PHEGEA

driemaandelijks tijdschrift van de
VLAAMSE VERENIGING VOOR ENTOMOLOGIE

Afgiftekantoor 2170 Merksem 1 ISSN 0771-5277
Periode: oktober – november – december 2005 Erkenningsnr. P209674

Jaargang 33, nummer 4 1 december 2005

A recently discovered new locality for *Coenonympha leander* in Greece, and notes about the taxonomic position of the species-group taxon *Coenonympha orientalis* (Lepidoptera: Nymphalidae, Satyrinae)

John G. Coutsis & Níkos Ghavalás

Abstract. A new locality in Greece is given for *Coenonympha leander* (Esper, 1784) and the taxonomic position of the species-group taxon *Coenonympha orientalis* (Rebel, 1913) is being discussed.

Samenvatting. Een onlangs ontdekte nieuwe vindplaats in Griekenland van *Coenonympha leander* en bemerkingen over de taxonomische plaats van het taxon in de soort-groep *Coenonympha orientalis* (Lepidoptera: Nymphalidae, Satyrinae)

Résumé. La découverte récente d'une nouvelle localité de *Coenonympha leander* en Grèce, avec des notes sur la position taxonomique du taxon dans le groupe-espèces *Coenonympha orientalis* (Lepidoptera: Nymphalidae, Satyrinae)

Key words: Satyrinae – *Coenonympha* – *leander* – *orientalis* – taxonomy - distribution – faunistics - Greece.

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Introduction

The hitherto known distribution of nominotypical *Coenonympha leander* (Esper, 1784) in Greece comprises areas that are situated immediately to the N and NW of Mt. Falakró (Dráma district, Makedonía), on and immediately to the SW of Mt. Varnoús, on Mt. Vítsi (both localities being in Flórina district, Makedonía), at Valtónera, situated near Ptolemaís (Kozáni district, Makedonía) and at Kristalopigí, situated immediately to the S of lake Mikrí Préspa (Kastoriá district, Makedonía). The species-group taxon *orientalis* (Rebel, 1913) is known to occur in Greece in the general vicinity of Katára pass, on Mt. Tzoumérka

(both, S Píndos Mts., Ioánnina district, Ípiros), near Miliá and Flambourári (both, N Píndos Mts., Ioánnina district, Ípiros), near Pendálofos, situated on Mt. Vóio (Kozáni district, Makedonía), on Mt. Grámmos (Kastoriá district, Makedonía) and on Mt. Smólikas (Ioánnina district, Ípiros). No single area has so far been found in which the two species-group taxa fly together.

The purpose of the present paper is to give new locality data on *leander* within Greek territory and to discuss the taxonomic position of *orientalis* vis-à-vis *leander* and *Coenonympha gardetta* (de Prunner, 1798).

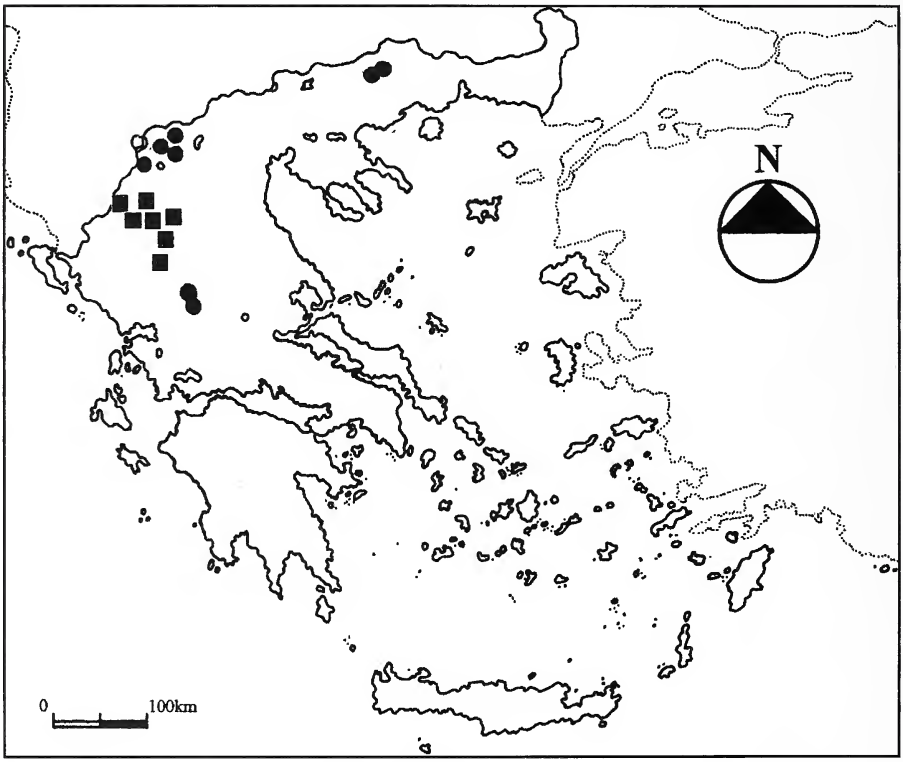

Fig. 1. Map of Greece, indicating sampling localities.
● = *Coenonympha* (*leander*) *leander*, ■ = *Coenonympha* (*leander*) *orientalis*

A new locality record for *Coenonympha leander*

In early June 2003 the second author discovered a colony of *leander* on Mt. Voutsikáki (Ágrafa Mts., S Píndos range, Kardítsa district, Thessalía) at an altitude of about 1700 m. In early June 2004 the same area was revisited, this time by both authors, and a further colony was discovered on Mt. Galatás at an altitude of about 1300 m. The former locality is situated just above the tree line and supports a mixed Flora of grasses and shrubs. The latter locality comprises clearings with grasses and ferns within a forest composed of a mixture of *Abies*

borisii-regis Mattf. and various deciduous trees. These localities lay SSE of Katára pass and Mt. Tzoumérka. They are separated from them by at a distance of about 70 km and 50 km respectively and belong to the same mountain system (Píndos range). They constitute the southernmost, known range limit of *leander* in Europe. The importance of this find is that it shows that the range of *leander* in Greece comprises localities that encircle from roughly North, North-East and South the known localities of *orientalis*, apparently without the present existence of any zones of contact.

The taxonomic status of *orientalis*

There have been in time four positions in respect of the taxonomic status of *orientalis*. There are those who have placed it as a ssp. of *gardetta*, and those who have considered it as simply belonging to the *Coenonympha arcania* (Linnaeus, 1761)/*Coenonympha darwiniana* Staudinger, 1871/*C. gardetta*-complex, others who have considered it to be a ssp. of *leander*, and still others who have considered it to be a separate species in its own right. In those cases in which taxonomic justifications are given, the criteria that are being selected and stressed (either through publication, or through personal communication) are the ones that best support the often, predetermined taxonomic view. The first position is held by Rebel & Zerny (1931), by Gross (1957), by Thurner (1964), by Sijarić (1978), by Boillat (1990)—who also provides a detailed historic overview on the subject, re-establishes synonymies and gives the first detailed presentation of arguments in support of his views—, and by Jakšić (1988 & 1998). The second position is held by Schawerda (1913) and by Davenport (1941). The third position is held by Coutsis (1972), by Dacie *et al.* (1979), by Higgins & Riley (1980), by Willemse (1981), by Higgins & Hargreaves (1983), by Tolman & Lewington (1997), by Tolman (2001), and by Chinery (1998). The fourth and last position is held by Schawerda (1917), who had apparently changed his mind vis-à-vis his previous position, by Pamperis (1997), and by Lafranchis (2004).

According to the first position, *orientalis* is being considered as being a ssp. of *gardetta* on the basis primarily of two external aspects: a.- That *orientalis* shares with *gardetta* a similar in shape, white post-discal band on HW underside, which is considered more important than other characters, and which it is said that *leander* completely lacks, and b.- That form *macrophthalmica*, Stauder of *gardetta*, which inhabits areas that are geographically placed between the distribution areas of typical *gardetta* and *orientalis*, presents certain external characters that are considered as being intermediate between those of typical *gardetta* and those of *orientalis*, suggesting the presence of variation on a cline. Mention is also made of the existence of a gray area on apex of FW underside in some individuals of *orientalis* of a more northern provenance, which is a constant character in *gardetta*, but considered as totally lacking in *leander*, implying that this is yet another aspect that makes *orientalis* appear closer to *gardetta* than it does to *leander*.

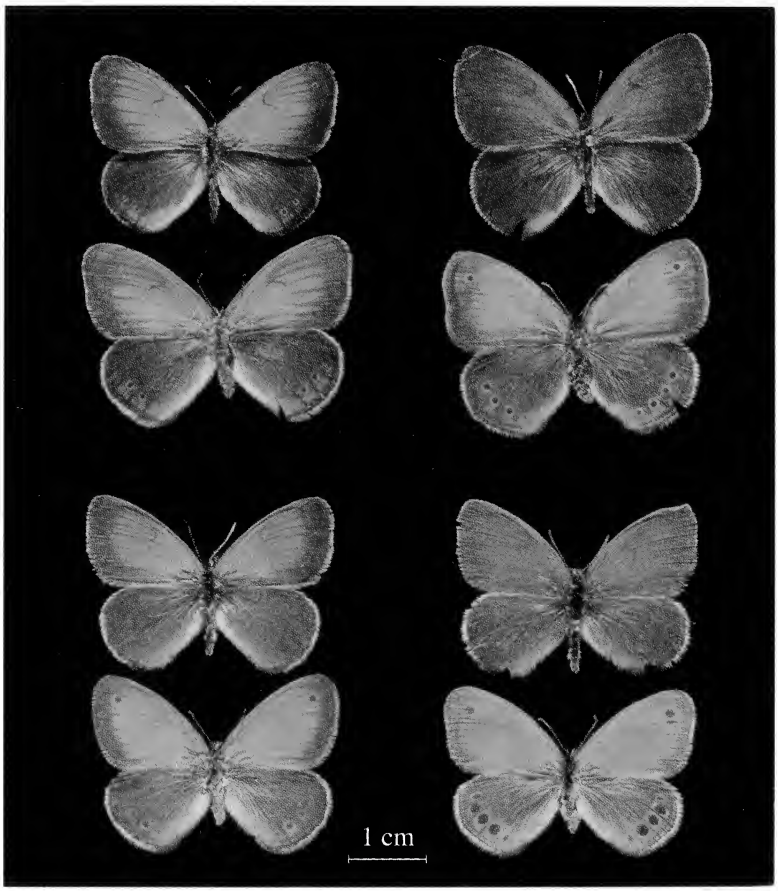

Fig. 2. Upper-sides of *Coenonympha* from Greece. 1–4. (*leander*) *leander*, 5–8. (*leander*) *orientalis*, 1. ♂ near Krateró, Mt. Varnoús, Flórina district, Makedonía, ca. 800 m, 5.vi.1997 (normal), 2. ♂ Mt. Varnoús, Flórina district, Makedonía, 1400 m, 21.vi.1996 (dark), 3. ♀ near Andártiko, Flórina district, Makedonía, 1300 m, 5.vi.1997 (normal), 4. ♀ near Ahladiá, Dráma district, Makedonía, 550 m, 15.v.1994 (with weekly defined HW sub-marginal fulvous-orange band), 5. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (normal), 6. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (dark), 7. ♀ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (normal), 8. ♀ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (HW with sub-marginal fulvous-orange band).

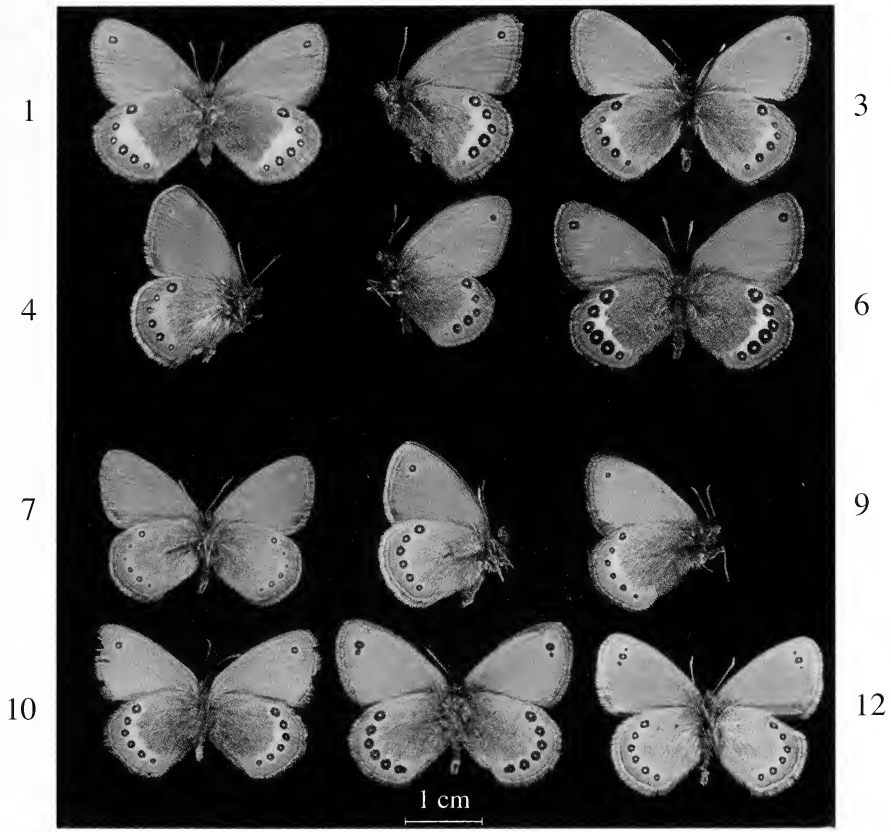

Fig. 3. Undersides of *Coenonympha* from Greece. 1-6. (*leander*) *orientalis*, 7-12. (*leander*) *leander*, 1. ♀ near Pendálofos, Mt. Vóio, Kozáni district, Makedonía, 1200 m, 22.vi.1976 (wide white band), 2. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (normal white band), 3. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (reduced white band with fulvous-orange wash), 4. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (reduced white band with fulvous-orange wash and reduced black rings), 5. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (much reduced white band with pronounced fulvous-orange wash), 6. ♂ near Pendálofos, Mt. Vóio, Kozáni district, Makedonía, 1200 m, 22.vi.1976 (reduced white band and much enlarged black rings). 7. ♂ Kristalopigí, Kastoriá district, Makedonía, ca. 600 m, 5.vi.1997 (normal), 8. ♂ near Ahladiá, Dráma district, Makedonía, 550 m, 15.v.1994 (black rings proximally with white scales), 9. near Andártiko, Flórina district, Makedonía, 1300 m, 5.vi.1997 (narrow white band just appearing), 10. ♀ Kristalopigí, Kastoriá district, Makedonía, ca. 600 m, 21.vi.1996 (narrow white band evident), 11. ♂ near Ahladiá, Dráma district, Makedonía, 550 m, 15.v.1994 (large black rings), 12. ♂ Mt. Galatás, Ágrafa Mts., Píndos range, Kardítsa district, Thessalía, 1200-1300 m, 16.vi.2004 (normal - new locality record)

According to the second position, *orientalis* is being placed within the *arcania/darwiniana/gardetta* complex, presumably on the basis of external characters and in particular because of the fact that they all share the white post-discal band on HW underside.

According to the third position, *orientalis* is being placed as a ssp. of *leander*, on the basis of their sharing upper-side wing characters (most important of which is considered the fulvous-orange wedge-like mark on HW anal angle, which in *gardetta* is either totally missing, or at the most appears as traces of a narrow marginal line), of what is (erroneously) believed to be their constant sharing a fulvous-orange apex on FW underside (in *gardetta*, *macrophthalmica* inclusive, the apex is grey), of there being individuals of *orientalis* with a marked reduction of the HW underside white band and individuals of *leander* with a faint appearance of this band, of their having about equal FW lengths (*gardetta* is a smaller butterfly), of their inhabiting areas included within the same altitudinal limits (from about 600 to about 1700 m, the upper limit of which in Greece is sub-alpine and not alpine, thus differing in this case from *gardetta*, which is predominantly an alpine species) and of their sharing the same flight period (late May to first half of July, according to altitude, and under normal seasonal and weather conditions – *gardetta* as a rule flies in July and August). The problem with lepidopterists adhering to this position is that they did not consider these arguments worthy of publication, as they judged them as being self-evident.

According to the fourth position, *orientalis* is being raised to specific level apparently on the basis of what is believed to be unique external characters, that do not relate to any of the other taxa under consideration, of sympatry with *leander* (though no actual syntopism is involved here), and of the supposed absence of intermediates between the two.

Data based on personal experience

Our own field experiences in Greece with both *leander* and *orientalis*, dating back to 1971, has shown them to inhabit predominantly grassy clearings within the forest zone, as well as clearings supporting large concentrations of ferns. The lowest altitude at which we have found *leander* is at 500 m, and *orientalis*, at 600 m. The highest altitude for the former has been recorded at 1700 m and for the latter, at 1500 m., both being clearly situated below alpine level, as applying to Greece. The earliest capture for the former has been recorded in mid-May (very fresh), and for the latter, in early June (fairly fresh), while the latest captures for both have been recorded in mid-July (worn, or in tatters), thus both taxa appearing and ending their flight, respectively before the appearance and phasing out of the syntopic *arcania*. Out of a total of 61 male *leander* in our possession, the minimum FW length has been measured at 17.00 mm, the maximum at 20.10 mm and the average at 18.29 mm. In the case of Greek *orientalis*, and out of a total of 46 male individuals, minimum FW length was

measured at 16.00 mm, maximum at 19.00 mm and average at 17.22 mm. Female *leander* in our possession, totalling 21 individuals, have a FW length of minimum 17.40 mm, maximum 20.60 mm and average 19.15 mm, while the corresponding values for 14 *orientalis* females in our possession are minimum 18.40 mm, maximum 20.10 mm and average 19.07 mm. All these measurements for both taxa are higher than are the corresponding ones for *gardetta.* Variation in both *leander* and *orientalis* males is expressed on upper-side by the extent, definition and tone of the FW fulvous-orange area, by the definition of the FW end-cell black stria and by the degree of extension of the wedge-like mark on HW anal angle along the wing's sub-margin, occasionally forming a weekly-defined band that partly encloses some of the sub-marginal black rings. In male *leander* the underside of the HW varies primarily by the size of the black sub-marginal rings, as well as by the rare presence of a narrow whitish post-discal band just basad to these rings. In male *orientalis* variation on underside is expressed on HW primarily by the width and shape of the whitish post-discal band, which on rare occasions may be much reduced and darkened, and by the size of the sub-marginal black rings. In both taxa there is also variation in the tone of, and amount of grey present in the basal, discal and part of the post-discal area of the HW underside. Variation in the females of both taxa follows that which is expressed in the males, but the colours on upper-side are as a rule of a lighter hew and the fulvous-orange sub-marginal band of HW upper-side, when present, tends to be wider, more extensive and better defined than it is in the males.

Coenonympha leander from localities other than Greece

In Hesselbarth *et al.* (1995), Tuzov *et al.* (1997), and Nazari (2003), there are colour photographs of *leander*, respectively from Turkey (Pl. 39 Underside, figs. 1–5), Russia (Pl. 46, fig. 21) and Iran (Pl. 51, fig. 7), that clearly show them to possess a grey area on the apex of FW underside, much as is the case in *gardetta* and certain northern *orientalis* and quite unlike the totality of Greek specimens of *leander* that have been studied and which always have the apex fulvous-orange instead. This shows that this trait cannot be considered as indicating exclusive taxonomic proximity between *orientalis* and *gardetta*, since it is also occasionally present in *leander.*

Discussion

Our own estimation of the problem is that at present and with the evidence at hand, there is no safe way of drawing 100% definitive conclusions as to the true taxonomic status of *orientalis*. The criteria presented by the position that *leander* and *orientalis* are conspecific (third position), however, and especially the one which relates to the existence in both *leander* and *orientalis* of intermediate individuals as far as the whitish post-discal band on HW underside is concerned (perhaps suggesting gene exchange between the two taxa at a time when they may have been syntopic) , appear to us as being the most convincing of the lot, and we are of the opinion that on a tentative basis, it is best at present to either

consider *orientalis* as being a ssp. of *leander* rather than of *gardetta*, or to consider it as being a semispecies of superspecies (*leander*). The problem will most probably eventually be solved by a study of the DNA sequences of all the species-group taxa under consideration and it is sincerely hoped that this will be done in the very near future.

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A new brown *Polyommatus* (*Agrodiaetus*) from northern Greece (Lepidoptera: Lycaenidae)

John G. Coutsis & Jurate De Prins

Abstract. A new species of brown *Agrodiaetus* is described from northern Greece on the basis of its chromosome number, its karyotype, and its external characters. The new species-group taxon, so far known only from a single restricted area situated in the district of Dráma, appears to be closest to the *aroaniensis* species-group complex.

Samenvatting. Een nieuwe, bruine *Polyommatus* (*Agrodiaetus*)-soort uit Noord-Griekenland (Lepidoptera: Lycaenidae)
De beschrijving van een nieuwe, bruine *Agrodiaetus*-soort uit Noord-Griekenland is gebaseerd op het chromosoomnummer, het karyotype en de uiterlijke kenmerken. Deze nieuwe soort, tot nu toe uitsluitend bekend uit een beperkt gebied in het district Dráma, blijkt het nauwst verwant te zijn met de *aroaniensis* soortengroep.

Résumé. Une espèce nouvelle, brune, de *Polyommatus* (*Agrodiaetus*) du nord de la Grèce (Lepidoptera: Lycaenidae)
La description d'un *Agrodiaetus* brun, nouveau, du nord de la Grèce est basée sur le nombre des chromosomes, le caryotype et les caractères extérieurs. Ce taxon nouveau, qui est jusqu'à maintenant seulement connu d'un endroit restreint dans le district Dráma, appartient au groupe-espèces d'*aroaniensis*.

Key words: Lycaenidae – *Polyommatus* – *Agrodiaetus* - *Polyommatus* (*Agrodiaetus*) *eleniae* sp. nov. – karyotype – chromosome number – Greece

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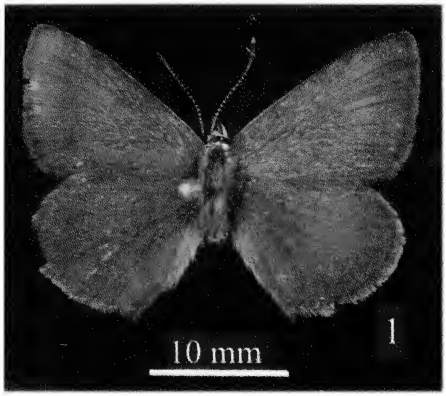
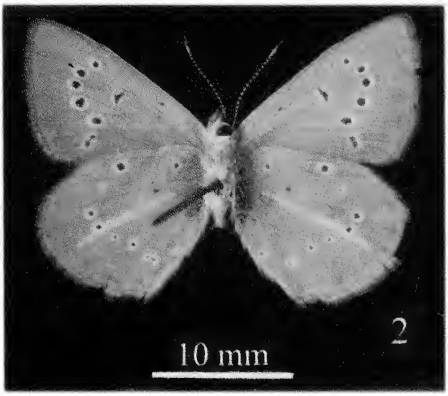
Introduction

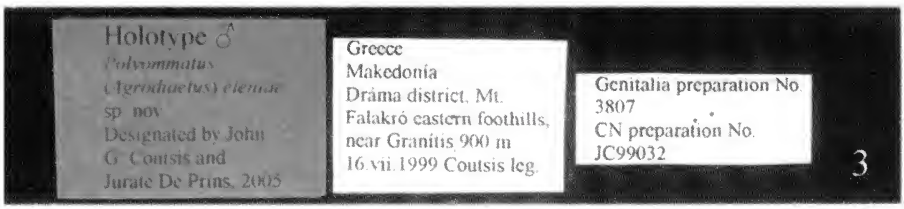
During a series of expeditions that were carried out by the first author on Mt. Falakró and its surrounding foothills (northern Greece, Makedonía, Dráma district – Fig. 22), a small number of a brown *Polyommatus* (*Agrodiaetus*) were recorded which, on the basis of their general external features and of their male genitalia, were at first attributed to *Polyommatus* (*Agrodiaetus*) *aroaniensis* (Brown, 1976). The fact, however, that the recorded individuals exhibited a darker, redder and warmer-appearing yellow-brown underside ground-colour (especially evident in fresh individuals), than is the case in nominotypical *aroaniensis*, prompted us to consider having their chromosome number and karyotype checked; this task was undertaken by the second author, and the results showed that these specimens represent a new and as yet un-described species, that fits within the *aroaniensis* species-group complex.

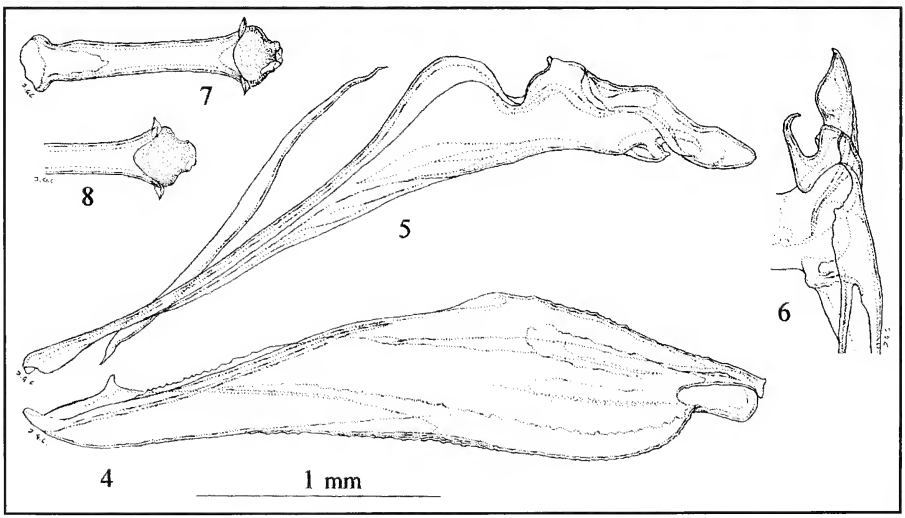
Abbreviations:

ZMA	Zöologisch Museum, Universiteit van Amsterdam
TL	Type locality
FW	Forewing
HW	Hind-wing
MI	Metaphase of first division of primary spermatocyte
MII	Metaphase of second division of primary spermatocyte
n	Haploid chromosome number
ssp.	Subspecies









Figs. 1–8. *Polyommatus* (*Agrodiaetus*) *eleniae* **sp. nov**. holotype ♂. **1**.– Upper-side. **2**.– Underside. **3**.– Data labels. 4–8. Genitalia. **4**.– Side view of outer face of left valva. **5**.– Side view of left face of genitalia with valvae and aedeagus removed. **6**.– Ventral view of right falx, right labis and right half of tegumen. **7**.– Dorsal view of aedeagus. **8**.– Ventral view of distal half of aedeagus.

Polyommatus (*Agrodiaetus*) *eleniae* sp. nov.

Material. Holotype ♂ (Figs. 1, 2), Greece. Makedonía, Dráma district, Mt. Falakró, eastern foothills, near Granítis, 900 m, 16.vii.1999, Coutsis leg., coll. ZMA. ♀ paratype (Figs. 10, 11), Makedonía, Dráma district, Mt. Falakró, 1200–1300 m, 10.vii.1993, Coutsis leg., coll. ZMA. 19 ♂ paratypes, Makedonía, Dráma district, Mt. Falakró, all Coutsis leg. et coll., of which: 9 specimens 1300 m, 6.viii.1981, 3 specimens 1200–1300 m, 10.vii.1993, 1 specimen 1600–1900 m, 6.viii.1999, 3 specimens eastern foothills, near Granítis, ca. 600 m, 7.vii.2001, 2 specimens same data, but 7.viii.1999 and 1 specimen same data, but 600–700 m, 6.viii.1999. 3 ♀ paratypes, Makedonía, Dráma district, Mt. Falakró, 1300 m, 6.viii.1981, Coutsis leg. et coll.

Description. Holotype (Figs. 1, 2). FW length 16.0 mm. Upper-side: as in *aroaniensis*; ground colour dark brown with a slight yellowish sheen, which under certain lighting conditions may make sub-marginal area of both FW and HW appear darker than rest of wing; when held against light, wings not translucent, being similar to those of *aroaniensis*, and differing from those of *Polyommatus* (*Agrodiaetus*) *ripartii* (Freyer, 1830) and *Polyommatus* (*Agrodiaetus*) *nephohiptamenos* (Brown & Coutsis, 1978), both of which show mild translucence; wing veins blackish-brown, but not as evident as in *ripartii* and *nephohiptamenos*, because of the lack of wing translucence; FW basal, discal and part of post-discal area covered with dense dark brown hairs that are somewhat lighter than the ground-colour; FW blackish stria at cell-apex barely visible; inner half of fringes of FW blackish-brown, outer half brown, while on HW inner half of fringes blackish-brown and outer half whitish-brown. Underside: as in aroaniensis, but ground-colour darker yellow-brown with a reddish tinge, giving an overall warmer appearance; HW black post-discal spots small, sub-marginal markings vestigial, and whitish stripe weakly developed; FW fringes with light brown inner half and blackish-brown outer half; HW fringes with light brown inner half and brown outer half; base of HW devoid of any greenish- or bluish-silver dusting, even when observed microscopically.

♀ paratype (Figs. 10, 11). FW length 16.1 mm; upper-side as in ♂, but ground-colour lighter dark brown and lacking the yellowish sheen, FW blackish stria at cell-apex better defined, FW hairs missing, and fringes of both wings lighter-coloured; dark brown sub-marginal area darker than ground-colour, as in ♂, but narrower; HW with blackish-brown sub-marginal markings. Underside, as in male, but fringes lighter-coloured, HW whitish stripe slightly better defined, and both wings with bare traces of sub-marginal orangey-brown spots.

Variation (Figs. 14–17). This is expressed in the males by their overall size (FW length: minimum = 14.1 mm, maximum = 17.3 mm, and average for 20 specimens studied = 16.4 mm), by the shade and intensity of ground-colour on underside (light yellow-brown with slight reddish tinge to darker yellow-brown with more intense reddish tinge, depending on the freshness of the specimens), by the degree of definition and the size of the HW post-discal black spots on underside, as well as by the degree of definition, or total absence, of the HW underside whitish stripe (about 60% out of 20 ♂ specimens studied were found

to be totally un-striped, while 40% were found to carry a stripe in varying degrees of definition, but never as well defined as in *ripartii*). In the 4 available females variation is expressed as it is in the males, but the FW length was found to have a minimum value of 14.0 mm, a maximum one of 16.2 mm, and an average one of 15.6 mm, while one of the studied specimens was found to be un-striped and the other three, to possess a whitish stripe that is slightly better defined than in the males. Variation in the females is also expressed by the degree of definition of the underside orangey-brown sub-marginal spots, the degree of definition and number of the HW upper-side sub-marginal dark brown markings, as well as by the shape of the wings, that most often tend to be narrower than in the ♂.

Male genitalia (Figs. 4–8). Indistinguishable from those of *aroaniensis*, sharing with the latter the long valvae that are also characteristic of *Polyommatus* (*Agrodiaetus*) *humedasae* (Toso & Balletto, 1976), *Polyommatus* (*Agrodiaetus*) *alcestis* (Zerny, 1932), *Polyommatus* (*Agrodiaetus*) *fabressei* (Oberthür, 1910), nominotypical *Polyommatus* (*Agrodiaetus*) *dantchenkoi* (Lukhtanov, Wiemers & Meusemann, 2003), *Polyommatus* (*Agrodiaetus*) *dantchenkoi orphicus* Kolev, 2005 and *Polyommatus* (*Agrodiaetus*) *admetus* (Esper, [1783]).

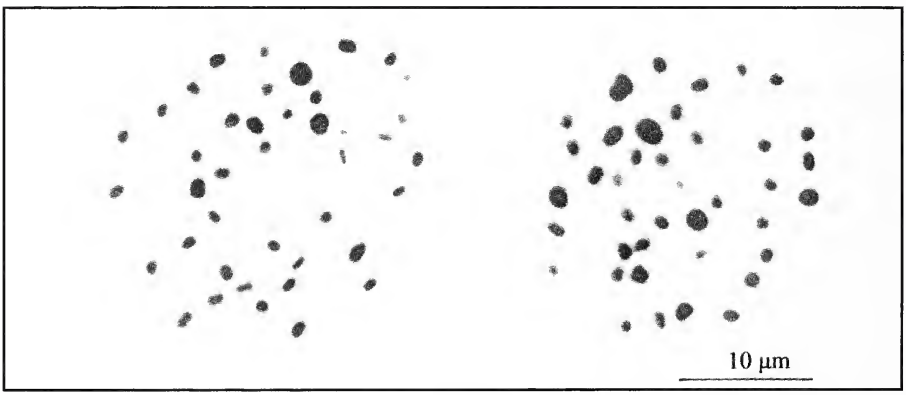


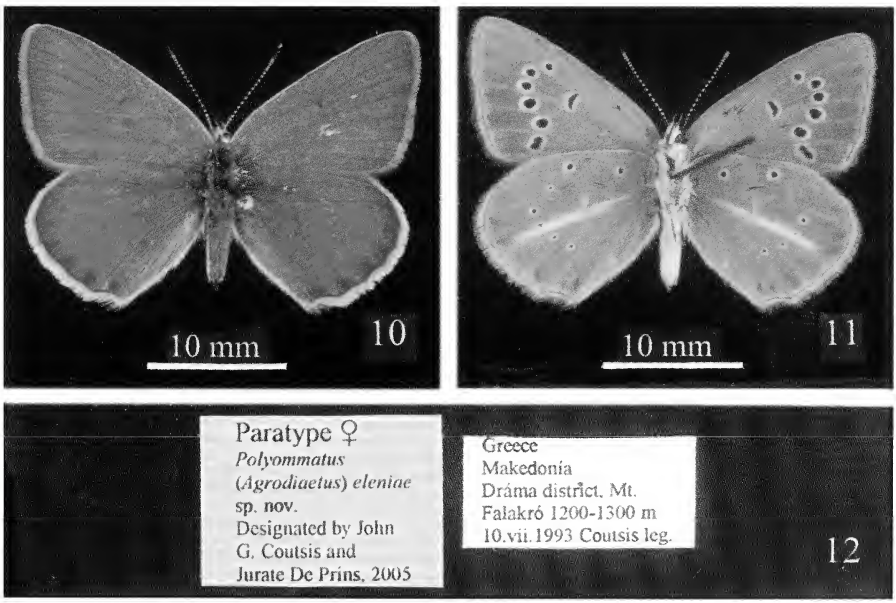
Fig. 9. Spermatocytes in MI of holotype (white stripe on HW underside present). Chromosome preparation No. JC 99032. – $n = 41$.

Chromosome number and karyotype (Fig. 9). Preparation method according to Wiemers & De Prins (2004). There were found 15 cells in MI (2 are figured) and 3 cells in MII, each with $n = 41$, this value being significantly lower than that of *aroaniensis*, which has $n = 48$ (Coutsis, Puplesiene & De Prins 1999), extremely lower than that of *fabressei*, which has $n = 90$ (De Lesse, 1960), higher than that of *humedasae*, and *alcestis* which have respectively $n = 39$ (Troiano *et al.* 1979) and $n = 19–21$ (De Lesse 1960), and about equal to that of the geographically distant nominotypical *dantchenkoi*, and to that of the geographically proximate *dantchenkoi orphicus*, the first one of

which has $n = 40–42$, and the second one has $n = 41–42$ (Lukhtanov *et al.* 2003 and Kolev 2005, respectively), and both of which differ, however, from *eleniae* by their karyotype as well as by underside external characters that seem to bear close affinities to those of *ripartii*. The karyotype of *eleniae* is asymmetrical and is characterized by having 4 large bivalents, and another 37 smaller ones that show a gradual decrease in size, but not quite as gradual as in *aroaniensis*. From nominotypical *dantchenkoi* and its ssp. *orphicus* it differs by the length of the smallest chromosome versus that of the largest one, the smallest one being about 1/3 the length of the largest one in *eleniae*, and about 2/3 this length in nominotypical *dantchenkoi* and its ssp. *orphicus*.

Distribution. The new species-group taxon is presently known only from Mt. Falakró and its immediate surroundings (Fig. 22). Specimens from the geographically proximate Mt. Meníkio and Mt. Órvilos appear also to belong to *eleniae*, but their taxonomic status will remain uncertain until an examination of their respective chromosome number and karyotype is also carried out.

Derivatio nominis. The specific name given is derived from the first author's wife, 'Eléni', who has patiently and silently endured his lepidopterological monomania for a period of over 40 years.



Figs. 10–12. *Polyommatus* (*Agrodiaetus*) *eleniae* **sp. nov**. paratype ♀. **10**.– Upper-side. **11**.– Underside. **12**.– Data labels.

Supplementary chromosomal evidence

As a measure of verification, a second specimen from the type series of *eleniae* was checked, and it too revealed in all five of its MI spermatocytes that were studied (four are shown in Fig. 13), exactly the same karyotype and number of chromosomes (n = 41) as did the holotype. This time the specimen chosen was one that totally lacked the HW underside whitish stripe, and this was done in order to preclude any possible doubts about the con-specificity of the striped and un-striped forms of the new species.

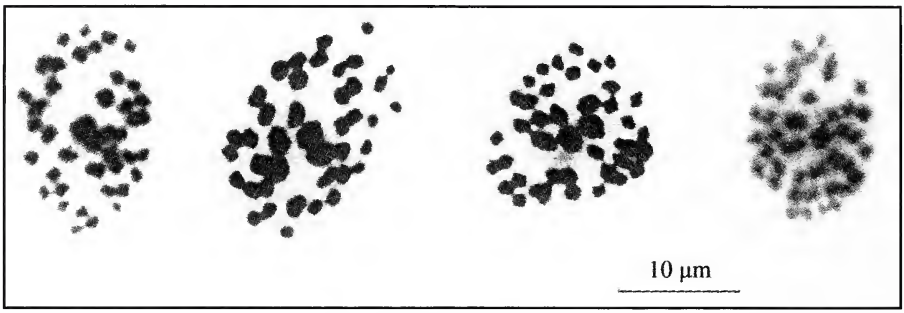
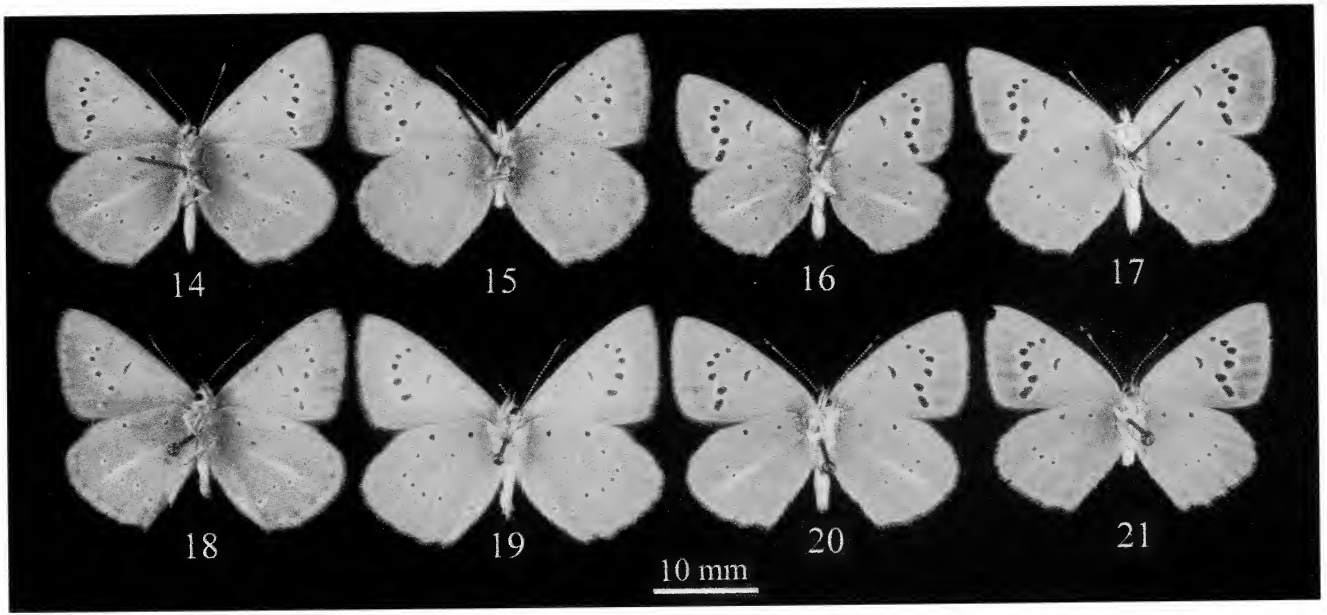


Fig. 13. Spermatocytes in MI of paratype (white stripe on HW underside absent). Greece, Makedonía, Dráma district, Mt. Falakró, 1600–1900m, 6.viii.1999, Coutsis leg. Chromosome preparation No. JC 99041. — n = 41.

Discussion

The difference in chromosome number from *aroaniensis* (n = 48), being a constant 7, is quite high in respect of the overall low number of chromosomes involved here. No definable external differences occur however between the newly described species and *aroaniensis*, other than the darker, warmer and redder underside ground colour of the former (Figs. 14–21). Using independent sample two-tailed t-test, we were not able to establish statistically significant differences between *eleniae* and topotypical *aroaniensis* in the mean value of their respective FW lengths. Application of an x^2 test revealed that no statistically significant difference occurs between *eleniae* and topotypical *aroaniensis* in the frequency of the presence of the HW underside whitish stripe.

As mentioned above, the recently described *P.* (*A.*) *dantchenkoi*, both in its nominate form, as well as in its ssp. *orphicus*, though sharing with *eleniae* the same chromosome number, does however differ from the latter by its karyotype, as well as by the external characters of the underside, these being very close instead to those of *ripartii* (whitish stripe always present and well-defined, ground-colour of a lighter, colder hue, without reddish tinge). The chromosome number of *humedasae*, being n = 39, is closer to that of *eleniae* than is that of *aroaniensis* to that of *eleniae*, but the existence of external differences between the first two, supports specific differentiation between them.



Figs. 14–21. Undersides of *Polyommatus* (*Agrodiaetus*) species from Greece, Coutsis leg. 14–17. Paratypes of *eleniae* **sp. nov**., Makedonía, Dráma district, Mt. Falakró. **14**.– ♂, eastern foothills, near Granítis, ca. 600 m, 7.vii.2001 (HW white stripe present). **15**.– ♂, 1300 m, 6.viii.1981 (HW white stripe absent). **16**.– ♀, same data (HW white stripe present). **17**.– ♀, same data (HW white stripe vestigial). 18–21. *aroaniensis* (Brown, 1976), Pelopónnisos, Ahaía district, Mt. Helmós (= TL). **18**.– ♂, 1100 m, 4.vii.1980 (HW white stripe present). **19**.– ♂, same data (HW white stripe absent). **20**.– ♀, 1400 m, 24.vii.1971 (HW white stripe present). **21**.– ♀, same data (HW white stripe vestigial).

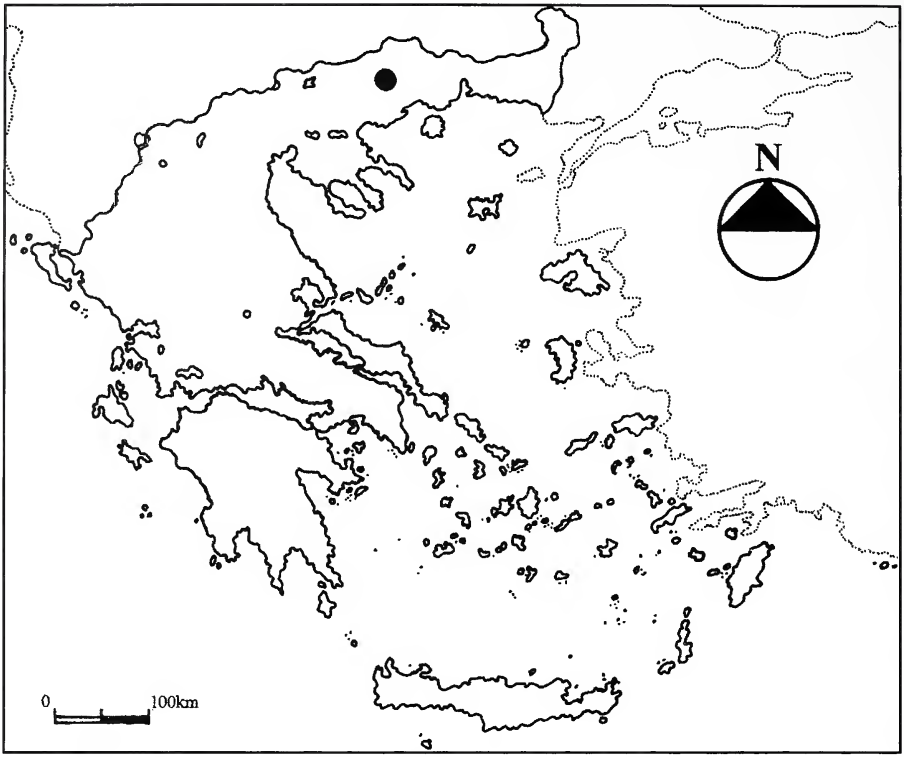


Fig. 22. Map of Greece showing sampling locality for *P.* (*A.*) *eleniae* **sp. nov**.

It is hoped that in due time the chromosome number of *aroaniensis* species-group taxa from various other localities on the Greek mainland will also have their chromosomes studied, in order to acquire a broader overview of this taxonomically difficult and complex group of butterflies.

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Spiegelkevers aan de westrand van Brussel (Coleoptera: Histeridae)

Willy Troukens

Abstract. Histeridae at the westside of the Brussels region (Coleoptera)
Since 1978 twelve species of Histeridae were found at the westside of Brussels: *Hololepta plana* (Sulzer), *Plegaderus dissectus* Erichson, *Abraeus granulum* Erichson, *Saprinus semistriatus* (Scriba), *Gnathoncus rotundatus* (Kugelann), *Paromalus flavicornis* (Herbst), *Hister unicolor* Linnaeus, *Margarinotus brunneus* (Fabricius), *M. purpurascens* (Herbst), *M. carbonarius* (Hoffmann), *Atholus duodecimstriatus* (Schrank), and *Elbisia minor* (Rossi).

Résumé. Histeridae à la périphérie ouest de Bruxelles (Coleoptera)
Depuis 1978 douze espèces de Histeridae furent observées dans la zone occidentale de Bruxelles: *Hololepta plana* (Sulzer), *Plegaderus dissectus* Erichson, *Abraeus granulum* Erichson, *Saprinus semistriatus* (Scriba), *Gnathoncus rotundatus* (Kugelann), *Paromalus flavicornis* (Herbst), *Hister unicolor* Linnaeus, *Margarinotus brunneus* (Fabricius), *M. purpurascens* (Herbst), *M. carbonarius* (Hoffmann), *Atholus duodecimstriatus* (Schrank) et *Elbisia minor* (Rossi).

Key words: Belgium – faunistics – Histeridae – Coleoptera.

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Toen ik in 1999 onderzoek deed naar doodgravers en aaskevers (Silphidae) (Troukens 2001: 95–98), vond ik in de bodemvallen met dierlijk aas—als bijproduct—ook heel wat spiegelkevers (Histeridae). Ik had deze zwartglimmende insecten ook al geregeld waargenomen onder losse boomschors, op boomzwammen, onder kadavertjes of gewoon in de tuin onder plantaardig afval. Volgens Keer (1930: 362) worden de kevers aangelokt door de rottingsgeuren omdat ze daar ook volop hun voedsel vinden, met name vliegenmaden en larven van spektorren en schorskevers. Sommige spiegelkevers hebben zich sterk gespecialiseerd en verkiezen een totaal ander menu (Schilthuizen & Vallenduuk 1998: 27). Zo leeft een aantal kleinere soorten in nesten van vogels en zoogdieren waar ze jacht maken op mijten (Acarina). Nog andere vindt men in mierennesten: ze hebben het vooral gemunt op het mierenbroed. Ook larven van bladhaantjes (Chrysomelidae) vormen een begeerde prooi: *Saprinus virescens* (Paykull, 1798) maakt verwoed jacht op *Phaedon*- en *Gastroidea*-larven, terwijl *Hister helluo* Truqui, 1852 zich voedt met de larven van het elzenhaantje, *Agelastica alni* (Linnaeus, 1758) (Keer 1930: 362). Herhaaldelijk heeft men waargenomen dat tal van spiegelkevers aangelokt worden door de rottingsgeur van bloeiende aronskelken (*Arum* sp.) (Du Chatenet 1986: 217–220). Het gaat hier vooral om *Gnathoncus*- en *Saprinus*-soorten. Men kan zich hierbij de vraag stellen of de kevers misleid worden door de geur of dat ze gewoon afkomen op de motmugjes (Psychodidae) die in de bloeischede aan het werk zijn als bestuivers.

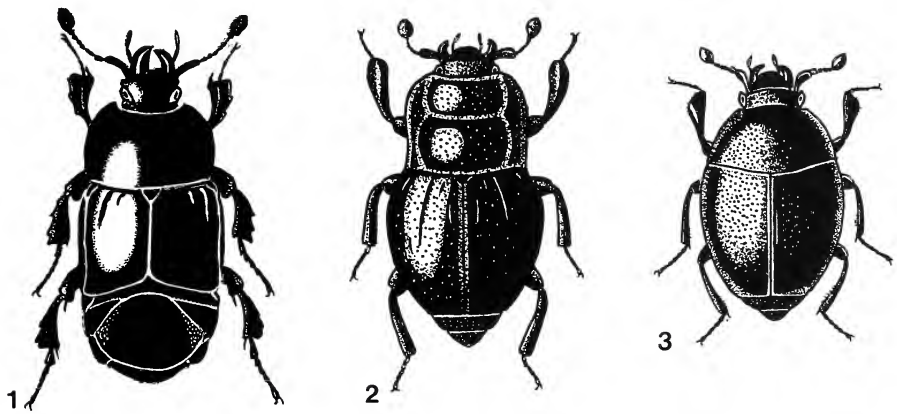
Histeridae zijn meestal zwarte, rondovale, lichtgewelfde kevers met een uitgesproken lakglans. Hun lengte varieert van 1 mm (*Abraeus perpusillus* (Marsham, 1802), = *A. globosus* (Hoffmann, 1803)) tot 15 mm (*Pachylister inaequalis* (Olivier, 1789)). De sprieten zijn vrij kort, geknied en 11-ledig

waarbij de laatste 3 een eindknots vormen. De meestal getande voorschenen zijn verbreed en wijzen op een gravende functie. De dekschilden zijn afgeknot en laten één of twee achterlijfssegmenten—het propygidium en het pygidium—onbedekt. Omdat de dekschildstrepen nabij de naad kunnen ontbreken worden deze vanaf het schouder- of humeraalstreepje van buiten naar binnen geteld (Schilthuizen & Vallenduuk 1998: 31).

Spiegelkevers houden niet van vliegen. Na een vlucht van enkele meter ploffen ze weer op de grond. Ook lopen gaat vrij traag. Om belagers om de tuin te leiden, trekken ze kop, sprieten en poten in en houden zich dood. Aldus lijken ze op een steentje en zijn ze moeilijk vast te pakken.

In Europa leven 200 soorten Histeridae (Du Chatenet 1986: 217) waarvan er zowat 65 bekend zijn in België. Sinds 1978 werden aan de westrand van Brussel twaalf soorten waargenomen. In de nu volgende opsomming volgt een beknopte beschrijving van elke soort met enkele bijzonderheden over hun vondst en hun levenswijze.

De laatste jaren is aan de nomenclatuur van de Histeridae nogal wat gesleuteld. In dit artikel heb ik gekozen voor de naamgeving van Lackner & Yélamos (2004) terwijl de namen van Witzgall (1971: 156–189) tussen haakjes worden vermeld.



Figuren 1–3. **1**.– *Hololepta plana* (Sulzer, 1776), **2**.– *Plegaderus dissectus* Erichson, 1839, **3**.– *Abraeus granulum* Erichson, 1839.

1. ***Hololepta plana*** (Sulzer, 1776) (fig. 1)

H. plana is een langwerpige kever van 8 à 9 mm. Zijn lichaam is haast zo dun als een vingernagel en dit onderscheidt hem van alle andere Histeridae. In Midden-Europa is *H. plana* nergens gewoon (Witzgall 1971: 178). Meer naar het noorden toe, o.a. in Noord-Frankrijk, ontbreekt hij volledig (Du Chatenet 1986: 224). In ons land was de kever tot 1970 vrijwel onbekend. De daaropvolgende jaren verscheen hij echter op verschillende plaatsen, vooral in Midden-België. In 1986 verzamelde Bosselaers (1986: 25–26) al gegevens van elf lokaliteiten.

Aan de westrand van Brussel vond ik mijn eerste exemplaar in mijn tuin te Anderlecht op 11.VI.1989. Het kwam uit een wilgenbosje gevlogen. In april en mei 1999 ontdekte ik in de Wolfsputten te Dilbeek 19 *plana*'s onder schors van gevelde populieren. In dezelfde gemeente zat op 15.V.2000 ook nog een exemplaar op een stuk brandhout. Dat *H. plana* nu op verschillende plaatsen in het Brusselse aanwezig is, bewees A. De Turck op 15.V.1988 met een vangst in het Zoniënwoud.

2. ***Plegaderus dissectus*** Erichson, 1839 (fig. 2)

Deze zwartbruine, langovale spiegelkever is volledig bestippeld. Hij meet nauwelijks 1 à 1,5 mm. Zijn halsschild valt op door de dubbelgebogen zijrand en een dwarsgleuf die het middenveld verdeelt in twee kussenvormige helften. Ook de dekschilden zijn opvallend gewelfd en elk vanaf de basis voorzien van een diepe, halve rugstreep.

P. dissectus is in Midden-Europa overal zeldzaam (Witzgall 1971: 161). In Nederland is hij alleen bekend uit Zuid-Limburg (Brakman 1966: 87). Ook in België is dit kevertje moeilijk te vinden. Op 25.IX.1986 was ik de gelukkige ontdekker van 3 exemplaren te Dilbeek. De kevertjes zaten in een schimmelige beukenstomp. Volgens Witzgall (1971: 161) moet men dit insect zoeken in molm en onder schors van loofbomen waar het jaagt op larven van schorskevers.

3. ***Abraeus granulum*** Erichson, 1839 (fig. 3)

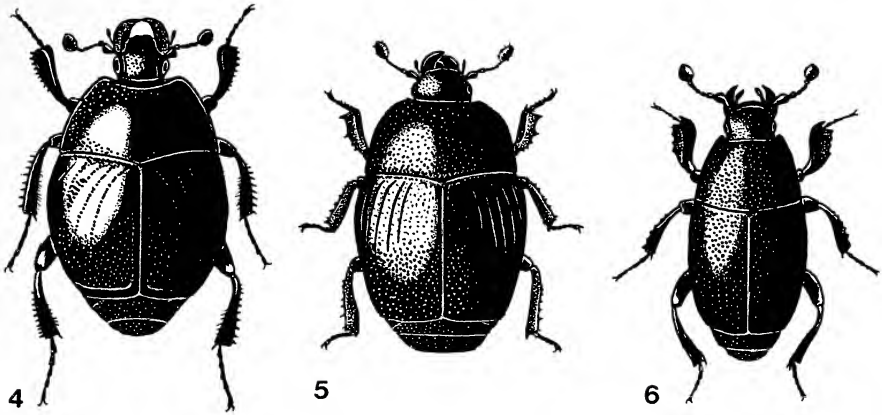
Ook dit spiegelkevertje is nergens gewoon. Mijn enige vangst te Dilbeek dateert van 25.IX.1986. Ik vond dit kevertje, samen met *Plegaderus dissectus*, in een schimmelende beukenstomp.

A. granulum is een bruin, eirond insect van 1 à 1,5 mm. Hij is één van de twee *Abraeus*-soorten met verbrede, afgeronde voorschenen. Zijn lichaam is sterk gewelfd. Zowel de kop, het halsschild als de dekschilden zijn fijn en dicht bestippeld. *A. granulum* leeft vooral in molm, onder schors van oude loofbomen en soms bij mieren (Witzgall 1971: 162).

4. ***Saprinus semistriatus*** (Scriba, 1790) (Gestreepte spiegelkever) (fig. 4)

S. semistriatus is een eironde spiegelkever van 3,5 à 6 mm. Zoals alle *Saprinus*-soorten bezit hij achteraan op de dekschilden een randstreep die bij de naad naar voren ombuigt en verder loopt als naadstreep. Bij de gestreepte spiegelkever lopen de 4 rugstrepen vanaf de voorrand tot ongeveer halverwege het dekschild. De ruimte tussen de 1ste en 2de rugstreep is meestal rimpelig bestippeld. Een brede strook naast de halsschildrand en de achterste helft van de dekschilden zijn eveneens grof en dicht bestippeld.

Deze spiegelkever is in het hele Palaearctische gebied zeer algemeen (Keer 1930: 373). Men vindt hem op kadavertjes en soms ook op mest, rottende planten, paddestoelen en aronskelken (Keer *l.c.*). In Dilbeek is *S. semistriatus* heel gewoon. Ik ving hem geregeld van april tot juli in bodemvallen met garnaalkoppen, alsook 1 ex. op 04.VI.1983 onder een dode merel en op 04.VII.1999 17 ex. in een bodemval met een dode mol.



Figuren 4–6. **4**.– *Saprinus semistriatus* (Scriba, 1790), **5**.– *Gnathoncus rotundatus* (Kugelann, 1792), **6**.– *Paromalus flavicornis* (Herbst, 1792).

5. ***Gnathoncus rotundatus*** (Kugelann, 1792) (*G. nanus* (Scriba, 1790)) (fig. 5)

G. rotundatus behoort tot een geslacht van kleine kevertjes die vooral te vinden zijn in vogelnesten en kippenhokken (Witzgall 1971: 166). Dit spiegelkevertje heeft bruinrode sprieten en poten. Het meet slechts 1,8 à 3 mm. De bovenzijde is volledig bestippeld, het krachtigst op de halsschildzijden en de achterste dekschildhelft. De 4 rugstrepen reiken tot in het midden van elk dekschild. Aan de basis is ook nog een boogvormig restantje zichtbaar van een 5de rugstreep.

G. rotundatus komt verspreid voor in het Palaearctisch gebied (Keer 1930: 378) maar ik heb hem in de vrije natuur nog niet kunnen vinden. Te Anderlecht noteerde ik 3 ex. op een gesloten terras met een kleine voorraad uien en aardappelen, nl. op 18.VII.1985, 11.VI.1988 en 05.VIII.1995.

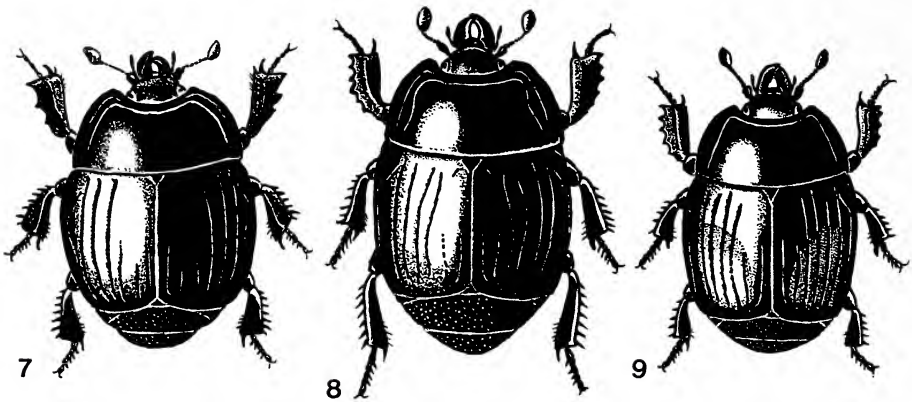
6. ***Paromalus flavicornis*** (Herbst, 1792) (fig. 6)

Deze langovale spiegelkever is volledig bestippeld en meet 1,5 à 2,2 mm. Zijn sprieten en poten zijn roestrood. Brakman (1966: 88) gebruikt voor dit insect de genusnaam *Micromalus*. Te Dilbeek vond ik verschillende exemplaren van *P. flavicornis* onder losse schors van vermolmde of schimmelende beukenstompen: 1 ex. op 18.IV.1981, 1 ex. op 25.IV.1981 en 2 ex. op 25.IX.1986.

7. ***Hister unicolor*** (Linnaeus, 1758) (Gladde spiegelkever) (fig. 7)

H. unicolor is een korteivormige spiegelkever van 7 à 10 mm. De rugbestippeling beperkt zich tot de 2 onbedekte achterlijfssegmenten. Het halsschild heeft 2 randstrepen waarvan de buitenste gereduceerd is tot de voorste helft. De dekschilden vertonen elk 3 volledige en 3 verkorte rugstrepen. Volgens Keer (1930: 366) is de gladde spiegelkever nergens zeldzaam en is hij vooral te

vinden in mest en rottend plantenmateriaal. Ikzelf vond verschillende exemplaren van april tot september in de tuin te Anderlecht en te Dilbeek op 29.VI.1995 1 ex. in een bodemval met garnaalkoppen.



Figuren 7–9. **7**.– *Hister unicolor* (Linnaeus, 1758), **8**.– *Margarinotus brunneus* (Fabricius, 1775), **9**.– *Margarinotus purpurascens* (Herbst, 1792).

8. ***Margarinotus brunneus*** (Fabricius, 1775) (= *Hister cadaverinus* Hoffmann, 1803) (fig. 8)

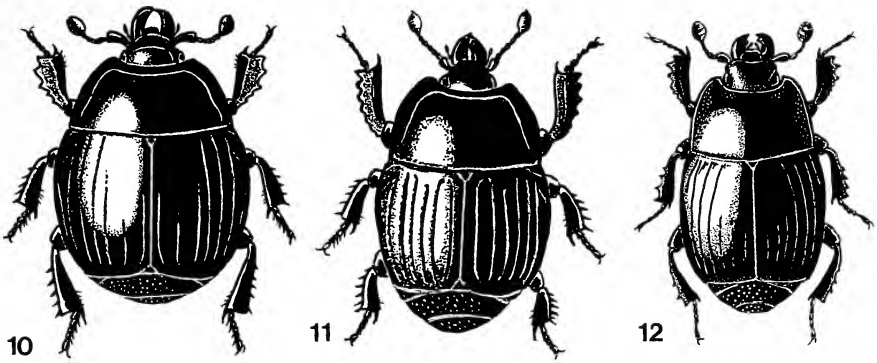
Zoals bij de vorige soort zijn alleen de twee onbedekte achterlijfssegmenten bestippeld. De 2 randstrepen op het halsschild zijn ongeveer even lang. De dekschilden vertonen elk 4 volledige en 2 verkorte, gefragmenteerde rugstrepen. Naast het schildje is meestal ook nog een rudimentair streepje te zien.

Deze spiegelkever is zeer algemeen in Europa en komt voor tot in Siberië en Japan (Schilthuizen & Vallenduuk 1998: 54). Ik ving hem geregeld van april tot juni in de tuin te Anderlecht en te Dilbeek in bodemvallen met garnaalkoppen; verder ook te Dilbeek 1 ex. op 15.V.1999 in een rottende boomstronk en op 25.VI.1999 1 ex. onder een dode mol.

9. ***Margarinotus purpurascens*** (Herbst, 1792) (= *Paralister purpurascens* Herbst, 1792) (fig.9)

Deze spiegelkever is 4 à 5 mm lang en valt op door de rode vlek op elk dekschild die evenwel ook kan ontbreken (Witzgall 1971: 184). Het halsschild vertoont één enkele randstreep. Op elk dekschild zijn 4 volledige en 2 verkorte rugstrepen te zien. De bestippeling beperkt zich tot de twee achterlijfssegmenten.

M. purpurascens komt voor in het hele Palaearctische gebied tot in Japan (Schilthuizen & Vallenduuk 1998: 58). Men vindt hem meestal in mest en onder rottend plantenmateriaal (Witzgall 1971: 184). Aan de Brusselse westrand noteerde ik slechts twee vangsten: nl. 1 ex. te Dilbeek op 17.IV.1989 en 1 ex. in de tuin te Anderlecht op 01.VI.1993.



Figuren 10–12. **10**.– *Margarinotus carbonarius* (Hoffmann, 1803), **11**.– *Atholus duodecimstriatus* (Schrank, 1781), **12**.– *Eblisia minor* (Rossi, 1792).

10. ***Margarinotus carbonarius*** (Hoffmann, 1803) (= *Paralister carbonarius* Hoffmann, 1803) (fig. 10)

M. carbonarius is een breedovale spiegelkever van 3,5 à 5,5 mm. Hij komt algemeen voor in Europa en zijn areaal reikt oostwaarts tot in Siberië (Schilthuizen & Vallenduuk 1998: 57). De halsschildrandstreep en de bestippeling zijn zoals bij *M. purpurascens* (fig. 9). Elk dekschild vertoont 3 volledige en 3 verkorte rugstrepen.

Aan de Brusselse westrand nam ik de kever jaarlijks waar van april tot augustus. Te Dilbeek vond ik hem meestal in bodemvallen met garnaalkoppen maar ik zag hem ook op uitwerpselen en op een dode duif. Op 1, 15 en 23.V.1999 ontdekte ik telkens enkele exemplaren op rottende boomzwammen. Volgens Keer (1930: 367) kan men hem bovendien aantreffen in mest, op duiventillen en in nesten van mollen en hamsters.

11. ***Atholus duodecimstriatus*** (Schrank, 1781) (fig. 11)

Het genus *Atholus* wordt gekenmerkt door het ontbreken van een subhumeraalstreep, d.w.z. de streep achter het schouder- of humeraalstreepje. *A. duodecimstriatus* is 4 à 5 mm lang en volledig zwart. De ander inlandse *Atholus*-soort, *A. bimaculatus* (Linnaeus, 1758), heeft op elk dekschild een rode vlek.

A. duodecimstriatus heeft slechts één halsschildstreep. De dekschilden vertonen elk 6 volledige rugstrepen; de 5de en de 6de streep neigen vooraan en achteraan naar elkaar toe. De bestippeling beperkt zich tot de twee onbedekte achterlijfssegmenten.

Deze spiegelkever is in Midden-Europa nergens zeldzaam. Men kan hem vinden op uitwerpselen en mest (Witzgall 1971: 188). Te Dilbeek vond ik deze soort drie keer in grazige terreinen: 1 ex. op 18.IV.1985, 1 ex. op 15.V.1985 en 1 ex. op 02.X.2001.

12. ***Eblisia minor*** (Rossi, 1792) (= *Platysoma frontale* (Paykull, 1798)) (fig. 12)

E. minor is een normaal gewelfde spiegelkever van 3 à 4 mm. Het halsschild is alleen wat bestippeld aan de voor- en zijkant. De dekschilden vertonen 3 volledige en 3 verkorte rugstrepen en achteraan een smalle strook met stippels. Typisch voor *E. minor* zijn de 2 doorns op de zijrand van de achterschenen.

Over zijn verspreiding spreken sommige auteurs elkaar tegen. Volgens J. Huizinga in Harde & Severa (1982: 106) is deze kever geen Nederlandse soort. Brakman (1966: 88) vermeldt hem achter wél voor Gelderland, Noord-Holland en Nederlands-Limburg. Ikzelf ving *E. minor* voor het eerst in de Dilbeekse Wolfsputten op 12.V.2005 onder schors van een gevelde knotwilg. In Midden-Europa zou de kever niet zeldzaam zijn in oude bossen. Hij moet gezocht worden onder schors van dode loofbomen waar hij jacht maakt op vliegenmaden en schorskeverlarven (Witzgall 1971: 181).

Ondanks hun monotone kleur vormen Histeridae een boeiende keverfamilie. Bovendien spelen zij een nuttige rol in de natuurhuishouding als predatoren van maden en larven. Heel wat soorten hebben een bepaalde biotoopvoorkeur. Tijdens een bemonstering in de duinen tussen De Haan en Blankenberge in 1988 verzamelde ik 5 soorten. Hiervan noteerde ik er 4 die ik aan de Brusselse westrand nog nooit had waargenomen.

Als besluit wil ik de mensen danken die me sinds jaren aanmoedigen om mijn bevindingen i.v.m. de lokale keverfauna op papier te zetten, met name Margriet De Ridder, ere-inspectrice biologie (Sint-Jans-Molenbeek), Aubin De Turck (Wenduine), Rokus Liefaart ('s-Gravendeel, Nederland), Lut Mertens (Anderlecht) en Bernard Misonne (Tervuren). Zij zijn daar al behoorlijk in geslaagd!

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Concept for the preservation of the Lepidoptera biodiversity in agrolandscapes

A. N. Poltavsky

Samenvatting. Concept voor het behoud van de biodiversiteit aan Lepidoptera in agrarische landschappen.
In de streek rond Rostov-on-Don is het grootste deel van het land ingenomen voor agrarische activiteiten, waarbij grote hoeveelheden insecticiden worden gebruikt. De daartussen liggende refugia worden dus eveneens ernstig bedreigd. Om de soortenrijkdom aan Lepidoptera en andere insecten te behouden dringen zich ernstige maatregelen op, zoals het gebruik van minder persistente insecticiden en het verbieden van het sproeien met vliegtuigen.

Résumé. Projet pour la préservation de la biodiversité de lépidoptères dans des régions agricoles.
Dans la région de Rostov-on-Don la pluspart du pays est occupée par des activités agricoles, où on utilise de grandes quantités d'insecticides. Les refuges avoisinants sont également menacés. Pour préserver la biodiversité en lépidoptères et autres insectes des mesures importants sont nécessaires, comme l'emploi d'insecticides moins persistants et l'interdiction de la dispersion de ces insecticides par avion.

Key words: Species variety – biodiversity – agrolandscapes – control measures – insecticides

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The study of the Lepidoptera-fauna in the Rostov-on-Don region, which is located in the south of the European part of Russia, started at the end of the 19th – beginning of the 20th century (Alpheraky 1876, 1877, 1880, 1908). Researches of the present-day specific fauna and distribution of the Lepidoptera in this territory were carried out since 1972. During this time were collected: 404 species of Noctuidae, 20 species of Sphingidae, 20 species of Notodontidae, 18 species of Arctiidae, 7 species of Lithosiidae, 13 species of Lasiocampidae, 13 species of Zygaenidae, 4 species of Papilionidae, 18 species of Pieridae, 53 species of Lycaenidae, 27 species of Nymphalinae, 23 species of Satyrinae, 17 species of Hesperiidae (Poltavsky 2001, Poltavsky & Artohin 2000, Poltavsky & Nekrasov 2002).

The Rostov area is the largest agricultural region in Russia, the arable land occupies up to 80–90 % of its territory. Only insignificant part of most adaptive moths and butterflies survive in argocenoses. These are mainly agricultural pests. The majority of Lepidoptera species concentrates on rather small local plots (refuges) kept poorly changed natural vegetative formations. These refuges were formed spontaneously in places unsuitable for agricultural use: stony and dry steppes, saline soils, sandy files, bairak woods, wetland woods, slopes of ravines, and river banks.

Entomological refuges in agrolandscape almost have no spatial isolation from associate agro-ecosystems in which significant volumes of pesticides are

constantly applied. Technologies of plant protection, which used in the Rostov-on-Don region, assume annual spraying a significant volume of insecticides: on one hectare of wheat 1.1–2.72 liters; on sugar beet 2.25 liters; on peas 3.1 liters; in orchard 10–12 liters. Insecticides, among which dominate phosphororganic and pirethroid preparations, are the constant threat for the stability of the natural ecosystems in the steppe zone of Russia and especially by avia-application.

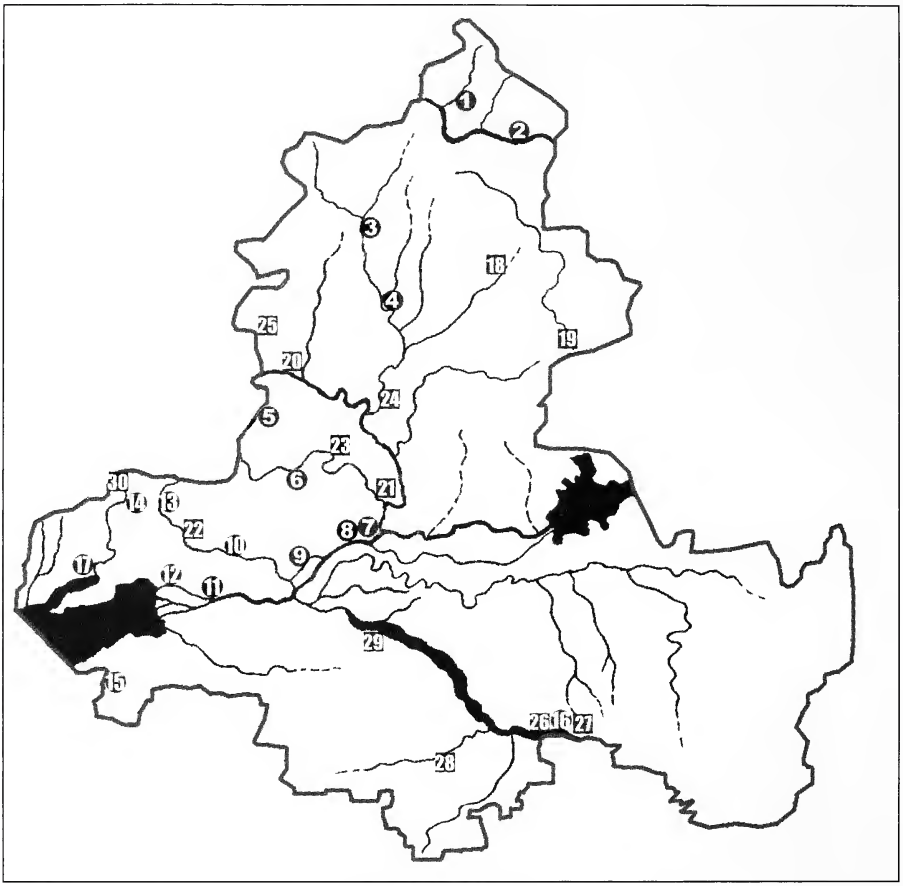

Figure 1. Entomological refuges in the Rostov-on-Don region: 1– Peskovatinsky, 2– Sholohovsky, 3– Millerovsky, 4– Efremovo-Stepanovsky, 5- Anikinsky, 6– Gornensky, 7– Kanyginsky, 8– Razdorsko-Pukhljakovsky, 9- Bessergenevsky, 10– Voloshino-Tuzlovsky, 11– Rostovsko-Temernitsky, 12– Nedvigovsky, 13– Lysogorsky, 14– Yasinovsky, 15– Alexandrovsky, 16– Volotchaevsky, 17– Darievsky, 18– Selivanovsky, 19– Oblivsky, 20- Kamensky, 21– Nizhnekundrjuchensky, 22– Bolshekrepinsky, 23- Zaicevsky, 24– Belokalitvensky, 25– Mitjiakinsky, 26– Ostrovnoj, 27- Krasnopartizansky, 28– «Bread ravine», 29– Krasnomanytchsky, 30– Kuibyshevsky.
● – well investigated, ■ – insufficiently investigated.

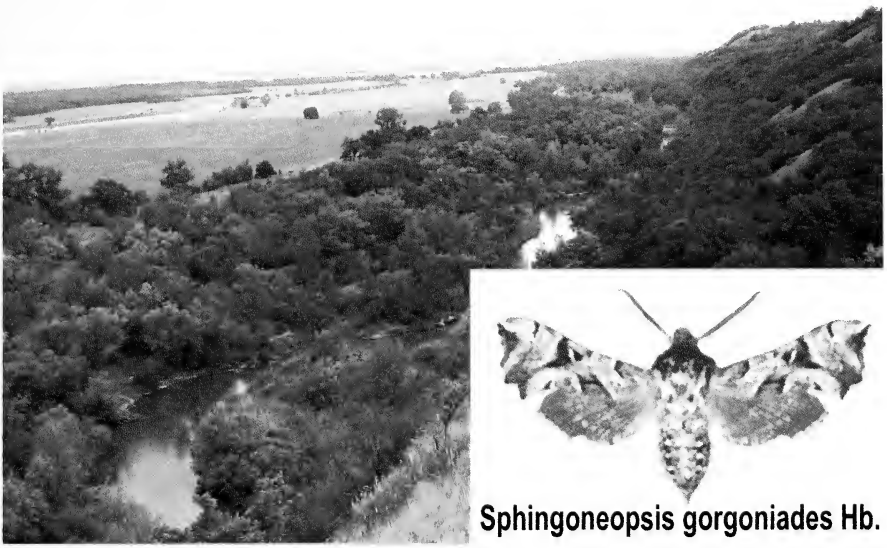

Figure 2. Kanyginsky refuge in the Rostov-on-Don region, especially known for the occurrence of *Sphingoneopsis gorgoniades* Hübner.

Figure 3. Nedvigovsky refuge in the Rostov-on-Don region, especially known for the occurrence of *Xylomoia graminea* Graeser.

Table 1. Lepidoptera indicator species of the entomological refuges in the Rostov-on-Don region (Southern Russia). Refuge numbers are according to figure 1.

Indicator species	Refugium numbers
Zygaenidae	
Zygaena laeta Hb.	2, 6
Zygaena sedi F.	1, 3, 6, 16
Zygaena carniolica Scop.	6
Sphingidae	
Sphingoneopsis gorgoniades Hb.	7
Proserpinus proserpina Pall.	2, 11, 12
Hemaris croatica Esp.	13, 14
Hesperiidae	
Muschampia cribrellum Ev.	24
Muschampia proto Ochs.	24
Pyrgus cinarae Rbr.	24
Papilionidae	
Parnassius mnemosyne L.	3, 7
Pieridae	
Zegris eupheme Led.	26, 27
Euchloe ausonia Hb.	16
Lycaenidae	
Hamearis lucina L.	2
Thecla betulae L.	1, 6, 10, 14, 23
Lycaena hippothoe L.	18
Lampides boeticus L.	28
Scolitantides orion Pall.	1, 23
Pseudophilotes bavius Ev.	24
Pseudophilotes vicrama Moore	8
Neolycaena rhymnus Ev.	4, 7, 8, 9, 10, 12, 13, 17
Plebeius (*Plebejides*) *pylaon* Fisch. von Wald.	24
Plebeius (*Aricia*) *eumedon* Esp.	12
Glaucopsyche (*Maculinea*) *teleius* Bergstr.	2
Polyommatus (*Neolysandra*) *coelestina* Ev.	3, 5, 12, 13
Polyommatus (*Cyaniris*) *semiargus* Rott.	30
Polyommatus (*Meleageria*) *daphnis* Den. & Schiff.	1, 2, 3, 4, 7, 13, 17
Polyommatus (*Polyommatus*) *eroides* Friv.	4, 21
Polyommatus (*Agrodiaetus*) *damone* Den. & Schiff.	13, 14
Polyommatus (*Agrodiaetus*) *damocles* H.-S.	13
Nymphalidae, Nymphalinae	
Euphydryas maturna L.	3, 4, 5, 23
Euphydryas orientalis H.-S.	13, 17
Melitaea arduinna Frr.	13, 14, 17
Clossiana euphrosyne L.	3
Brenthis hecate Den.& Schiff.	2, 3
Nymphalidae, Satyrinae	
Hipparchia autonoe Esp.	20
Kirinia climene Esp.	3, 4, 5, 7, 8, 13, 23
Chazara briseis L.	4, 10, 23

Satyrus ferula F.	5, 23
Coenonympha leander Esp	2
Triphysa phryne Pall.	16
Noctuidae	
Macrochilo cribrumalis Hb.	11
Naenia typica L.	4
Pyrrhia purpurina Esp.	4
Xestia sexstrigata Haw.	4
Acontia melanura Tausch.	4, 7, 13, 18
Dichonia pinkeri Kobes	2, 4, 15
Dichonia aprilina L.	4
Aedophron rhodites Ev.	4
Tarachidia candefacta Hb.	4
Eublemma rosina Hb.	18
Eublemma pannonica Frey.	4, 18
Apaustis rupicola Den. & Schiff.	5, 14
Catocala lupina H.-S.	2, 4, 18
Catocala electa Borkh.	2, 4
Catocala nymphaea Esp.	25
Catocala conversa Esp.	18
Craniophora pontica Stgr.	11, 12
Xylomoia graminea Graes.	12
Chortodes brevilinea Fenn.	15
Chazaria incarnata Frr.	16
Oxytripia orbiculosa Esp.	2
Euclidia fortalitium Tausch.	2
Gortyna moesiaca H.-S.	2
Arctiidae	
Arctia festiva Hfn.	4, 8, 10
Euplagia quadripunctaria Poda	7, 20
Callimorpha dominula L.	2

The new concept of insect biovariety preservation assumes the protection of complete entomocomplexes in all regional entomological refuges. They must be estimated from the point of view a number of insect species and ecological vulnerability. Such work was begun with the Macrolepidoptera (Rhopalocera, Heterocera) as an example (Poltavsky 2003, Poltavsky & Hatchikov 2004, Poltavsky & Liman 2002, Poltavsky & Stradomsky 2004). Altogether, 30 entomological refuges were revealed in different areas of the Rostov-on-Don region (figure 1). The refuges areas vary in intervals: 1600–30000 hectare (big refuges), 300–800 hectares (medium refuges), 20–60 hectares (small refuges). Every single refuge is substantially original in the structure of its Lepidoptera fauna. The relationships between local faunas of even a neighborhood refuge are 50–60% only.

The brief characteristic of Lepidoptera structure originality of entomological refuges could be given by analyzing the specific structure of rare indicator species (table 1). It is typical, that the number of indicator species does not include migrants which could be met with in agrocenoses and in the cities of the

region, such as: *Papilio machaon* L., *Iphiclides podalirius* L., *Argynnis pandora* Den. & Schiff.

For the protection of the preserved variety of insects it is necessary to correct the character of modern land exploitation, which is close to entomological refuges: to apply insecticides with a low persistence, to forbid aviation spraying, to sow long-term fodder grasses.

Neither protection of landscapes in reserved territories, nor permanent measures of separate rare species protection are capable to solve the problem of the protection of the Lepidoptera and other insect biodiversity. A biodiversity of insects in entomological refuges also provides a constant immigration of entomophagues into the agrocenoses, which will control the pest density in the fields. The significance of competition between phytophagues in natural ecosystems, which decrease the danger of entomological refuges transformation into centers of harmful insects multiplication is poorly studied. The role of Lepidoptera in such processes is assumed to be very important.

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Pour une détermination correcte de *Mesapamea secalis* et *M. didyma* (Lepidoptera: Noctuidae)

R. H. Nyst

Abstract. On the correct identification of *Mesapamea secalis* and *M. didyma* (Lepidoptera: Noctuidae)
The author shows that in both species, *Mesapamea secalis* and *M. didyma*, similar colour forms occur which makes the identification even more difficult.

Samenvatting. Over een correcte determinatie van *Mesapamea secalis* en *M. didyma* (Lepidoptera: Noctuidae)
De auteur toont aan dat beide soorten, *Mesapamea secalis* en *M. didyma*, dezelfde kleurvariëteiten vertonen wat hun determinatie nog moeilijker maakt.

Key words: *Mesapamea secalis* – *Mesapamea didyma* – Identification.

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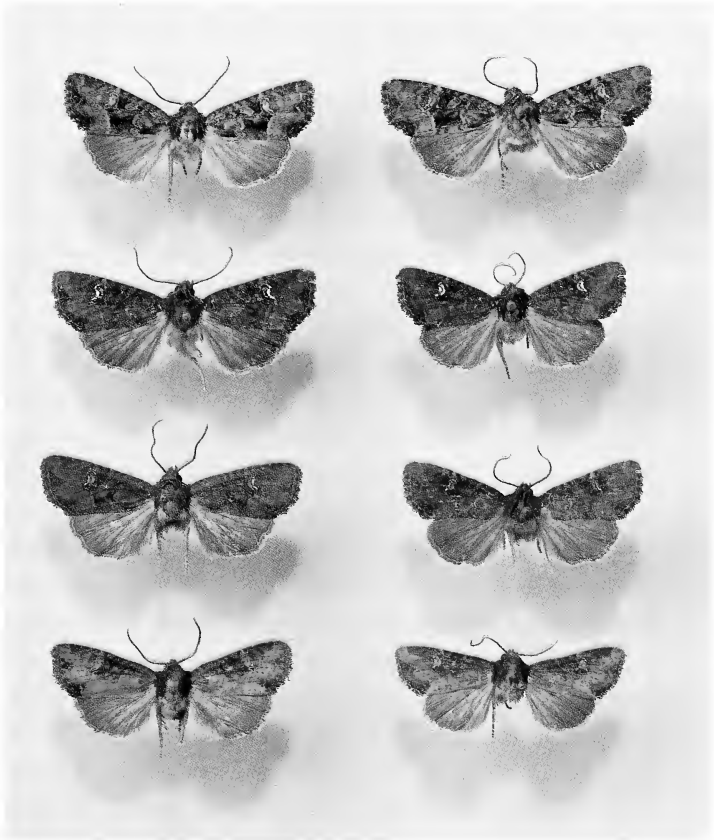

Fig. 1. Colonne de gauche, *Mesapamea secalis*; de droite, *Mesapamea didyma*. 2 rangées supérieures, femelles; 2 rangées inférieures, mâles (Photo: Paul Louis).

Lorsqu'en 1984 F. Coenen et W. O. De Prins révèlent la présence du couple *Mesapamea secalis* (Linnaeus, 1758) et *Mesapamea didyma* (Esper, 1788) (nommée *M. secalella* Remm, 1983) en Belgique et en France, je constatai comme chacun, que l'habitus ne permettait pas de distinguer les deux espèces. Et leur article montrait déjà fort bien les caractères des genitalia très faciles à utiliser.

Les listes de captures publiées et les ouvrages de référence parus depuis font toujours état des deux espèces. Malheureusement les données concernant leur fréquence comparée me semblent souvent sujettes à caution. En effet les ouvrages publient des photos d'exemplaires non disséqués ou appartenant à l'une des trois formes les plus courantes pour illustrer les deux espèces. Alors que ces formes existent, rigoureusement pareilles dans les deux espèces. Il en résulte que les captures sont souvent signalées sans vérification par les genitalia. La dissection de mes propres captures et de celles que quelques collègues ont bien voulu me confier (peu, malgré mes offres de service!) m'a montré environ 75% d'erreurs commises en toute bonne foi!

Le but de la présente note est de convaincre (surtout par les photos) les collègues hésitants, qu'il est vain de classer nos exemplaires sans dissection préalable. Ne serait-il pas intéressant d'établir correctement la répartition actuelle pour la Belgique et aussi la France?

Ce travail avait été réalisé à grande échelle pour la Suisse en les années 1983 à 1987 par L. Rezbanyai-Reser du Musée de Luzern (Rezbanyai-Reser 1987). G. Ebert a établi une carte du Baden-Württemberg beaucoup plus récente. Il présente de remarquables photos; mais, prises sur le vif, elles illustrent la similitude des formes sans permettre la distinction réelle entre les deux espèces (Ebert 1998).

La liste des exemplaires que j'ai pu recueillir ou vérifier n'est pas très importante mais il apparaît justement remarquable qu'un petit nombre suffise déjà à révéler une forte différence entre les régions. On notera (tableau 1) que dans tous les départements français, si peu nombreuses que soient mes captures, les deux espèces étaient présentes. Les choses diffèrent pour la Belgique.

Tableau de répartition des exemplaires disséqués.

	Mesapamea secalis	*Mesapamea didyma*
Belgique		
Flandre occidentale	3	8
Hainaut	–	1
Brabant	–	38
Liège	–	15
Namur	2	13
Luxembourg	–	1
France		
Alpes-Maritimes	1	5
Corrèze	4	4
Côte d'Or	3	3
Lot	1	1
Tarn	13	5
Var	1	1

Les photos (fig. 1) soulignent chez les trois formes les plus caractéristiques (rangée 1, rangées 2 et 3, rangée 4) la parfaite identité d'aspect de *M. secalis* et *M. didyma*.

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Boekbesprekingen

Askew, R. R.: *The Dragonflies of Europe (revised edition).*
23 × 17 cm, 308 p., 32 kleurenplaten, 513 tekstfiguren en 114 verspreidingskaarten, Harley Books, Martins, Great Horkesley, Colchester, Essex CO6 4AH, England, paperback, 2004, £30.00 (ISBN 0-946589-75-5).

Dit boek is een herwerkte versie van het bekende werk over de Europese libellen dat in 1988 gepubliceerd werd als gebonden boek in groot formaat. Waarschijnlijk mede door de eerste editie raakten heel wat nieuwe gegevens bekend over de Europese Odonata, zowel biologische als verspreidingsgegevens. Deze werden niet in de algemene tekst verwerkt maar wel in een supplementair hoofdstuk. Daarin staan ook de 14 nieuwe soorten behandeld die sinds de eerste editie in Europa bekend raakten. Verder bevat dat hoofdstuk wijzigingen en enkele correcties aan de tekst van de eerste editie. Zo raakt de informatie natuurlijk wel een beetje verspreid. Het is ook jammer dat de nieuwe soorten niet in de determineertabellen werden opgenomen.

De inleidende en algemene teksten zijn gelijk aan die van de eerste uitgave. De figuren zijn zeer verhelderend en de kleurenplaten zonder meer prachtig en goed bruikbaar voor het determineren. De ene, supplementaire kleurenplaat doet zeker niet onder voor de vorige platen. De verspreidingskaartjes geven een duidelijk beeld van de verspreiding van de verschillende soorten in Europa, maar ze werden jammer genoeg niet altijd bijgewerkt met de informatie die de laatste 15 jaar bekend raakte.

Het boek eindigt met een uitgebreide literatuurlijst. De referenties sinds 1988 worden in een supplementaire lijst opgesomd. Achteraan volgt nog een alfabetische index van de wetenschappelijk namen. Gelukkig zijn de nieuwe soorten daar wel goed in verwerkt. Al bij al dus een erg informatierijk boek, goedkoper en handiger dan de oorspronkelijke uitgave, maar de nieuwe gegevens zijn nogal verspreid opgenomen wat de bruikbaarheid niet altijd ten goede komt.

Willy De Prins

Mason, F., Nardi, G. & Tisato, M. (eds.): *Dead wood: a key to biodiversity.*
21 × 29,5 cm, 99 pp., tekstfiguren, Proceedings of the International Symposium 29–31 Mey 2003, Mantova (Italy), te bestellen bij Centro Nazionale per lo Studio e la Conservazione della Biodeiversità Forestale, Corpe Forestale dello Stato, Via C. Ederle 16a, I-37100 Verona, natcons@tin.it, geniet, 2004, prijs niet meegedeeld (ISBN 88-901223-0-7).

Heel wat dierlijk leven is gebonden aan dood hout en bossen waarin omgevallen bomen of afgewaaide takken blijven liggen, hebben dan meestal ook een veel grotere biodiversiteit dan bossen waarin alles kraaknet wordt opgeruimd. Tijdens dit symposium werden 23 voordrachten gehouden over diverse aspecten van het leven in dood hout. De teksten van deze voordrachten, vooral in het Italiaans of het Engels, worden in deze publicatie samengebracht en voorzien van tabellen, grafieken en foto's.

De entomologische hoofdstukken omvatten: Saprophylic invertebrates of floodplains, a particularly endangered component of biodiversity; Two lowland beech-oak forest areas abandoned for more than 30 years: what do bird and beetle communities tell us?; Coleotteri scolitidi in querce del Bosco della Fontana; *Osmoderma eremita* s.l. in Europa meridionale: stato delle conoscenze e problemi di conservazione (Coleoptera: Cetoniidae); Importanza degli insetti xilofagi primari nell'economia forestale; *Eupotosia mirifica*, joyau mencé du patrimoine naturel européen (Coleoptera, Cetoniidae); Saprophylic beetles in boreal forests: temporal variability and representatives of samples in beetle inventories, The succession of saprophylic insects in dead wood: a new research method. Het boek is keurig uitgegeven en interessant voor entomologen die in xylofage insecten geïnteresseerd zijn.

Willy De Prins

Notes on *Ecdamua nambui* (Hymenoptera: Torymidae), with a key to world *Ecdamua* species

A. Zavada

Abstract. The species *Ecdamua nambui* Kamijo, 1979, originally described from Japan, is in the present communication reported as found in Kiev, Ukraine. The Ukrainian specimen is provided with a description. A key to all five known species of *Ecdamua* is given.

Samenvatting. Gegevens over *Ecdamua nambui* (Hymenoptera: Torymidae), met een sleutel voor de *Ecdamua*-soorten van de wereldfauna
Ecdamua nambui Kamijo, 1979, oorspronkelijk beschreven uit Japan, wordt hier meegedeeld uit Kiev, Oekraïne. Het exemplaar uit Oekraïne wordt beschreven. Een determineertabel voor alle vijf bekende soorten uit het genus *Ecdamua* wordt gegeven.

Résumé. Données sur *Ecdamua nambui* (Hymenoptera: Torymidae), avec une clé pour les espèces mondiales d'*Ecdamua*
Ecdamua nambui Kamijo, 1979, décrite du Japon, est rapporté ici de Kiev, Ukraine. L'exemplaire ukrainien est décrit. Une clé de détermination est donnée pour les 5 espèces d'*Ecdamua* connues dans le monde entier.

Keywords: *Ecdamua* – *Ecdamua nambui* – new record – key.

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Introduction

In June, 2003 I learned of a "*Torymus*" species with exceptionally long ovipositor collected in Kiev, Ukraine. On a subsequent visit to the collecting locality, which is in the park surrounding the Sophia Cathedral in the downtown, another specimen, hereunder described, was taken in my presence. The specimen proved to be *Ecdamua nambui* Kamijo, 1979, previously only known from its type locality in Japan.

In describing sculpture and punctuation I adhered to the terminology proposed by Torre-Bueno (1962), while in all other respects following my earlier descriptions of *Torymus* species, and those of Graham & Gijswijt (1998).

The key was composed based on females of *Ecdamua* Walker deposited in the NHM (former BMNH). The distribution data and synonymies to all species listed below have been compiled from the online Chalcidoidea catalogue (Noyes 2003).

Key to species of *Ecdamua* Walker

1. Propodeum with median row of foveae. Petiole at most twice as long as broad. Hind femur: length of tooth about half the breadth of femur at point of attachment; contour of lower margin non-continuous proximally and distally from tooth attachment. [Longitudinal sulcus on scutellum absent.] ..... *nambui* Kamijo

— Propodeum without row of foveae in the middle, smooth or with piliferous punctures. Petiole longer. Hind femur: tooth on hind femur as minute tubercle; curvature of lower margin smooth, unbroken at point of attachment of the tooth. 2

2. Propodeum glabrous. Prepectal fossa as a wide groove, with upper and lower margins parallel. ..3

— Propodeum finely sculptured. Prepectal fossa triangular. 4

3. Scutellum with an incomplete longitudinal sulcus. ..... *cadenati* (Risbec)

— Scutellum without such longitudinal sulcus. ..... *macrotelus* Walker

4. Petiole 1.5-1.6 times as long as hind tibia. Foveae in basal rows on propodeum smaller and more than four on each side. Width of frons equal to height of eye. [?Smaller species?] ..... *indica* Walker

— Petiole 1.9 times as long as hind tibia. Foveae in basal rows on propodeum large and few, at most four visible, on each side. Width of frons slightly less than height of eye. [?Larger species?] ..... *longipilum* (Girault)[1]

Ecdamua nambui Kamijo, 1979

Ecdamua nambui Kamijo, 1979.

Material studied: ♀, Ukraine, Kiev, 7.viii.2003 (Zavada) (BMNH).

DESCRIPTION: ♀: Head from above 39:18 times as broad as long; temples straight, 3.5:14.5 length of eye; parascrobal areas level with anterior margin of eyes; occipital aperture equal in breadth to distance between inner margins of eyes, its foremost point passes a little the tangent line drawn at their posterior margins; POL:OOL 4.5:10, OOL:OD 4.5:5; surface moderately shiny, on vertex slightly corrugated transversely, punctures of moderate size, rather sparse. Head in anterior view 41:30 times as broad as high; height of eye 22:30 height of head and 22:21 width of frons; toruli situated distinctly nearer to lower than to upper margin of face; length of scape proper 14:21 width of frons; scape hardly or just reaching lower ocellus; genae virtually straight, malar space 7:12 breadth of mouth; lower margin of face with a bordering groove along its entire length including clypeus; clypeus produced forward a little. Mandible with three robust teeth, which are equal in size. Lower face devoid of punctures, lightly alutaceous; parascrobal areas stronger sculptured, coriaceous, with isolated punctures appearing; head all over in long sparse brownish hairs; mandibles more densely pilose. Pedicellus longer than broad; anellus slightly shorter than broad or quadrate, subparallel, its breadth at base more than half apical breadth of pedicellus; F1 elongated conical, approximately twice as long as broad at apex and at base equal in breadth to pedicellus; F2-F7 gradually becoming shorter, F7 being 1.6-1.7 times as long as broad; all funicular segments clothed with short adpressed sensilla, arranged in up to 5 irregular rows; clava not broader than F7, approximately as long as F7 plus one-third F6.

Pronotum from above resembling the form seen in *Callimomus* species, with sides subparallel; its surface sculpture anteriorly foveolate-punctate with smooth interstices, posteriorly (along the partly effaced suture) becoming glabrous, devoid of punctures, postero-laterally shallow, confused-rugulose, showing as though meshes of very loose and irregular reticulation; sides of pronotum longitudinally strigulate in the main part, with an elevated smooth area distinctly bordering it at and around its upper posterior corner; below, sides of pronotum are extended down to overhang fore coxa as small and narrow, smooth testaceous flaps. Halves of prosternum with dividing longitudinal suture almost obliterated. Mesoscutum 85:52 as long as broad, in large and rather shallow

[1] I have seen only one Australian specimen in BMNH identified as *E. longipilum* (Girault). This specimen was rather close to *E. indica* Walker.

piliferous punctures, uniformly spaced at one their diameter, with smooth interstices; abscissae of scutoscutellar suture not continuously straight, thus forming an obtuse angle. Scutellum 51:27 times as long as broad, narrowly rounded apically, sculptured as mesoscutum but with punctures more apart; axillae with punctures even sparser and interstices lightly imbricate. Prepectal fossa very shallow but delimited clearly. The obliquely running ridge dividing antero-ventral and lateral surfaces of mesosternum is conspicuous and entire, reaching base of mid coxa; lateral surface weakly imbricate to smooth, furnished with a set of small foveae along its posterior margin in middle part. Frenal line distinct; posterior part of scutellum, occupying about two-fifth of its length, entirely and perfectly smooth; flange furnished with a few trabeculae. Metanotum clearly visible from above; lateral fossae with medial border somewhat smoothed. Propodeum visibly longer than scutellum, convex, glabrous and shining; with a row of four quite large, gradually diminishing laterad, foveae along base, on each side; partly separating the two innermost foveae lies another fovea, immediately posterior to which begin another pair of diverging rows of foveae, these being somewhat larger and more elongate than those in basal rows, that go to sides of propodeal foramen and divide the propodeum into three subequal areas; posterior margin of propodeum furnished with a groove; propodeal spiracle slit-like; callus only slightly stronger sculptured than rest of propodeum, with several obscure punctures and apparently bare. Propodeum inclined at 25–30°; propodeal foramen low. Mesepimeron large, rotund, somewhat (but not as strongly as in *Torymus austriacus* Graham) convex, as high as mid coxa. The lobe of mesepisternum that lies above mesepimeron forms at its anterior extremity a small detached sclerite, which is delimited by a sulcus. Hind coxa bare except for several long hairs near apex, about or slightly more than twice as long as broad; in profile, its anterior margin is very weakly angular; posterior margin not angulate basally and weakly and evenly curved in the rest of its length; dorsal ridge quite distinct only in proximal one-fourth; lateral surface reticulate, reticulation becoming obsolescent towards mid-line and turns alutaceous on anterior surface; medial surface imbricate, and neither surface has nitid areas such as in *T. armatus* Boheman and *T. kononovae* (Zerova & Seryogina). Hind femur 75:18 times as long as broad, bearing a strong, apically hooked tooth, distal to which the breadth of femur is conspicuously less than immediately proximally to it. Shorter spur of hind tibia 0.6-0.7 length of longer spur, the latter subequal to apical breadth of tibia. Hind basitarsus 28:76 length of tibia.

Fore wing with two hair-rows on under surface of costal cell, one running along its entire length and one terminating at about one-third from base; upper surface with single hair-row in distal half; basal and cubital veins traced with uninterrupted hair-rows; basal cell bare except for two or three hairs below SC; speculum small, closed, with disc piliation beginning immediately from cv. SC:M 81:45; ST distinct, oblique; PM gradually disappearing towards apex, at least 3.5 times as long as ST. Overall disc piliation not dense; disc entirely immaculate.

Gaster distinctly shorter than mesosoma, and conspicuously petiolate; petiole parallel-sided, somewhat compressed dorso-laterally and about twice as long as broad. Gastral tergites 2 to 4 narrowly and more or less strongly emarginate medially; tergite 5 broadly emarginate; all tergites alutaceous at base and glabrous, brightly shining in middle and at apex. Hypopygium unsclerotized except at extreme apex, pilose. Sides of gaster and apices of tergites 4 and 5 in sparse long greyish hairs. Ovipositor exceptionally long, measuring at least 3 body lengths.

Head, mesosoma from above, gaster except petiole, fore and mid coxae and femora metallic greenish-blue, strongly shining; sides of mesosoma and hind coxa and femur bluish-green, with golden tinge in places; posterior margins of gastral tergites violet; scape testaceous brown, fore tibiae at base, and mid tibiae entirely, brown, fuscous-testaceous, and so are maxillae; hind tibiae deep brown with weak metallic sheen; tarsi light-brown except distal segment, which is dark; antennae, tegulae, and petiole black.

Body length excluding ovipositor, 4 mm.

♂ unknown.

BIOLOGY. The specimen was taken on the trunk of an old chestnut tree when ovipositing into one of the numerous scolytid burrows, 2–3 mm in diameter, in a stretch of bare wood about 80 cm long for many seasons stripped of bark. Small wasps were seen entering and leaving these burrows.

DISTRIBUTION. Japan, Ukraine.

COMPARATIVE NOTES. This species stands apart from the other four species of *Ecdamua* for its pronounced hind-femoral tooth and the median row of foveae on the propodeum, downward diverging from the midpoint.

Ecdamua cadenati (Risbec, 1951)

Plesiostigma cadenati Risbec, 1951.

E. cadenati; Grissell, 1995.

DISTRIBUTION. Niger, Senegal, Sierra Leone, Uganda.

Ecdamua indica Walker, 1871

E. indica Walker, 1871.

E. indica; Narendran, 1984.

E. indica; Bouček, 1988.

E. indica; Grissell, 1995.

E. mirabilis Masi, 1926.

Torymus mirabilis; Farooqi, 1986.

E. mirabilis; Narendran & Sureshan, 1988.

Amonodontomerus indicus Ahmad, 1946.

E. bangalorensis Mani & Kurian, 1953.

DISTRIBUTION. China (Taiwan), India (Bihar, Karnataka, Kerala, Maharashtra, Uttar Pradesh).

Ecdamua longipilum (Girault, 1925)

Monodontomerella longipilum Girault, 1925.
E. indica; Bouček, 1988.
DISTRIBUTION. Australia (Queensland).

Ecdamua macrotelus Walker, 1862

E. macrotelus Walker, 1862.
E. macrotelus; Bouček, 1988.
E. macrotelus; Grissell, 1995.
DISTRIBUTION. Kenya, Sierra Leone, Uganda.

Acknowledgments

I am very much obliged to Dr. Viktor Fursov of Schmalhausen Institute of Zoology, Kiev, Ukraine, with whom maintaining a reserved correspondence I eventually became aware of the new species. I would also like to thank Dr. John Noyes for assistance during my visit to the Natural History Museum, London, and Mr. M. J. Gijswijt, Zoological Museum Amsterdam and Naturalis, Leiden, for his sceptical though sound comments on my work.

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