, 1800), a South American moth belonging to the family Castniidae and inhabiting Brazil, NW Argentina, Paraguay and Uruguay, was accidentally introduced to Europe in the years between 1985 and 1995 as a direct result of the importation of infested palm trees, the moth's only known larval food-plant. Colonies were eventually established in mainland Spain, the Balearic Islands, France, mainland Italy and Sicily (Leraut 2006). In some areas, especially in Spain, the moth has reached pest proportions, and attempts are being made to eradicate it.

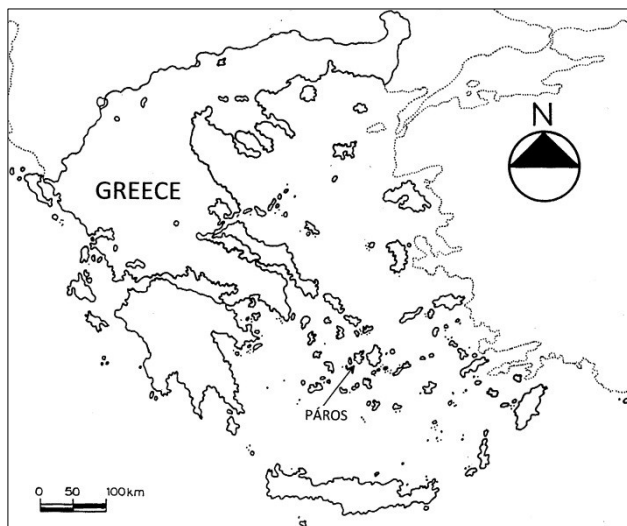


Fig. 1. Map of Greece.

The first record of the species for Greece (Fanourakis & Reppas 2008 [Thesis]) dates back to 2006, and refers to the islands of Kríti (Crete) and Ródos (Rhodes), while further Greek records, appearing as articles in local newspapers, include also the island of Híos (Chios). Unfortunately all information relating to Greece is given

in Greek language and none of it was ever published in entomological journals, remaining unknown to the lepidopterological community. It thus appeared desirable to remedy this situation by producing the present paper.

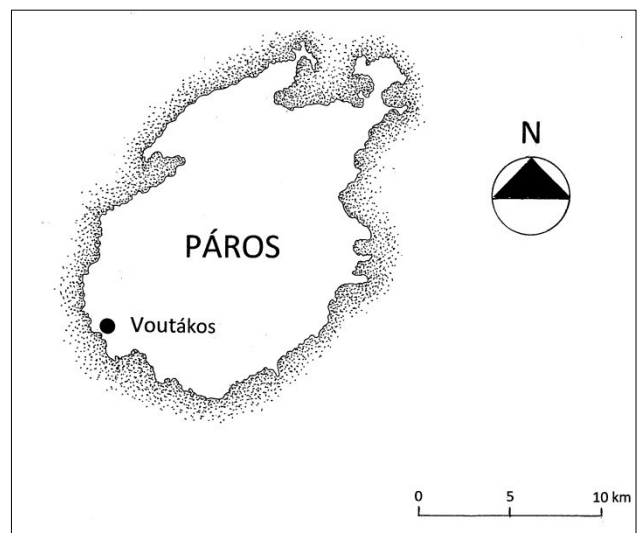


Fig. 2. Map of Páros Island.



Fig. 3. Male *Paysandisia archon* (Burmeister, 1800), Greece, Páros Island, Voutákos, sea level, 15–18.vii.2010. Scale bar 1 cm.

New Greek record

On 15th to 18th July 2010, while on the Aegean island of Páros (Figs 1 & 2), a seaside locality was visited that supports vineyards as well as a large number of planted palm trees, the latter representing at least three separate species. In the morning of 16th July a large moth was accidentally flushed from oleander bushes, which in flight was somewhat reminiscent of *Theretra alecto* (Linnaeus, 1758), a Spingid common to the island, but in colour and silhouette appeared different. When it finally settled it was realized that it was the Castniid *P. archon*. Five specimens were recorded in all, one male of which was captured (Fig. 3).

Discussion

The number of specimens recorded clearly suggests that the moths were members of an established colony. The island's ample supply of palm trees and its mild

climate, both should act positively in keeping the colony alive and allowing it to spread, if indeed the latter has not already taken place. The introduction of *P. archon* to Páros Island must be attributed to the massive importation of palm trees, which have become of late one of the most favoured of garden plants. The fast spreading of the moth in Europe and its parallel establishment in parts of N Africa and the Middle East, suggest that the road is open for it to spread in full in the Asiatic and African continents, wherever the climate permits and the larval food-plant is available.

Acknowledgements

I wish to express my thanks to Mr. and Mrs. John Zepos of Athens, Greece, for their kindness and hospitality in letting me stay at their summer house in Páros Island, as well as for their capacity to endure without a single sign of displeasure my often annoying collecting habits.

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Isophrictis anthemidella (Lepidoptera: Gelechiidae) nieuw voor de Belgische fauna

F. Groenen

Samenvatting. Op 19 juni 2011 werden enkele exemplaren van *Isophrictis anthemidella* (Wocke, 1871) verzameld in de omgeving van Lommel (prov. Limburg). De soort wordt hier voor het eerst voor de Belgische fauna vermeld. De biologie en verspreiding worden kort besproken.

Abstract. *Isophrictis anthemidella* (Lepidoptera: Gelechiidae), new for the Belgian fauna
On 19 June 2011, some specimens of *Isophrictis anthemidella* (Wocke, 1871) were caught in the neighbourhood of Lomme (Province of Limburg). This is the first record of this species for the Belgian fauna. Details on its biology and distribution are presented.

Résumé. *Isophrictis anthemidella* (Lepidoptera: Gelechiidae), espèce nouvelle pour la faune belge
Le 19 juin 2011, quelques exemplaires d'*Isophrictis anthemidella* (Wocke, 1871) ont été capturés dans les environs de Lommel (Province du Limbourg). Il s'agit de la première mention de cette espèce pour la faune belge. Des informations concernant la biologie et la répartition sont données.

Key words: *Isophrictis anthemidella* – Faunistics – New record – Belgium.

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Inleiding

In het weekeinde van 17, 18 en 19 juni 2011 werd door de Projectgroep Levend Zand het tweede Biodiversiteitsweekeinde in de omgeving van Lommel georganiseerd. Tijdens dit weekeinde is de flora en fauna van een aantal terreinen geïnventariseerd. De terreinen die opengesteld werden zijn de Blekerheide, Riebos, voormalig Stort, Balimgronden, Kristallijn/ Maatheide en het Waaltjesbos. Ondanks de regenachtige weersomstandigheden en de lage temperaturen zijn in het weekeinde tot op heden 848 soorten gedetermineerde soorten waargenomen (www.waarnemingen.be).

Door de auteur is voor de eerste keer, speciaal voor het inventariseren van microvlinders, deelgenomen aan dit weekeinde. Op zondag 19 juni 2011 is het terrein het voormalig Stort, gelegen tussen de afgraving de Sahara en het industrieterrein Maatheide, geïnventariseerd. Tijdens deze dagexcursie zijn drie exemplaren, 2♂ en 1♀, van *Isophrictis anthemidella* (Wocke, 1871) (fig. 1, 2) gevangen. De soort wordt hier als nieuw voor de Belgische fauna gemeld.

Kenmerken

Isophrictis anthemidella is op uiterlijk niet te onderscheiden van *I. striatella* ([Denis & Schiffermüller], 1775). Onderscheid kan enkel gemaakt worden door genitaal onderzoek. Kenmerkend voor het mannelijk genitaal van *I. anthemidella* is de vorm van de aedeagus, waarbij het apicale deel even lang is als het basale deel en de vorm van de cucullus (zie fig. 3, 4). In *I. striatella* is het apicale deel van de aedeagus korter dan het basale gedeelte. Het vrouwelijk genitaal verschilt in de sclerotisatie van de ductus bursae. In *I. anthemidella* is de ductus bursae sterk gesclerotiseerd (zie fig. 5), in *I. striatella* is alleen het basale gedeelte gesclerotiseerd. In Huisman *et al.* (2007) zijn de verschillen tussen de beide soorten nader beschreven.

Biologie

De rups van *I. anthemidella* is in Nederland nog niet gevonden, maar kan mogelijk worden aangetroffen op wilde bertram (*Achillea ptarmica*) en gele kamille (*Anthemis tinctoria*). Beide plantensoorten zijn tot op heden niet op 't Stort waargenomen (www.waarnemingen.be). De vlinders zijn verzameld op een kleine verhoging in het terrein begroeid met diverse kruidachtigen waaronder o.a. kamille (*Matricaria* sp.), Akkerdistel (*Cirsium arvense*), Zwarte toorts (*Verbascum nigrum*), Smalbadig kruiskruid (*Senecio erucifolius*) en grassen. De rups van *I. striatella* leeft op Boerenwormkruid (*Tanacetum vulgare*) (Elsner *et al.* 1999), maar ook op wilde bertram (*Achillea ptarmica*) (Corver 2011).

Over de vliegtijden van beide soorten bestaat enige verwarring. In de literatuur worden vliegtijden voor *I. anthemidella* gemeld van mei tot augustus, juni en juli-augustus. De vliegtijd voor *I. striatella* is van juni-augustus (Huisman *et al.* 2007). Waarnemingen uit Nederland van *I. anthemidella* zijn bekend van juli en augustus, in België van juni.

Verspreiding

Uit Nederland is de soort in 2001, 2004 en 2006 gevangen te Schinveld, provincie Limburg door A. Schreurs (Huisman *et al.* 2007). In Noord-Brabant is de soort waargenomen in het herinrichtingsgebied van de Kleine Beerze te Hoogeloon, Provincie Noord-Brabant Nederland. De meest nabijgelegen vindplaatsen in Duitsland liggen in Nordrhein-Westfalen. Gezien de ligging van de vindplaatsen in Nederland was de soort in de Belgische Kempen te verwachten.

Isophrictis anthemidella is in de Belgische en Nederlandse Kempen gevangen op terreinen met pioniersvegetaties. Het herinrichtingsgebied de Kleine Beerze is enkele jaren geleden heringericht door opnieuw laten meanderen van de beek en het afgraven

van de toplaag van aanliggende percelen. Op 't Stort te Lommel zijn, door het droge biotoop, eveneens pioniersvegetaties aanwezig.



Fig. 1.— *Isophrictis anthemidella* (Wocke, 1871) ♂, Lommel (België, Limburg), 19.vi.2011, leg. F. Groenen.



Fig. 2.— *Isophrictis anthemidella* (Wocke, 1871) ♀, Lommel (België, Limburg), 19.vi.2011, leg. F. Groenen.

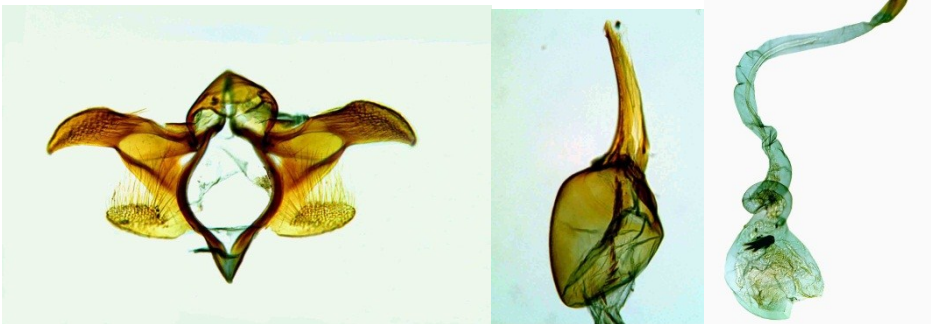


Fig. 3–4.— *Isophrictis anthemidella* (Wocke, 1871), mannelijke genitalia, gen. prep. FG2124; Fig. 5.— Vrouwelijke genitalia, gen. prep. FG2126.

Dankwoord

Willy de Prins, Leefdaal en Toon Jansen, Lommel, wil ik bedanken voor hun hulp bij het samenstellen van dit artikel.

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- www.waarnemingen.be

A contribution to the knowledge of the Ichneumon wasps (Hymenoptera: Ichneumonidae) from Guilan Province, Northern Iran

Hassan Ghahari & Reijo Jussila

Abstract. In a total of 28 ichneumonid species from 22 genera and 6 subfamilies (Cremastinae, Cryptinae, Ichneumoninae, Pimplinae, Rhyssinae and Tryphoninae) were collected from Guilan province, northern Iran. Of these, one species *Schizopyga podagrica* Gravenhorst is new record for Iran.

Samenvatting. Een bijdrage tot de kennis van de Ichneumonidae (Hymenoptera) van de provincie Guilan, Noord-Iran. In het totaal werden 28 soorten Ichneumonidae behorend tot 22 genera en 6 subfamilies (Cremastinae, Cryptinae, Ichneumoninae, Pimplinae, Rhyssinae en Tryphoninae) verzameld in de provincie Guilan, Noord-Iran. *Schizopyga podagrica* Gravenhorst is nieuw voor Iran.

Résumé. Contribution à la connaissance des Ichneumonidae (Hymenoptera) de la province de Guilan, Iran septentrional. Au total 28 espèces d'Ichneumonidae furent capturées dans la province de Guilan, Iran septentrional, appartenant à 22 genres et 6 sous-familles (Cremastinae, Cryptinae, Ichneumoninae, Pimplinae, Rhyssinae et Tryphoninae). *Schizopyga podagrica* Gravenhorst est mentionné ici pour la première fois d'Iran.

Keywords: Ichneumonidae – Fauna – Faunistics – Guilan Province – Iran.

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Introduction

The Ichneumonidae are one of the most species-rich families of all organisms with an estimated 60,000 species in the world (Townes 1969). According to Gauld (1991) many authorities regard this figure as an underestimate. An estimated 12,100 species of Ichneumonidae occur in the Afrotropical region, of which only 1,815 had been described by 1973 (Townes and Townes 1973). Subsequently the single major revision of Afrotropical ichneumonids added a further 70 species of Ophioninae (Gauld and Mitchell 1978), with the result that only an estimated 15% of the Afrotropical ichneumonids are known to science. The ichneumonid fauna of Iran is rather poorly known (Kolarov and Ghahari 2005, 2006, 2007, 2008; Ghahari et al. 2010). The Ichneumonidae, along with other groups of parasitic Hymenoptera, are purported to be no more species rich in the tropics than in the Northern Hemisphere temperate regions (Owen and Owen 1974, Janzen 1981, Janzen and Pond 1975), although a number of hymenopteran families, for example the Chalcididae (Hespenheide 1979) and Encyrtidae (Noyes 1989b) exhibit an increase in species richness with a decrease in latitude. Other hymenopteran taxa such as sawflies (Symphyta), gall-forming Cynipidae, and bees (Apoidea) peak in species richness at mid- or high latitudes (Michener 1979; Noyes 1989b; Kouki et al. 1994). Considerable debate has centered on the apparent species richness anomaly exhibited by a number of hymenopteran parasitoid taxa in the tropics (e.g. Morrison et al. 1978, Gauld 1991, Gauld and Gaston 1994).

The family Ichneumonidae is currently split into 37 subfamilies, of which 24 have been recorded from the

Afrotropical region (Yu 1998). Ichneumonids utilise a diverse array of insects and arachnids as their hosts and play an essential role in the normal functioning of most ecosystems, underlining the need to inventory their diversity. Comprehensive, quantitative, biodiversity surveys will enable the identification of hotspots of species richness and endemism. This essential base line data will enable informed conservation management decisions.

The objective of this research is determining of ichneumonids' fauna in Guilan province, northern Iran (Fig. 1). Guilan is one of the provinces of Iran. It lies along the Caspian Sea, just west of the province of Mazandaran, east of the province of Ardabil, north of the provinces of Zanjan and Qazvin. At the center of the province is the main city of Rasht. Other towns in the province include Astara, Astaneh-Ashrafieh, Fooman, Lahijan, Langrood, Masouleh, Manjil, Roodbar, Roodsar, Shaft, Talesh, and Some'e Sara. Guilan has a humid temperate climate with plenty of annual rainfall. The city Rasht which is the center of the province is well-known globally as the "City of Silver Rains" and also known as the "City of Rain" around Iran. The Alborz range provides further diversity to the land in addition to the Caspian coasts. The amount of humidity is truly high in the warm seasons of the year in Guilan, however the coastlines are much cooler and pleasant at the same time and thousands of domestic and foreign tourists come to the seashore for swimming and camping. Despite of the abundant humidity, Guilan is known for its moderate, mild and Mediterranean-like climate. Large parts of the province are mountainous, green and forested. The coastal plain along the Caspian Sea is similar to that of Mazandaran, mainly used for rice paddies.

Materials and Methods

The Ichneumonidae were sampled using Malaise traps, yellow pan traps, sweep netting and hand collecting at each of the sampled regions on Guilan province. In some station a yellow plastic bowl (165 mm diameter 40 mm depth) was placed on the forest floor and charged with propylene glycol. These yellow pan traps were left for 5 days and serviced at the end of this period, with each station being retained as a separate sample. Four Malaise traps were deployed at each region and serviced each day for a period of seven days. The Malaise traps were constructed to the specifications of the Townes design (Townes 1972), and made with a fine-meshed netting (grid size 0.2 mm), with black walls and a white roof. The collection of these samples was spaced over a period of 5 days at each region. Each sweep was conducted in previously unsampled vegetation. The sweep net used for sampling was based on the design of Noyes (1982), with an opening area of ca. 1300 cm², and a collecting bag constructed from fine-meshed netting with a grid size of 0.2 mm. Also, the information concerning the species' name, describer, locality and the date of collection, place which the material was collected and the altitude (in brackets) was also given. The collected specimens by the first author and some other Iranian researchers were confirmed by Dr. J. Šedivý (Research Institute for Crop Protection, Praha, Czech Republic) and by the second author, and they are preserved in his collection. Classification, nomenclature and distributional data of Ichneumonidae suggested by Yu et al. (2005) and Kasparyan (1981a, b) have been followed.

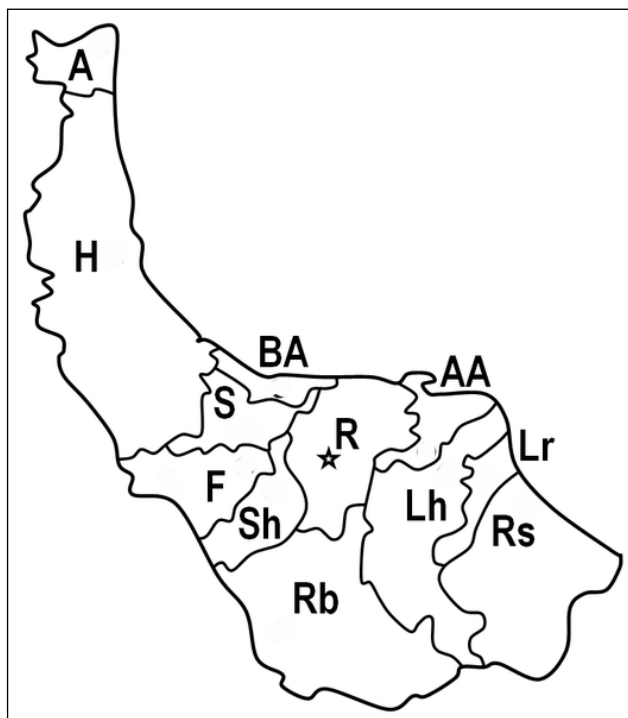


Fig. 1.— Guilan province with its cities [A: Astara, AA: Astaneh-Ashrafieh, BA: Bandar-Anzali, F: Fooman, H: Hashtpar, Lh: Lahijan, Lr: Langrood, R: Rasht (Center of province), Rs: Roodsar, Rb: Roodbar, S: Some'e Sara, Sh: Shaft, M: Masal].

Results

Totally 28 ichneumonid species from 22 genera and 6 subfamilies were collected from Guilan province. The list of species with distributional data is given below.

Subfamily Cremastinae

Cremastus pungens Gravenhorst, 1829

Material: Talesh (77 m), 3♀, September 2007. General distribution: Europe, Turkey, Mongolia and Siberia.

Temelucha caudata (Szépligeti, 1899)

Material: Astara (-8 m), 1♀, September 2007. General distribution: Middle and South Europe and Turkey.

Temelucha discoidalis (Szépligeti, 1899)

Material: Astara (-19 m), 1♂, September 2007. General distribution: Europe and Turkey.

Temelucha tricolorata Sedivy, 1968

Material: Bandar-Anzali (-15 m), 2♀, July 2007. General distribution: Canary Islands, Turkey and Afghanistan.

Subfamily Cryptinae

Agrothereutes fumipennis (Gravenhorst, 1829)

Material: Rasht (39 m), 1♂, August 2008. General distribution: Palaearctic region.

Aritranis longicauda (Kriechbaumer, 1873)

Material: Roodsar (9 m), July 2007. Langrood (16 m), 2♂, September 2006. General distribution: Europe and Algeria.

Gambrus incubitor (Linnaeus, 1758)

Material: Masal (70 m), 1♂, July 2007. General distribution: Palaearctic and Ethiopian region

Hoplocryptus quadriguttatus (Gravenhorst, 1829)

Material: Some'e Sara (25 m), 1♂, September 2006. General distribution: Europe and Turkey.

Ischnus migrator (Fabricius, 1775)

Material: Astara (-19 m), 1♂, September 2007. General distribution: Palaearctic region.

Mesostenus albinotatus Gravenhorst, 1829

Material: Rasht (127 m), 2♀, August 2008. General distribution: Holarctic region.

Mesostenus transfuga Gravenhorst, 1829

Material: Roodbar (213 m), 1♀, 1♂, July 2007. General distribution: Western Palaearctic region.

Stenarella domator (Poda, 1761)

Material: Roodsar (2 m), 1♀, June 2007. General distribution: Western Palaearctic region.

Trychosis neglecta (Tschek, 1871)

Material: Rasht (39 m), 1♀, August 2008. General distribution: Europe and Turkey.

Trychosis priesneri Rossem, 1971

Material: Langrood (16 m), 1♂, September 2006. General distribution: France, Switzerland, Austria, Poland, Former Yugoslavia, Greece and Turkey.

Subfamily Ichneumoninae

Barichneumon incubitor Zetterstedt var. *caucasica*, 1893

Material: Fooman (34 m), August 2008. General distribution: Azerbaijan.

Thyraeella collaris Gravenhorst, 1889

Material: Astara (-19 m), 2♀, September 2007 ex *Plutella xylostella* Linnaeus (Plutellidae). General distribution: Central Asia (Turkmenia), Southwest Asia, West Europe, the Canary Islands.

Phaeogenes ophthalmicus Wesmael, 1844

Material: Rasht (127 m), 1♀, August 2008. General distribution:

Protichneumon pisorius Linnaeus, 1903

Material: Lahijan (12 m), 2♀, July 2007. General distribution: Kazakhstan, Siberia, Western Europe, Turkey, Iran, Afghanistan (13).

Subfamily Pimplinae

Exeristes arundinis (Kriechbaumer, 1887)

Material: Fooman (34 m), 1♀, August 2008. Astaneh-Ashrafieh (-27 m), 1♀, September 2006. General distribution: Middle and South Europe, Latvia, Kazakhstan, Middle Asia, Mongolia and Pacific Cost of Russia.

Schizopyga podagrica Gravenhorst, 1829

Material: Rasht (39 m), 2♀, August 2008. New record for Iran. General distribution: Palaearctic.

Subfamily Rhyssinae

Rhyssa amoena Gravenhorst, 1829

Material: Roodsar (2 m), 2♂, July 2007. Lahijan (12 m), 1♂, 1♀, June 2007. General distribution: *R. amoena* has a European and eastern Palaearctic distribution.

Megarhyssa superba (Schrank, 1781)

Material: Talesh (77 m), 1♂, 1♀, September 2007. General distribution: European and eastern Palaearctic distribution.

Subfamily Tryphoninae

Cosmoconus (Cosmoconus) elongator (Fabricius, 1775)

Material: Bandar-Anzali (-15 m), 1♂, June 2007. General distribution: Palaearctic region.

Tryphon (Tryphon) thomsoni Roman, 1939

Material: Some'e Sara (25 m), 1♂, 1♀, September 2006. Lahijan (12 m), 1♀, June 2007. Rasht (76 m), 2♂, August 2008. General distribution: Europe, Azerbaijan, Georgia, Turkey, Armenia, Israel, Tajikistan and Siberia.

Tryphon (Symboethus) bruniventris Gravenhorst, 1829

Material: Rasht (76 m), 1♂, August 2008. General distribution: Palaearctic region.

Ctenochira haemosterna (Haliday, 1839)

Material: Fooman (34 m), 1♀, August 2008. General distribution: Holarctic region.

Erromenus analis Brisshke, 1871

Material: Roodsar (9 m), 2♀, June 2007. General distribution: Holarctic region.

Erromenus punctulatus Holmgren, 1857

Material: Rasht (76 m), 1♀, August 2008. General distribution: Holarctic region.

Discussion

The results of this research indicated that the fauna of ichneumonids in Guilan province is very diverse. The

sampling sites were located at minimum -27 m and maximum 127 m altitudes. In this study we collect only the adult wasps by different methods while determining of their hosts is necessary and can be a research project for other researchers. In this case collecting the larvae and pupae of different pests, especially Lepidoptera, and rearing them in optimum condition is the main method.

Of the four methods deployed to collect ichneumonid wasps, sweeping was the most efficient in terms of procured species richness and abundance, followed by Malaise trapping; yellow pan trapping was extremely inefficient, and was superseded by hand collecting. Smoothed, species-accumulation curves showed that sweeping was the most efficient method in procuring species per sampling effort followed by hand collecting, Malaise trapping and lastly yellow pan trapping. Conversely, plotting cumulative species against abundance showed that all four methods were similarly efficient in returning species per number of specimens captured. Malaise trapping and hand collecting slightly superseded sweeping and yellow pan trapping. Species richness estimators indicated that the deployed sampling methods procured between 19 and 38% of expected species richness (Noort 2004). Malaise traps are a form of flight interception trap which are generally considered to be the best means of obtaining large, general samples of Ichneumonidae from most habitats (Fitton *et al.* 1988), and which have been used extensively for this purpose (Owen & Owen 1974, Noyes 1989a, b, Bartlett *et al.* 1999, Sperber *et al.* 2004). These traps sample the field-herb layer and only provide data on assemblages using or flying through this part of the woodland. The trap operates continuously and may be left unattended (Fitton *et al.* 1988) therefore allowing the collection of multiple samples over the same time period (Mayhew *et al.* 2009).

There was considerable variation in species' abundance and occupancy in our collections. Our previous analyses of the collections have shown that species that were collected from only a few sites or traps tended to be found in low abundance there, such that rare species (in our samples) tend to be rare in both senses (see Fraser *et al.* 2008). This is a small-scale illustration of the more widely known phenomenon of extinction-risk double-jeopardy whereby low abundance and restricted distributions can make species vulnerable to extinction from different sources of threat (Gaston 1999). Parasitoid wasps are already expected to be especially vulnerable to extinction due to their host specificity and high trophic status (Shaw & Hochberg 2001), and the double-rarity indicated in our data may add to this vulnerability. However, rarity in our catch might not necessarily mean that species are rare more generally: they might not be effectively sampled by Malaise traps, or might have peak flight seasons outside our sample period (Mayhew *et al.* 2009).

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D. R. Kasparyan (Russian Academy of Sciences) and Dr. T. Finlayson (Burnaby BC V3J 7E3, Canada) for identification of some specimens and sending the necessary resources. We are also thanks to Dr. K. Holy of the Czech Republic for editing the manuscript. The research was supported by the Islamic Azad University and the University of Turku, Finland.

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Nemapogon wolffiella (Lepidoptera: Tineidae), new species for the Belgian fauna

Steve Wullaert

Abstract. On 29 May 2010 a specimen of *Nemapogon wolffiella* Karsholt & Nielsen, 1976 was caught at Ploegsteert (Belgium, Prov. of Hainaut). The identification was confirmed by dissection of the genitalia. This is the first record of this species for the Belgian fauna. Details on its biology and distribution are presented.

Samenvatting. *Nemapogon wolffiella* (Lepidoptera: Tineidae), nieuw voor de Belgische fauna
Op 29 mei 2010 werd tijdens de 1000-soortendag met de Bladmijnenwerkgroep te Ploegsteert (Prov. Henegouwen) deelgenomen aan een grootschalige inventarisatie om zoveel mogelijk soorten te noteren. Overdag werd naar bladmijnen gezocht en 's nachts werden vlindervallen uitgezet waarin één exemplaar *Nemapogon* werd aangetroffen. Na genitaalcontrole is met zekerheid aangetoond dat het om *Nemapogon wolffiella* Karsholt & Nielsen, 1976 gaat. Deze soort wordt hier voor het eerst uit België vermeld. Details over de biologie en verspreiding worden meegedeeld.

Résumé. *Nemapogon wolffiella* (Lepidoptera: Tineidae), espèce nouvelle pour la faune belge
Le 29 mai 2010, un exemplaire de *Nemapogon wolffiella* Karsholt & Nielsen, 1976 a été trouvé dans un piège lumineux à Ploegsteert (Province du Hainaut). La détermination fut confirmée par une préparation des genitalia. C'est la première fois que cette espèce est mentionnée pour la faune belge. Des informations sur sa biologie et sa répartition sont données.

Key words: *Nemapogon wolffiella* – Faunistics – First record – Belgium.

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Introduction

On 29 May 2010 the leaf mining group participated in the 1000-species-day at Ploegsteert (province of Hainaut). Many naturalists searched for different trees, plants, birds, butterflies and other living species. All species were noted and listed in a central computer in the hope to reach 1000 species that day. Sunday 30 May the counter stopped at 744 species, but one of the recorded species turned out to be a new species for the Belgium fauna: *Nemapogon wolffiella* Karsholt & Nielsen, 1976, caught in one of the light-traps. This species has some resemblance with *Nemapogon cloacella* and *N. granella*, and it is advisable to check the genitalia in order to obtain a identification.

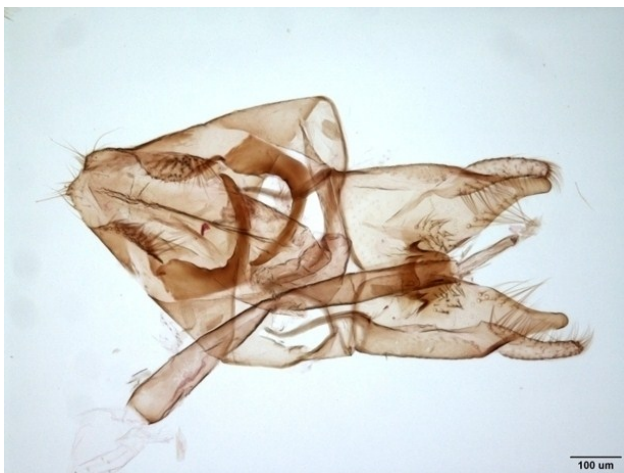


Fig. 1. *Nemapogon wolffiella* Karsholt & Nielsen, 1976, male genitalia, prep. & photo Jurate De Prins.

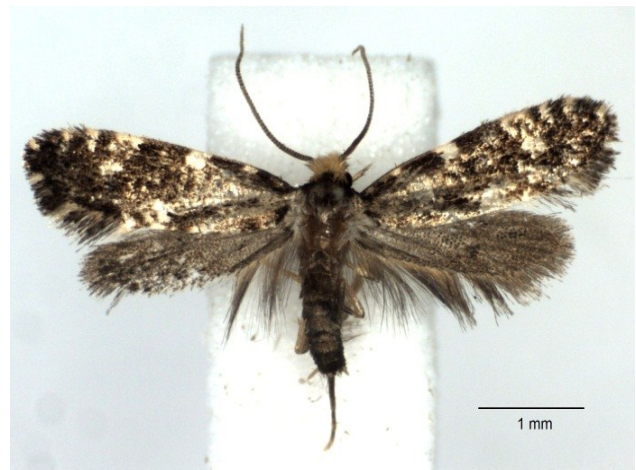


Fig. 2. *Nemapogon wolffiella* Karsholt & Nielsen, 1976. Ploegsteert, (Belgium, Hainaut), 29.v.2010, leg. S. Wullaert (Photo Jurate De Prins).



Fig. 3. *Nemapogon wolffiella* Karsholt & Nielsen, 1976. Ploegsteert, (Belgium, Hainaut), 29.v.2010, leg. & photo S. Wullaert .

Description

The species has a wingspan of 10 to 14mm. The head is pale ochreous and has some darker hairs at the sides and on the crown. The antenna of the male are slightly pubescent and subserrate. The forewing is dark brown with several prominent white spots which can vary in size and position. The fringe has five white bars between the costal cilia and tornus. The hindwing is dark fuscous. *Nemapogon cloacella* and *N. granella* are very similar to *N. wolffiella* but the ground colour of *N. wolffiella* is darkened to such an extent that the dark markings corresponding to those other species are scarcely visible. When the male genitalia are checked the shape of the gnathos arms distinguishes it from the other *Nemapogon* species (Heath 1985).

Biology

On the continent there are two generations flying in May and June and again in July and August. Heath writes that in Great Britain and Ireland the species occurs only in June and July and therefore it is presumably univoltine over there. The adults are active during late afternoon and at dusk. They come to light. The larva is undescribed

but moths were bred from bracket fungi and from rotten wood (Heath 1985).

Distribution

The butterflies can be found in Austria, British Isles, Bulgaria, Croatia, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Italian mainland, Latvia, Luxembourg, Norwegian mainland, Poland, Russia Northwest, Slovakia, Sweden, Switzerland, and The Netherlands (Karsholt & van Nieukerken 2010). In The Netherlands the species was discovered in the year 1986 in the Province Limburg (Kuchlein 1993). From that year on *Nemapogon wolffiella* is being reported in about 13 different places in The Netherlands (microlepidoptera.nl 2010).

Acknowledgements

Thanks to Willy and Jurate de Prins for controlling the genitalia of *Nemapogon wolffiella*. To Chris Snyers and Dries De Vreeze for accompanying me on both trips and to Christophe Gruwier for giving us the opportunity to make observations at Ploegsteert.

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Lampronia rupella, a species new to the Belgian fauna (Lepidoptera: Prodoxidae)

Willy De Prins & Ludwig Jansen

Abstract. A small series of *Lampronia rupella* ([Denis & Schiffermüller], 1775) was caught at Malempré (prov. of Luxembourg) on 29 May 1990, leg. W. Hogenes and deposited in the collection of the Zoological Museum, Amsterdam (now at Naturalis, Leiden). On 5 June 2011, a specimen was photographed by the second author at Ovipat (prov. of Liège). This species is mentioned here for the first time from Belgium and information on its distribution in Europe and biology is presented.

Samenvatting. *Lampronia rupella*, een nieuwe soort voor de Belgische fauna (Lepidoptera: Prodoxidae) Enkele exemplaren *Lampronia rupella* ([Denis & Schiffermüller], 1775) werden verzameld te Malempré (prov. Luxemburg) op 29 mei 1990, leg. W. Hogenes, coll. Zoologisch Museum, Amsterdam. Op 5 juni 2011 werd door de tweede auteur een exemplaar gefotografeerd te Ovipat (prov. Liège). Deze soort wordt hier voor het eerst uit België vermeld en informatie over haar verspreiding in Europa en biologie wordt gegeven.

Résumé. *Lampronia rupella*, espèce nouvelle pour la faune belge (Lepidoptera: Prodoxidae) Quelques exemplaires de *Lampronia rupella* ([Denis & Schiffermüller], 1775) ont été capturés à Malempré (Province de Luxembourg) le 29 mai 1990, leg. W. Hogenes, coll. Musée zoologique, Amsterdam (maintenant à Naturalis, Leiden). Le 5 juin 2011, un exemplaire fut photographié par le second auteur à Ovipat (Province de Liège). Cette espèce est mentionnée ici pour la première fois de la faune belge et des informations sur la répartition en Europe et la biologie sont données.

Key words: *Lampronia rupella* – Prodoxidae – Belgium – Faunistics – First record.

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Introduction

A small series of *Lampronia rupella* ([Denis & Schiffermüller], 1775) (fig. 1) was caught at Malempré (Belgium, Prov. of Luxembourg) on 29.v.1990, leg. W. Hogenes, coll. Zoological Museum, Amsterdam (presently in Naturalis, Leiden). More recently, on 05.vi.2011, a specimen was photographed at Ovipat (Prov. of Liège) (fig. 2) in a valley with high herbs and shrubs (leg. L. Jansen). This species has never been mentioned before from the Belgian fauna (De Prins 1998, De Prins & Steeman 2003–2011). Wingspan 13–17 mm, head rusty yellow, forewing dark brown with purplish sheen and four pale yellow spots; a dorsal spot near the base at a positive angle, one at tornus, and two on the costa inside and outside tornal spot, respectively. It is the only *Lampronia* species with two costal spots. It could, however, be confused with *Alloclementia mesospilella* (Herrich-Schäffer, 1854) (Incurvariidae), but in that species the fringes are whitish yellow from the apex till the middle of the termen and the forewing ground colour is brown without the violet hue of *L. rupella*.

Biology

The habitat of *L. rupella* consists of shadow-rich, rather wet deciduous forests with an undergrowth of large herbs and shrubs (fig. 3), including *Cirsium*. The foodplant of the caterpillar is unknown, but it is reported to live on Asteraceae (Gustafsson 2008), however, this needs confirmation. In Sweden, the caterpillar is supposed to feed on *Cirsium heleniodes* and *Cicerbita alpina* (Bengtsson *et al.* 2008: 346). In France, Lhomme (1946–1963: 1131) reports *Adenostyles alpina* and

Homogyna alpina (both Asteraceae) as foodplants. The caterpillars feed in April–May and the adults fly during June–July in sunshine, preferably in the morning.

Distribution

L. rupella is widespread in Central and East Europe, and becomes more rare towards the west. It is known from Albania, Austria, Bulgaria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Norway, Poland, Romania, Russia, Slovakia, Sweden, Switzerland, and Yugoslavia (van Nieukerken 2011). In North Europe, the species occurs in the whole of Norway and Finland, till the northernmost parts of Lapland. In Sweden, it has been recorded southwards till Dalsland, Västergötland and Uppland. It has not yet been found in Denmark. Eastwards, the species reaches the Altai mountains (Bengtsson *et al.* 2008: 347).

In Germany, *L. rupella* is known from Schleswig-Holstein, Nordrhein-Westfalen, Baden-Württemberg, Bayern, Sachsen, Sachsen-Anhalt, and Thüringen (Gaedike & Heinicke 1999: 44, LepiForum).

In France, the species has been recorded mainly from mountainous areas: Alpes-Maritimes, Basses-Alpes, Cantal, Doubs, Hautes-Alpes, Haute-Garonne, Hautes-Pyrénées, Haut-Rhin, Isère, Puy-de-Dôme, Pyrénées-Orientales, Saône-et-Loire et Savoie (Lhomme 1946–1963: 1131).

The species has not yet been mentioned from the other neighbouring countries Luxembourg, The Netherlands, and the United Kingdom.

Acknowledgments

We would like to thank Jurate De Prins for the photograph of the Malempré specimen of this new

Belgian species, and Leo Janssen and Steve Wullaert for the identification of the Ovifat specimen.



Figs. 1–2. Adults of *Lampronia rupella* ([Denis & Schiffermüller], 1775); 1.– Belgium, Luxembourg, Malempré, 29 May 1990, leg. W. Hogenes, coll. W. De Prins. Scale 2 mm (Photo: Jurate De Prins); 2.– Belgium, Liège, Ovifat, 05 June 2011 (Photo: Ludwig Jansen).



Fig. 3. Habitat of *Lampronia rupella* ([Denis & Schiffermüller], 1775) at Ovifat (Belgium, Province of Liège), 05 June 2011 (Photo Ludwig Jansen).

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First record of *Anthocharis gruneri* for Serbia (Lepidoptera: Pieridae)

Miloš Popović & Miroslav Milenković

Abstract. The information about the observation of *Anthocharis gruneri* Herrich-Schäffer, 1851, a new species for the fauna of Serbia, is given and its distribution in the Balkan Peninsula is summarized. Some ecological preferences, the threat status and behaviour of the species are discussed.

Samenvatting. Eerste melding van *Anthocharis gruneri* uit Servië (Lepidoptera: Pieridae). Informatie over de eerste waarneming van *Anthocharis gruneri* Herrich-Schäffer, 1851, in Servië wordt gegeven en de verspreiding in het Balkanschiereiland wordt opgesomd. Enkele ecologische preferenties, de rodelijststatus en het gedrag van deze soort worden becommentarieerd.

Résumé. Première mention d'*Anthocharis gruneri* pour la Serbie (Lepidoptera: Pieridae). Des informations concernant la découverte d'*Anthocharis gruneri* Herrich-Schäffer, 1851 en Serbie sont données et la répartition dans les Balkans est rassemblée. Quelques préférences écologiques, le statut et le comportement de cette espèce sont discutés.

Key words: New records – Preševo – butterflies – endangerment.

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On May 13th 2011 a group of lepidopterists and ornithologists visited a poorly researched region near Miratovac village, south of Preševo at an altitude of about 550 m (42°16'20" N, 21°39'1,6" E). The location represents a relatively small rocky area with a strong submediterranean influence arriving from the south through northern Macedonia. The explored site is covered mainly by fragmented *Quercus pubescens* forests and dry, rocky pastures, but the wider area is predominantly agricultural land.

During this survey, two male specimens of *Anthocharis gruneri* Herrich-Schäffer, 1851 were found flying together with *Leptidea duponcheli*. They were flying slowly, without stopping and always close to the ground. One specimen was photographed and collected for confirmation purposes. During the next survey, at the middle of July, *Iolana iolas*, *Spialia phlomidis*, *Plebejus pylaon* and *Pyrgus serratalae* were found at the same locality. All of these species are considered rare and local butterflies in Serbian fauna (Popović & Đurić 2011).

Anthocharis gruneri is distributed in the southern Balkan Peninsula and the Middle East. On the Balkan Peninsula, the species is reported as common in continental Greece (Thrace, Macedonia, Epirus, Thessaly, Sterea Hellas, Peloponnese) (Pamperis 1997) and Macedonia (Galičica Mt., Radika Valley, Vardar Valley, Vodno Mt., Kozjak Mt.) (Franeta pers. comm., Tolman & Lewington 2008), but it becomes more local in Albania (Tolman & Lewington 2008) and SW Bulgaria (Kožuh, Belasica, Hambar Dere, Ilinden, Gradište, Gospodinci, Razlog) (Abadjiev 2001). There is also a single old record from Hungary (Csiki Mts.); however, the occurrence of this species in the Pannonian plain remains highly doubtful (Bálint & Janáky 1989). In the Middle East the distribution of the species covers most parts of Turkey, Syria, Iraq, Iran, and Transcaucasia (Savela 2008). Based on the nomenclature of Abadjiev & Ganey (1990) and Hesselbarth *et. al.* (1995) the Serbian populations

possibly belong to the nominotypic *Anthocharis gruneri* ssp. *gruneri*.

The species is reported to inhabit very dry habitat with limited vegetation (Pamperis 1997). The caterpillars foodplants are *Aethionema saxatile*, *Aethionema orbiculatum*, *Sisymbrium bilobum*, *Microthlaspi umbellatum* and *Isatis tinctoria* (Ziegler 2005, Savela 2008), of which *Aethionema saxatile* and *Isatis tinctoria* are recorded also from Serbia (Zlatković pers. comm.). This indicates that the butterfly is possibly a permanent resident in Serbia. Thus the site south of Preševo forms the northernmost limit of the known species distribution in Europe. The closest known locality is in Macedonia on Mt. Vodno south of Skopje approximately 40 km to the south.

During the field surveys in this area, no immediate threats for the habitat of *Anthocharis gruneri* were noticed. Agriculture is dominated by small scale farming and is limited to more open areas, grazing is limited due to low quality grassland and abandonment due to depopulation of the area is not yet noticeable. This provides good opportunity for the survival of the species in Serbia, however more detailed surveys of the region and the ecology of the species would be required to establish its threat status.

Acknowledgments

The field survey in southern Serbia was organized as a result of cooperation between entomologists from BD „Dr Sava Petrović“, „HabiProt“ and ornithologists from „DZPPS“ and „Zeleni Balkani“. The aim of the expedition was to investigate potential new areas to be included in NATURA 2000 network. The entomological survey was financed by The Rufford Small Grants Foundation. The authors would like to thank Rudi Verovnik, Tamas Hapka, Milan Đurić and Filip Franeta for literature collation and for suggestions on this paperwork.



Fig. 1.– Google earth map of the explored area. The *Anthocharis gruneri* habitat is marked in red.



Fig. 2.– *Anthocharis gruneri*, Miratovac, Serbia.



Fig. 3.– The habitat of *Anthocharis gruneri* in Serbia.

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A comparison between the female genitalia of *Gegenes pumilio* and those of *G. nostradamus* (Lepidoptera: Hesperioidea)

John G. Coutsis

Abstract. The female genitalia of *Gegenes pumilio* (Hoffmansegg, 1804) and *G. nostradamus* (Fabricius, 1793) are figured and described, providing information for the safe identification of the females of these two closely allied and often misidentified similar species.

Samenvatting. Een vergelijking tussen de vrouwelijke genitalia van *Gegenes pumilio* en die van *G. nostradamus* (Lepidoptera: Hesperioidea)

De vrouwelijke genitalia van *Gegenes pumilio* (Hoffmansegg, 1804) en van *G. nostradamus* (Fabricius, 1793) worden afgebeeld en beschreven. Hierdoor wordt het mogelijk om de wijfjes van deze twee, dikwijls verkeerd gedetermineerde soorten, op naam te brengen.

Résumé. Une comparaison entres les genitalia femelles de *Gegenes pumilio* et celles de *G. nostradamus* (Lepidoptera: Hesperioidea)

Les genitalia femelles de *Gegenes pumilio* (Hoffmansegg, 1804) et celles de *G. nostradamus* (Fabricius, 1793) sont illustrées et décrites. Ainsi, une détermination certaine de ces deux espèces souvent confondues, devient possible.

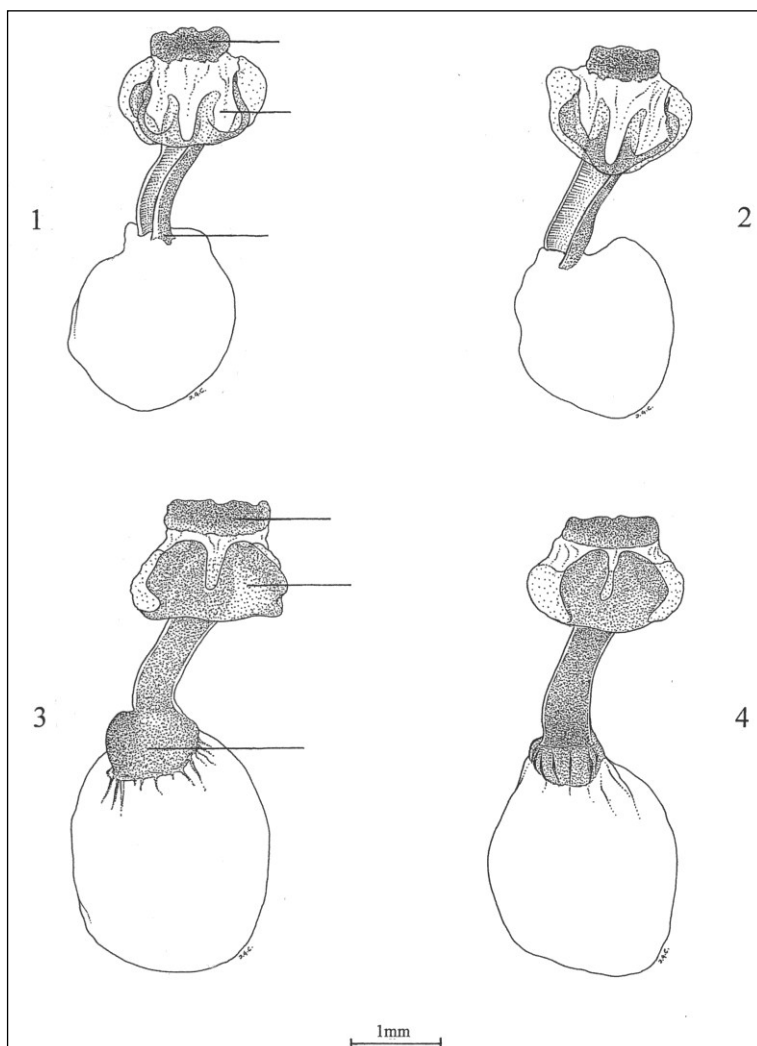
Key words: – Lepidoptera – Hesperioidea – *Gegenes* – *G. pumilio* – *G. nostradamus* – Female genitalia.

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Introduction

The similarity between *Gegenes pumilio* (Hoffmansegg, 1804) and *G. nostradamus* (Fabricius, 1793) has often led to misidentifications. Fortunately their respective male genitalia provide characters that

are useful for differentiating and identifying the males of both these species (Verity 1940, Evans 1949, Coutsis & Olivier 1993). In the case of females, however, no information regarding their genitalia has ever been provided, making it presently desirable to fill this vacuum.



Figs. 1–4. Ventral aspect of bursa copulatrix of *Gegenes* species from Greece. 1, 2. *G. pumilio*. 3, 4. *G. nostradamus*. 1.– Sími Island, near Pédi, sea level, 24.iv.2010; 2.– Spétses Island, sea level, 24.ix.1974; 3.– Spétses Island, Ágios Mámas, sea level, 10.ix.2001; 4.– Attikí, Ekáli, ca. 400m, 25.viii.1963.

The bursa copulatrix

[Genitalia component terms derived from Tuxen (1970)].

G. pumilio. (Figs. 1, 2). Lamella post-vaginalis shorter than in *G. nostradamus*; lamella ante-vaginalis halves deeply bifid; heavily sclerotized ductus bursae of even width throughout entire length; corpus bursae smaller than in *G. nostradamus*.

G. nostradamus. (Figs. 3, 4). Lamella post-vaginalis longer than in *G. pumilio*; lamella ante-vaginalis halves

rounded; heavily sclerotized ductus bursae distended at base; corpus bursae larger than in *G. pumilio*.

Discussion

The diversity and degree of these differences provide a means for easy identification of female *G. pumilio* and *G. nostradamus*, thus eliminating the possibility for misidentifications resulting from not all too clear wing characters.

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