The European species of the subgenus *Aliolus* Say of the genus *Eubazus* Nees and of the genus *Dicyrtaspis* van Achterberg (Hymenoptera: Braconidae: Brachistinae)

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The European species of the subgenus *Aliolus* Say, 1836, of the genus *Eubazus* Nees, 1814, and of the genus *Dicyrtaspis* van Achterberg, 1980 (Hymenoptera: Braconidae: Brachistinae) are reviewed. The identity of *Triaspis thomsoni* Fahringer, 1934, and the interpretation by Šnoflák (1953) are discussed. A lectotype is designated for *T. thomsoni*, a neotype for the types species of *Aliolus* Say, 1836 (*Bracon trilobatus* Say, 1836) and *T. thomsoni* sensu Šnoflák is described as a new species (*Eubazus nigroventralis* spec. nov.) from Bulgaria, Germany and Czech Republic. Two new species of the *E. lepidus*-group are described and illustrated (*E. punctifer* cpec. nov. from Bulgaria and *E. planifacialis* spec. nov. from The Netherlands, Belgium and Sweden). In addition, a closely related species of the type species (and up to now only known species) of the genus *Dicyrtaspis* van Achterberg from Bulgaria is described and illustrated (*D. aurantia* spec. nov.). A key to the European species of the subgenus *Aliolus* Say, and of the genus *Dicyrtaspis* van Achterberg is added.

Introduction

The genus *Eubazus* Nees, 1814 (Braconidae: Brachistinae) is rather large with a worldwide distribution, but most diverse in the northern hemisphere and South America (van Achterberg & Kenis, 2000). Formerly it was usually included in the tribe Brachistini Foerster, 1862, of the subfamily Helconinae Foerster, 1862 (e.g. van Achterberg, 2000) but because of recent results of DNA-analysis (Belshaw et al., 2000) the tribe is here treated as the subfamily Brachistinae, as was done before by Tobias (1986) and Belokobylskij (1998). At the species level the taxonomic situation is complicated because of the misinterpretation of available names, and the subtle differences between the species. This paper is part of a series to clarify the taxonomy of the genus in Europe (van Achterberg & Kenis, 2000; van Achterberg, 2000). The confusion is exacerbated by the use of several genera for the group of closely related species included by me in the genus *Eubazus* Nees (van Achterberg, 1990a): mainly *Eubazus* Nees, 1814, *Aliolus* Say, 1836, *Eubadizon* Nees, 1834, *Brachistes* Wesmael, 1835, and *Allodorus* Foerster, 1862. This paper deals with the European species belonging to the subgenus *Aliolus* Say, and the closely related genus *Dicyrtaspis* van Achterberg, 1980. They share an extensively sculptured second metasomal tergite and a more or less shortened third tergite. In Europe these groups are represented by several new species, of which four are described below.

One of these is the subject of confusion: *Triaspis thomsoni* Fahringer, 1934, was proposed as a new name for *Sigalphus striatulus* Thomson, 1874, not Nees, 1814. To promote the stability of the nomenclature a lectotype of *Triaspis thomsoni* and a neotype of *Bracon trilobatus* Say, 1836 (the type species of the subgenus *Aliolus* Say, 1836) are designated below and are deposited in the Zoological Institute at Lund and the Nationaal Natuurhistorisch Museum at Leiden, respectively. Both Thomson and Fahringer were correct to include this species in the genus *Triaspis* Haliday, 1835. However, the species identified by Šnoflák (1953) as *Triaspis thomsoni* belongs to the genus *Eubazus* Nees, 1814. The figures in Šnoflák (1953) are often inaccurate or even wrong: e.g., the figured head of *T. thomsoni* sensu Šnoflák (fig. 42 in Šnoflák, 1953) has the head wider behind the eyes than at the level of the eyes, but in fact his specimen has the eyes strongly protruding compared to the temples. The sculpture figured is highly stylized and the shape e.g. of the clypeus is sketched only. According to the description the hind tibia and tarsus are missing in the only specimen available but they are present in his fig. 42! The shape of the clypeus and third tergite largely resemble *Eubazus shishiniovae* van Achterberg, 2000, but not the shape of the head! Actually the figure partly resembles the real *T. thomsoni* Fahringer (e.g., the shape of the clypeus and of the third tergite) better than Šnoflák's own specimen. In disagreement with the true *T. thomsoni* is the relative length of vein 1-R1 of the fore wing (should be shorter than the pterostigma) and the legs are mainly dark brown. The figure seems to be based on another specimen (probably lost at an early stage) than the one he based his description on and which is cited at the end of the description. To clear up the confusion *T. thomsoni* sensu Šnoflák is described in this paper as *Eubazus nigroventralis* spec. nov. from Bulgaria, Czech Republic and Germany, and a key is given to the subgenus *Aliolus*. In addition two new species of the subgenus *Aliolus* from The Netherlands and Sweden (*E. planifacialis* spec. nov.) and Bulgaria (*E. punctifer* spec. nov.); and is a new species of the genus *Dicyrtaspis* from Bulgaria (*D. aurantia* spec. nov.) are described and illustrated.

Eubazus species are ovo-larval koinobiont endoparasitoids of predominantly Curculionidae larvae. At least some of the species lay their eggs in eggs of the host or very young larvae, develop internally when the host larva is full-grown and have a final ectoparasitic phase (Haeselbarth, 1962; Alauzet, 1987). However, the biology of the members of the subgenus *Aliolus* and of the genus *Dicyrtaspis* are not known in detail.

For the recognition of the subfamily Helconinae, the tribe Brachistini (now subfamily Brachistinae) and the genus *Eubazus* Nees, see van Achterberg (1990b, 1993, 1997), for the subgenus *Aliolus* Say, see van Achterberg (1990a) and for the terminology used in this paper, see van Achterberg (1988). The abbreviation RMNH stands for the Nationaal Natuurhistorisch Museum, Leiden.

Key to European species of the subgenus *Aliolus* Say and of the genus *Dicyrtaspis* van Achterberg

1. First metasomal tergite immovably joined to second tergite; first metasomal suture heavely sclerotized and medially finely crenulate (figs 3, 6); frons with pair of distinctly developed lateral tubercles ("calli"; figs 2, 4); third tergite of ♀ coarsely irregularly sculptured medio-apically (figs 6, 11) and subtruncate apically in lateral

view (figs 3, 10); precoxal sulcus sculptured (fig. 3); third metasomal tergite with lateral crease (figs 3, 10); genus *Dicyrtaspis* van Achterberg, 1980 2

- First tergite movably joined to second tergite; first metasomal suture weakly sclerotized and medially smooth (figs 14, 21, 31, 33); laterally frons flat or moderately convex and without calli (figs 15, 18); third tergite of ♀ largely smooth or regularly sculptured medio-apically (figs 21, 33) and gradually lowered apically in lateral view (figs 14, 31); precoxal sulcus smooth or largely so (figs 14, 31), at most punctate; lateral crease of third tergite variable (figs 14, 31); subgenus *Aliolus* Say, 1836, of the genus *Eubazus* Nees, 1814 3

2. Clypeus triangular and completely or largely orange-brown (fig. 4); face of ♀ more or less orange-brown laterally, and rather depressed dorso-laterally (fig. 4); third metasomal tergite subtruncate apically in lateral view (fig. 3); frons with strong rugae and a distinct median carina (fig. 2) ..... ***D. aurantia*** spec. nov.
- Clypeus transverse and dark brown; face of ♀ black, and dorso-laterally hardly or not depressed; third tergite less truncate apically in lateral view (fig. 10); frons largely smooth and a weak median carina ..... ***D. glyptura*** (Thomson, 1874) comb. nov.

Notes.— The holotype of *Sigalphus glypturus* Thomson, 1874, is lost; under this species in the Thomson collection (Lund) is a pair of *Schizoprymnus* specimens from Austria. The specimens do not originate from the type locality in Sweden and disagree with the original description. Thomson indicates that it is near *S. carinatus* Nees, 1814, but it has a deeply excavated frons and the third tergite is depressed medio-posteriorly. I know only one species from Northwest Europa which fits this description, viz., *Triaspis cavifrons* Šnoflák, 1953 (**syn. nov.**) the type species of the genus *Dicyrtaspis* van Achterberg, 1980.

3. Face distinctly higher than clypeus medially (figs 24, 27); colour of face of ♀♂ variable, frequently yellowish; length of ovipositor sheath about 0.2 times fore wing, just protruding beyond apex of metasoma in dorsal view (fig. 31); first discal cell of fore wing slightly higher and anteriorly acute (figs 22, 26); frons weakly convex laterally (fig. 28); vein m-cu of fore wing often comparatively long and less oblique (fig. 22); (*E. lepidus*-group) 4
- Face about as high as clypeus medially (fig. 18); face of ♀ black(ish), of ♂ usually yellowish; length of ovipositor sheath 0.3-0.4 times fore wing, distinctly protruding beyond apex of metasoma in dorsal view; first discal cell of fore wing comparatively transverse and anteriorly (sub)sessile (fig. 12); frons distinctly convex and comparatively wide laterally (fig. 15; vein m-cu of fore wing somewhat shorter and distinctly oblique (fig. 12); (*E. carinatus*-group) 7

Notes.— If the hind coxa is black and the second metasomal tergite squarish and only punctate, cf. *E. novatibialis* (Shenefelt, 1970) (= *E. tibialis* (Hellén, 1958) not Haliday, 1835). The type series has not yet been examined; traditionally this species is included in *Aliolus*, but it probably does not belong here because of the shape and sculpture of the second tergite.

4. Second metasomal suture smooth; third metasomal tergite smooth or nearly so (fig. 33); face of ♀ black; second tergite finely sculptured (fig. 33); precoxal sulcus smooth 5

Note.— If the second tergite is rather coarsely sculptured, the face of males pale yellowish; the face without pit dorsally, hind tibia darkened, third tergite smooth basally and precoxal sulcus smooth or largely so, cf. the eastern Palaearctic *E. flavifacies* Belokobylskij, 1998. If precoxal sulcus largely sculptured (medially coarsely crenulate) and hind tibia yellowish-brown, without infuscation, cf. the eastern Palaearctic *E. sibiricus* Belokobylskij, 1998.

- Second metasomal suture crenulate; at least basal 0.7 of third tergite completely sculptured; face yellow; second tergite coarsely sculptured; precoxal sulcus vari

able, may be partly punctate 6

5. Face with medio-dorsal pit, weakly convex, and medially narrower (fig. 27); frons black laterally; hind basitarsus somewhat less robust (fig. 25) ..... ***E. punctifer*** spec. nov.

- Face with minute medio-dorsal tubercle, flattened, and medially wider (fig. 24); frons vaguely reddish-brown laterally; hind basitarsus comparatively robust (fig. 23) ..... ***E. planifacialis*** spec. nov.

6. Third metasomal tergite with regular curved striae; second tergite regularly striate; clypeus largely smooth, at most with some punctures; mesopleuron largely smooth; hind tibia yellowish dorsally ..... ***E. regularis*** van Achterberg, 2000
Note.— Replacement name for *E. rufithorax* (Tobias, 1986) not Abdinbekova, 1969.

- Third tergite with irregular sublongitudinal rugae; second tergite irregularly rugose; clypeus often distinctly rugose-punctate, but sometimes only with some punctures; mesopleuron often distinctly punctate dorsally; hind tibia dorsally usually infuscate (or only its outer side) or dark brown ..... ***E. lepidus*** (Haliday, 1835)
Notes.— Conspecific are *Allodorus kusarensis* Abdinbekova, 1969 (the male holotype has been examined; **syn. nov.**) and *E. hofferi* (Šnoflák, 1953) **syn. nov.** The antenna is 0.9-1.0 times as long as fore wing, and with 25-35 segments; the mesoscutum and the hind tibia are very variable in colour, varying from largely reddish or yellowish or largely black. Rarely small male specimens are found with a smooth clypeus and face, which may belong also here.

7. Hind basitarsus robust; vein r of fore wing short; ovipositor sheath about equal to combined length of second and third metasomal tergites and half as long as metasoma; clypeus rugose ..... ***E. carinatus*** (Nees, 1814)
Notes.— The types series is lost. The interpretation is based on the original description (e.g., the length of the ovipositor; Nees (1814): "longitudine dimidii abdominis [= metasoma]" and the carinate metasoma) and a ♀ and ♂ from Poland present in the collection of the National Museum of Scotland in Edinburgh.

- Hind basitarsus moderately slender (fig. 20); vein r of fore wing medium-sized (fig. 12); ovipositor sheath 1.2-1.5 times combined length of second and third tergites (and distinctly longer than half length of metasoma); if about 1.2 times then clypeus largely smooth 8

8. Clypeus (except dorsally in *E. obtusus*), malar space ventrally, scapus and pedicellus orange-brown; hind tibia brown ventrally; eyes less protruding; face of ♂ largely black (but ♂ of *S. sudeticus* is unknown) 10

- Clypeus and malar space ventrally, black; scapus and pedicellus black or dark brown; hind tibia black to dark brown ventrally; eyes distinctly protruding (fig. 15); face of ♂ completely brownish-yellow ..... ***E. nigroventralis*** spec. nov.

9. Length of ovipositor sheath about 1.2 times length of second and third tergites combined, about 0.4 times fore wing, shorter than metasoma; clypeus largely smooth; third tergite flat apically; temples gradually narrowed behind eyes ..... ***E. sudeticus*** (Šnoflák, 1953)
Note.— The female holotype should be in Prague Museum, but could not be traced (Dr J. Maček, pers. comm.). The interpretation is based on the original description and the included figures.

- Length of ovipositor sheath about 1.5 times length of second and third tergites combined, about 0.5 times fore wing, slightly longer than metasoma; clypeus coarsely rugose; third tergite more convex apically; temples subparallel-sided behind eyes; [including *Triaspis obtusus* var. *eurypyga* Šnoflák, 1953] ..... ***E. obtusus*** (Šnoflák, 1953)

Notes.— Only males are known. As indicated by Šnoflák (1953) this species is very close to his "*Triaspis thomsoni*". (= *E. nigroventralis* spec. nov.) I have examined one male from France (RMNH: "Museum Leiden, W. Frankrijk, Loire Atlantique, Herbignac", "Camp de Ranrouet, 2.vii.1970, E.N. Kuiper"). It differs by the hardly protruding eyes, the black face, the more or less yellowish-brown ventral face of the hind tibia and the anteriorly only finely punctate area below the precoxal sulcus.

Subfamily Brachistinae Foerster, 1862
Tribe Brachistini Foerster, 1862
Genus *Dicyrtaspis* van Achterberg, 1980

Dicyrtaspis van Achterberg, 1980: 77-78; Tobias, 1986: 169 (included in the genus *Triaspis* Haliday, 1835).

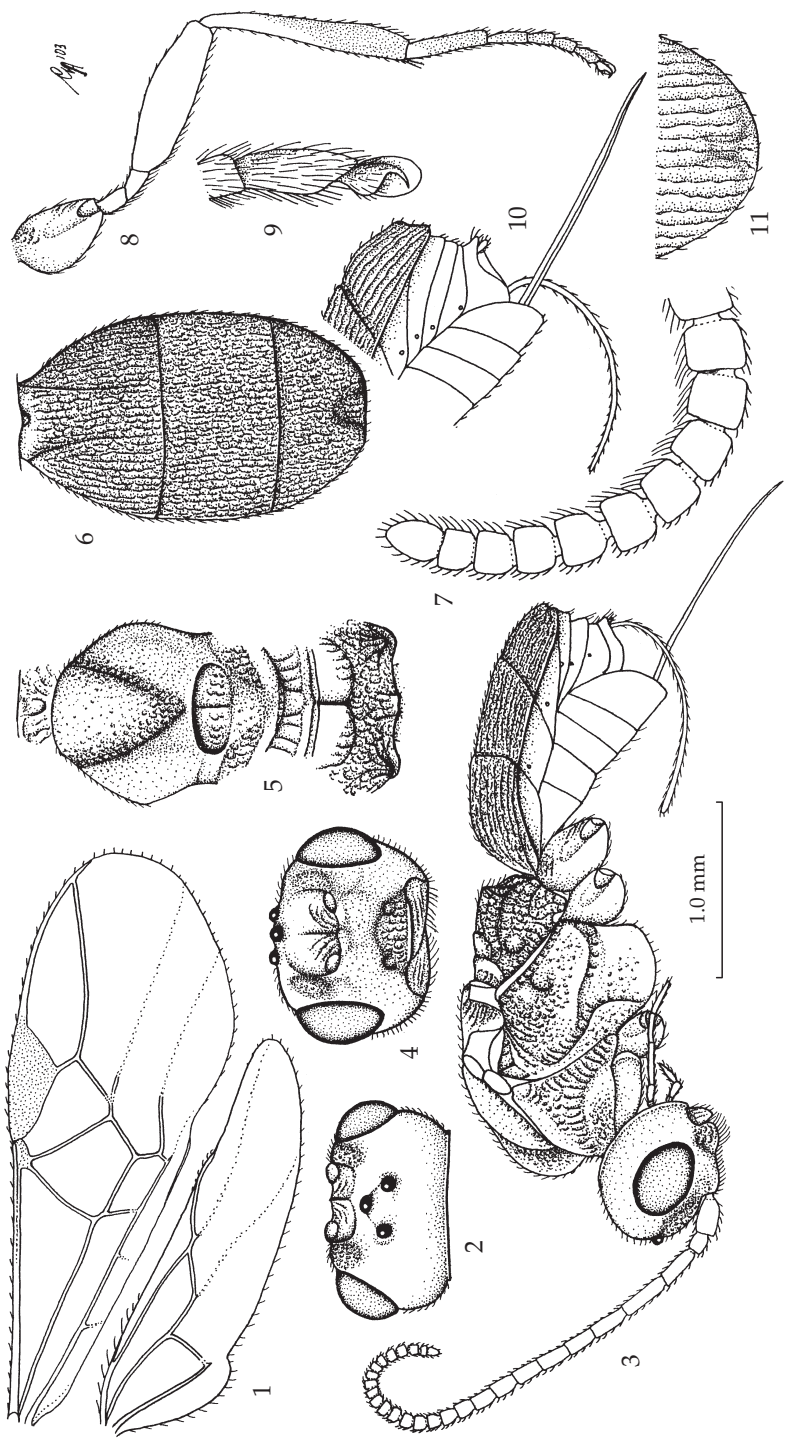
The genus *Dicyrtaspis* van Achterberg is included in this paper because its members are closely related to the subgenus *Aliolus* (e.g., by the wide and more or less convex part of the frons, the narrow face and the heavily sculptured and shortened third tergite). Therefore, it has little to do with the genus *Triaspis* as supposed by Šnoflák (1953) and Tobias (1986). The first metasomal tergite is immovably joined to the second tergite and the first suture is distinctly crenulate; a homeoplasy which *Dicyrtaspis* shares with the genus *Triaspis*. It is a small Palaearctic genus containing two very closely related species of which the biology is unknown.

Dicyrtaspis aurantia spec. nov.
(figs 1-9)

Material.— Holotype, ♀ (RMNH), "NW **Bulgaria**, Opletnja, near Mazdra, (Mal. tr. 5), c 300 m, 11.vi-11.vii.1998 C. v. Achterberg, R. de Vries, P.V. Atanassova, RMNH, [19]98". Paratypes: 2 ♀♀ (RMNH), "W Bulgaria, Sofia, Univ. Exper. Farm, Mat. tr. 8, c 600 m, 29.v-11.vi.1998, P.V. Atanassova, RMNH'98".

Holotype, ♀, length of body 3.6 mm, of fore wing 3.2 mm, of ovipositor sheath 1.0 mm.

Head.— Antenna densely and rather bristly setose, with 27 segments, third segment as long as fourth segment, length of third, fourth and penultimate segments 3.4, 3.4 and 1.0 times their width, respectively, subapical segments comparatively robust, submoniliform, petiolate (figs 3, 7); scapus punctate, normally setose; length of maxillary palp 0.8 times height of head; OOL:diameter of posterior ocellus:POL = 13:8:12; occipital carina complete, distinct and subhorizontal medio-dorsally; frons distinctly concave and largely sculptured medially, with distinct median carina (fig. 2), laterally strongly convex, tuberculate, punctate, with medium-sized setae (fig. 4); in dorsal view length of eye 1.4 times temple; vertex convex, punctulate and densely setose; temples subparallel-sided behind eyes (fig. 2); face about as high as clypeus, transverse, rather depressed dorso-laterally, with small tubercle dorso-medially, densely and finely punctate medially and sparsely so laterally (fig. 4); clypeus rather triangular and coarsely punctate-rugose, but dorsally and ventrally narrowly smooth, moderately convex, medio-ventrally without a tooth (fig. 4); length of malar space 0.8 times basal width of mandible, area smooth ventrally (figs 3, 4); mandible mainly rugose, hardly twisted; occipital flange rather long, not protruding.



Figs 1-9, *Dicyrtaspis aurantia* spec. nov., ♀, holotype; figs 10, 11, *D. glyptura* (Thomson), ♀, Netherlands, Hulshorst. 1, wings; 2, head, dorsal aspect; 3, habitus, lateral aspect; 4, head, frontal aspect; 5, mesosoma, dorsal aspect; 6, metasoma, dorsal aspect; 7, apex of antenna; 8, hind leg; 9, inner hind claw; 10, third metasomal tergite, lateral aspect; 11, id., dorsal aspect. 1, 3, 8: scale-line (= 1.0 x); 2, 4-6, 10: 1.2 x; 7, 9: 5.0 x; 11: 1.8 x.

Mesosoma.— Length of mesosoma 1.3 times its height; pronope deep, nearly round, with rather convex smooth area anteriorly; side of pronotum medially coarsely crenulate, above crenulate area reticulate-punctate, below area rugose anteriorly and largely smooth posteriorly, dorsally punctulate, largely smooth (fig. 3); mesosternal suture deep and distinctly crenulate; epicnemial area punctate dorsally; prepectal carina complete, strong; precoxal sulcus with few crenulae anteriorly, smooth medially and its posteriorly half distinctly crenulate; mesopleuron above precoxal sulcus coarsely rugose-punctate, below precoxal sulcus largely smooth (fig. 3); metapleuron coarsely reticulate-rugose; notauli complete, crenulate and moderately wide (fig. 5); mesoscutal lobes finely punctate and densely setose, mesoscutum rugose medio-posteriorly; scutellar sulcus deep, wide, rugose and with one long carina; scutellum convex and largely smooth except for some punctulation; surface of propodeum coarsely reticulate-rugose, but anteriorly largely smooth, its median carina long, and areola absent, anterior transverse carina coarsely developed; propodeal tubercle rather large, obtuse (fig. 3).

Wings.— Fore wing: distance from apex of marginal cell of fore wing to apex of wing 0.2 times vein 1-R1 (fig. 1); first discal cell sessile anteriorly; r:3-SR+SR1:2-SR = 4:34:10; 1-SR+M straight; SR1 weakly curved (fig. 1); cu-a oblique and not widened posteriorly (fig. 1); 1-CU1:2-CU1 = 2:13; 1-CU1 slender and oblique; m-cu distinctly antefurcal, straight and converging to 1-M posteriorly. Hind wing: 2-M weakly sinuate (fig. 1); 1-M about as long as 1r-m; M+CU:1-M = 5:2; cu-a weakly curved and subvertical.

Legs.— Hind coxa largely smooth, with some rugulae dorso-basally and with some striae posteriorly; tarsal claws rather robust, simple, bristly setose (fig. 9); hind femur superficially punctate ventrally; length of femur, tibia and basitarsus of hind leg 3.4, 7.5, and 6.4 times their width, respectively; hind tibia somewhat narrowed apically; length of hind tibial spurs 0.35 and 0.45 times hind basitarsus.

Metasoma.— Length of first tergite 0.7 times its apical width, slightly depressed medio-posteriorly, surface of first-third tergites very coarsely and densely reticulate-rugose (fig. 6), its dorsal carinae up to basal half; second tergite 1.3 times as long as third tergite (fig. 6); second suture deep, moderately wide and coarsely crenulate; second and third tergites with complete lateral crease, densely setose; fourth-seventh tergites hardly exposed; length of ovipositor sheath 0.33 times fore wing, 0.8 times hind tibia, and 0.7 times length of three basal metasomal segments combined; third tergite distinctly impressed medio-apically (fig. 6) and broadly truncate apically (fig. 3); hypopygium medium-sized and apically truncate.

Colour.— Black; face laterally, clypeus, basal half of antenna ventrally and temple near base of mandible orange-brown; palpi, mandible (except apically), tegulae, legs (except hind tibia and tarsus) and vein C+SC+R of fore wing basally brownish-yellow; basal quarter of hind tibia ivory; hind tibia more or less yellowish-brown ventrally; veins M+CU1 and 1A of fore wing, apex of parastigma pale yelllowish; remainder of veins, pterostigma, parastigma basally, ovipositor sheath, metasoma ventrally, remainder of hind tibia and tarsus dark brown; hind coxa somewhat orange-brown and slightly darkened basally; membrane of fore wing subhyaline.

Variation.— The paratypes have 27 and 28 antennal segments, length of the fore wing 3.5 mm, of the body 4.2 mm, and length of ovipositor sheath 0.38 times fore wing; face laterally partly and clypeus dorsally dark brown; temple nearly completely

black ventrally; hind tibia (except for pale basal ring) largely dark brown ventrally in one paratype; middle and hind coxae mainly brown in one paratype.

Biology.— Unknown.

Distribution.— Bulgaria.

Notes.— Close to *D. glyptura* (Thomson, 1874) **comb. nov**., but this species differs in addition to the differences given in the key by being more robust and having the propodeum less sculptured anteriorly.

Genus *Eubazus* Nees, 1814

Eubazus Nees, 1814: 214; Shenefelt, 1970: 230; van Achterberg, 1990a: 4-5, 2000: 340; van Achterberg & Kenis, 2000: 430. Type species (designated by Viereck, 1914): *Eubazus pallipes* Nees, 1814 [type series lost]. For synonyms, see van Achterberg & Kenis, 2000: 430.

Subgenus *Aliolus* Say, 1836

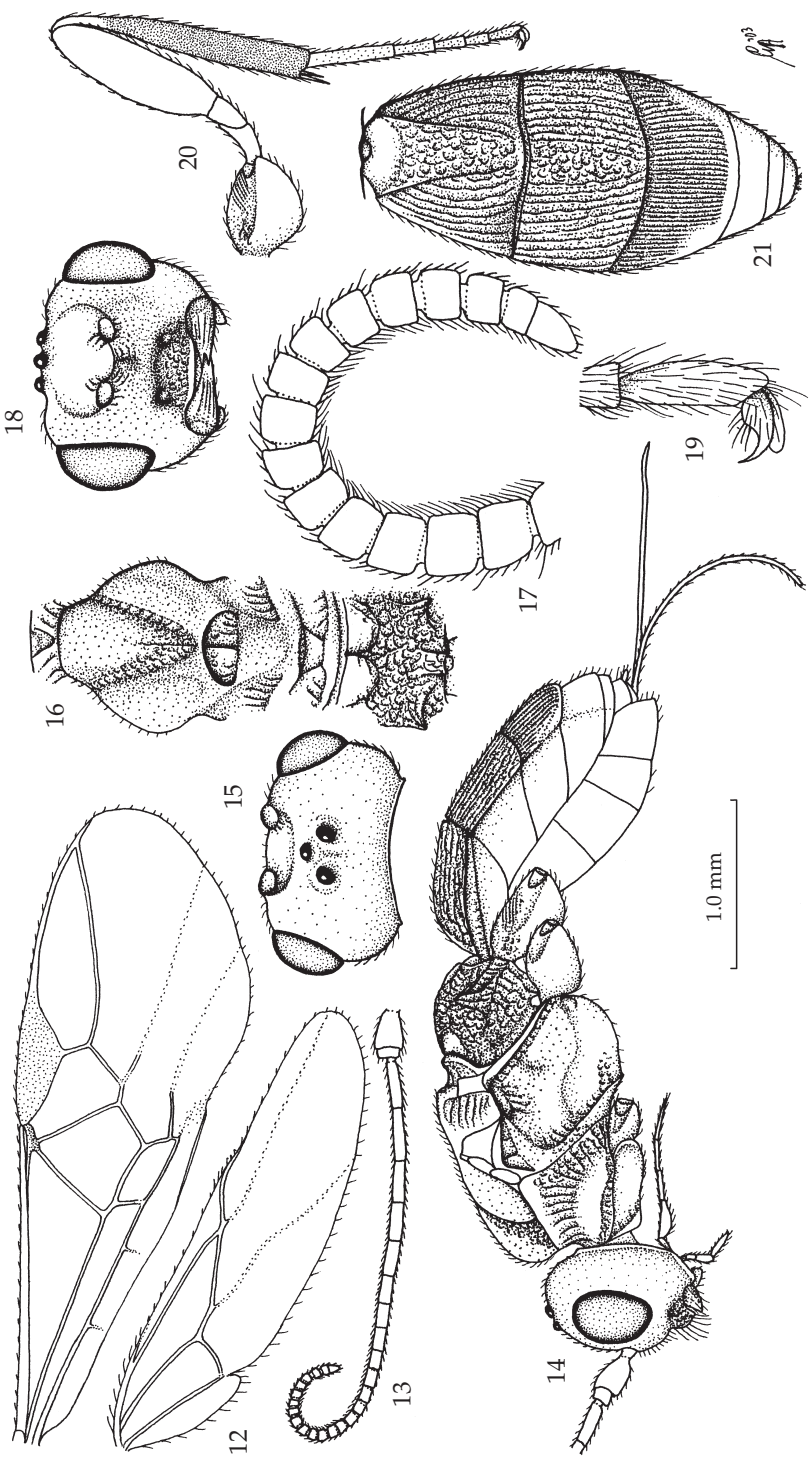
Aliolus Say, 1836: 259 (as subgenus of the genus *Bracon* Fabricius, 1804); Shenefelt, 1970: 269 (as valid genus in the subfamily Triaspidinae Viereck, 1918); van Achterberg, 1990a: 5 (as subgenus of the genus *Eubazus* Nees, 1814). Type species (designated by Viereck, 1914): *Bracon trilobatus* Say, 1836 (type lost; in order to promote stability of the nomenclature the following neotype (figs 36-46) is designated: ♀ (RMNH), "U.S.A., Michigan, Ann Arbor, vi.1976, I. & P. Gauld"). The type species is similar to the common West Palaearctic *E. lepidus* (Haliday, 1835), but *E. lepidus* is a much less robust species, with the frons laterally sparsely and finely punctate, the temples directly narrowed behind the eyes, the first subdiscal cell of the fore wing petiolate anteriorly, the length of the ovipositor sheath about 0.2 times fore wing, the mesosternum, mesopleuron, metapleuron, propodeum and metasoma black, the precoxal sulcus and its surroundings largely smooth and the notauli narrowly crenulate.

The subgenus *Aliolus* Say, 1836, is a small Holarctic subgenus containing parasitoids of Curculionidae and Mordellidae. It is characterized by having the third metasomal tergite medially distinctly shorter than the sculptured second tergite (figs 14, 33, 46), the second tergite comparatively wide (fig. 33; but less so in the eastern Palaearctic *E. shufanicus* Belokobylskij, 1998), the ovipositor sheath at most as long as the metasoma (figs 14, 31, 38) and 0.2-0.5 times the fore wing, the occipital flange at most moderately protruding (fig. 18), the clypeus transverse (fig. 27) and the third tergite nearly always at least partly distinctly sculptured; the tarsal claws simple (figs 19, 35, 44); the clypeus without small medio-ventral protuberance (figs 18, 37), at most with a minute lobe medio-ventrally; and the second metasomal suture variable, but often distinctly impressed and sculptured (figs 14, 38).

Eubazus (*Aliolus*) *nigroventralis* spec. nov.
(figs 12-21)

Triaspis (*Triaspis*) *thomsoni*; Šnoflák, 1953: 384-386 (not figs 42 a-d and not Fahringer, 1934).

Material.— Holotype, ♀ (RMNH), "SW **Bulgaria**, Melnik, near Petric, (Mal. tr. 6), c 450 m, 12.vi-14.vii.1998, C. v. Achterberg, R. de Vries, P.V. Atanassova, RMNH, [19]98. Paratypes: 18 ♀♀ + 3 ♂♂ (RMNH, but 1 ♂ in alcohol in Forschungsinstitut Senckenberg, Frankfurt am Main), 1 ♀, "W Bulgaria,



Figs 12-21, *Eubazus nigroventralis* spec. nov., ♀, holotype. 12, wings; 13, antenna; 14, habitus, lateral aspect; 15, head, dorsal aspect; 16, mesosoma, dorsal aspect; 17, apex of antenna; 18, head, frontal aspect; 19, inner hind claw; 20, hind leg; 21, metasoma, dorsal aspect. 12-14, 20: scale-line (= 1.0 x); 15, 16, 18, 21: 1.3 x; 17, 19: 5.0 x.

Sofia, Univ. Exp. Farm, (Mal. tr. 8), c 600 m, 11-25.vi.1998, P.V. Atanassova, RMNH, [19]98"; 6 ♀♀, id., but 29.v.-11.vi.1998 and 5 ♀♀ 29.v.-25.vi.1997; 2 ♀♀, "NW Bulgaria, Zelin, near Botevgrad, (Mal. tr. 4), c 500 m, 9.vi-5.vii.1998, C. v. Achterberg, R. de Vries, P.V. Atanassova, RMNH, [19]98"; 1 ♀,; 1 ♀, "SE Bulgaria, Brodilovo, nr Achtopol, (Mal. tr. 2), c 20 m, 7.v-8.vi.1998, C. v. Achterberg, R. de Vries, P.V. Atanassova, RMNH, [19]98"; 2 ♀♀, "SW Bulgaria, Pastra, near Rila, (Mal. tr. 7), c 850 m, 28.vi.-26.vii.1998, C. v. Achterberg, R. de Vries, P.V. Atanassova, RMNH, [19]98"; 1 ♀, "D. [= **Germany**], Hessen, MWR Schlüchtern, Fall SL 86, 15.vi.1993, [W. Dorow]"; 3 ♂♂, id., but SL 83 and 16.vii.1996; 1 ♀ (Moravian Museum Brno), det. *Triaspis thomsoni* by Šnoflák, **Czech Republic**, Námet n. O., 16.vii.1943, Obrtel.

Holotype, ♀, length of body 4.5 mm, of fore wing 3.7 mm, of ovipositor sheath 1.5 mm.

Head.— Antenna densely and rather bristly setose, with 29 segments, third segment 0.9 times longer than fourth segment, length of third, fourth and penultimate segments 3.5, 4.0 and 0.8 times their width, respectively, subapical segments robust, submoniliform, petiolate (figs 13, 17); scapus punctate, normally setose; length of maxillary palp 1.1 times height of head; OOL:diameter of posterior ocellus:POL = 20:7:10; occipital carina complete, distinct and subhorizontal medio-dorsally; frons rather concave medially and smooth except for some striae near sockets, laterally rather wide, slightly convex, punctulate and densely setose (fig. 15); in dorsal view length of eye 1.3 times temple; vertex rather flattened, finely punctate and densely setose; temples subparallel-sided behind eyes (fig. 15); face slightly higher than clypeus and 3.7 times wider than medially high, finely punctate (and some fine rugae dorsally) and with small medio-dorsal knob (fig. 18); clypeus punctate-rugose and rather convex, medio-ventrally without a tooth (fig. 18); length of malar space 0.9 times basal width of mandible, area smooth ventrally (fig. 14); mandible strongly striate, rather twisted; occipital flange large, moderately protruding (fig. 18).

Mesosoma.— Length of mesosoma 1.5 times its height; pronope not well visible in holotype but in paratypes widely triangular, rather shallow and without distinct smooth convex area anteriorly; side of pronotum distinctly crenulate medially, largely rugose-reticulate posteriorly (fig. 14); mesosternal suture distinct but rather narrowly crenulate; epicnemial area rugose dorsally; prepectal carina complete, strong; precoxal sulcus smooth, but below it, near prepectal carina with small punctate area; mesopleuron smooth medially and posteriorly, punctulate dorsally (fig. 14); metapleuron smooth antero-dorsally and remainder coarsely reticulate-rugose; notauli complete, crenulate-rugose and wide (fig. 16); mesoscutal lobes punctulate and densely setose, mesoscutum medio-posteriorly widely rugose and with a weak median carina; scutellar sulcus deep, wide and with one long carina; scutellum convex and largely smooth, punctulate; surface of propodeum partly smooth anteriorly and remainder densely and coarsely reticulate, its median carina short and areola absent, anterior transverse carina distinct; propodeal tubercle medium-sized, rather obtuse (fig. 14).

Wings.— Fore wing: distance from apex of marginal cell of fore wing to apex of wing 0.27 times vein 1-R1 (fig. 12); first discal cell sessile; r:3-SR+SR1:2-SR = 5:39:10; 1-SR+M straight; SR1 weakly curved (fig. 12); cu-a oblique and not widened posteriorly (fig. 12); 1-CU1:2-CU1 = 1:6; 1-CU1 slender and subhorizontal; m-cu distinctly antefurcal, straight and converging to 1-M posteriorly. Hind wing: 2-M sinuate (fig.

12); 1-M much shorter than 1r-m; M+CU:1-M = 40:17; cu-a weakly curved and subvertical.

Legs.— Hind coxa with some rugae dorso-basally and with some oblique striae dorso-apically; tarsal claws rather robust, simple, bristly setose (fig. 19); hind femur superficially punctate ventrally; length of femur, tibia and basitarsus of hind leg 3.2, 8.1, and 6.0 times their width, respectively; hind tibia subparallel-sided apically; length of hind tibial spurs 0.3 and 0.4 times hind basitarsus.

Metasoma.— Length of first tergite 0.8 times its apical width, slightly depressed medio-posteriorly, its surface coarsely sublongitudinally rugose, but medially more reticulate (fig. 21), its dorsal carinae complete, second tergite coarsely sublongitudinally rugose, with lateral crease, and 1.4 times as long as third tergite (figs 14, 21); second suture narrow and crenulate; third tergite coarsely and densely longitudinally striate, latero-posteriorly and narrowly medio-possteriorly smooth (fig. 21), and only basally with lateral crease (fig. 14), tergites densely setose; fourth-seventh tergites mainly retracted; length of ovipositor sheath 0.41 times fore wing, equal to length of hind tibia, and 0.9 times length of three basal metasomal segments combined; hypopygium medium-sized and apically truncate.

Colour.— Black; antenna (except blackish scapus), fore and middle telotarsi, hind tarsus largely, metasoma ventrally, and ovipositor sheath dark brown; tegulae (but humeral plate partly dark brown), mandible (except apically), palpi, remainder of fore and middle legs, hind trochanter and trochantellus brownish-yellow; hind coxa and hind femur yellowish-brown; base of hind tibia and base of vein C+SC+R of fore wing ivory; remainder of hind tibia (including ventral face) black; parastigma anteriorly, veins 1-M and M+CU1 of fore wing and most veins of hind wing yellowish-brown, remainder of veins brown, but apex of vein C+SC+R of fore wing, parastigma posteriorly and pterostigma dark brown; menbrane of fore wing subhyaline.

Variation.— Antenna of ♀ with 28 (3), 29 (8) or 30 (8) segments, of ♂ 30 (1) or 33 (1); length of fore wing 3.5-4.1 mm, of body 4.0-5.2 mm; length of ovipositor sheath 0.32-0.42 times fore wing; length of third metasomal tergite 0.6-0.7 times second tergite; males have face, clypeus, ventral half of temple and basal half of antenna ventrally brownish-yellow; antennal segments distinctly longer than wide, and face largely smooth; humeral plate may be completely dark brown.

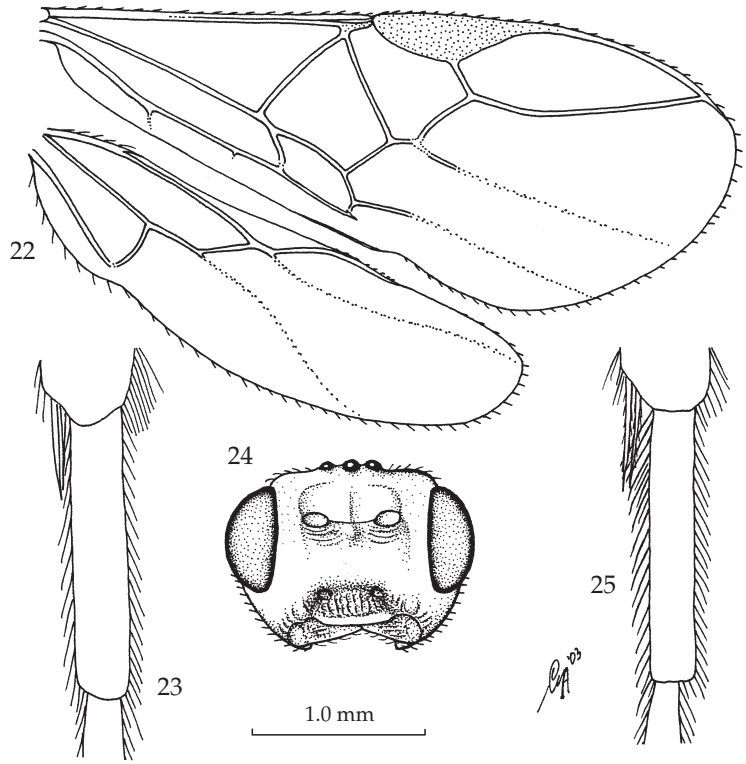
Biology.— Unknown.

Distribution.— Bulgaria, Czech Republic, Germany.

Notes.— Superficially resembling *E. shishiniovae* van Achterberg, 2000, but this species has the tarsal claws with a small protuberance, the clypeus with a small medio-ventral tooth, hind tibia yellowish-brown ventrally, the face distinctly higher than the clypeus, the notauli narrow and the third metasomal tergite as long as the second tergite.

Eubazus (*Aliolus*) *planifacialis* spec. nov.
(figs 22-24)

Material.— Holotype, ♀ (RMNH), "**Netherlands**: N.B., Udenhout, "De Brand", 26.v-2.vi.1990, UTM 476 225, Mal. trap, Ins. W[erk]G[roep] KNNV-Tilburg". Paratypes (3 ♀♀): 1 ♀ (RMNH), "Nederland, Asperen, (Z.-H.), 7-18.vi.1973, C.J. Zwakhals"; 1 ♀ (RMNH), "**Sverige**, Örebro Lån, Klysna "Norrber-



Figs 22-24, *Eubazus planifacialis* spec. nov., ♀, holotype; fig. 25, *E. punctifer* spec. nov., ♀, holotype. 22, wings; 23, 25, hind basitarsus, lateral aspect; 24, head, frontal aspect. 22: scale-line (= 1.0 x); 23, 25: 2.8 x; 24: 1.4 x.

ga", 8.vii-2.viii.1979, [G.] van Rossem"; 1 ♀ (RMNH), "**Belgique**-Lg, Mt. St. Pierre, 25, stronk (= reared from basal part of dead tree), 1977, B.V. Lefeber".

Holotype, ♀, length of body 4.0 mm, of fore wing 4.2 mm, of ovipositor sheath 0.75 mm.

Head.— Antenna densely and rather bristly setose, with 32 segments, third segment 1.1 times longer than fourth segment, length of third, fourth and penultimate segments 3.0, 2.8 and 0.9 times their width, respectively, subapical segments comparatively robust, submoniliform, petiolate; scapus punctate dorsally, normally setose; length of maxillary palp equal to height of head; OOL:diameter of posterior ocellus:POL = 8:3:5; occipital carina complete, distinct and subhorizontal medio-dorsally; frons weakly concave medially and smooth except for indistinct median carina, laterally slightly convex, sparsely punctate and with medium-sized setae; in dorsal view length of eye 1.5 times temple; vertex convex, smooth and densely setose; temples roundly narrowed behind eyes; face 1.8 times higher than clypeus, transverse, smooth (except for some fine striation dorsally) and with small tubercle dorsally (fig. 24); clypeus distinctly furcate-rugose, but dorsally and ventrally narrowly

smooth, moderately convex, medio-ventrally without a tooth (fig. 24); length of malar space equal to basal width of mandible, area partly depressed and remainder striate ventrally (fig. 24); mandible mainly punctate-rugose, distinctly twisted apically; occipital flange medium-sized, hardly protruding (fig. 24).

Mesosoma.— Length of mesosoma 1.5 times its height; pronope small, point-like; side of pronotum largely crenulate-rugose, posteriorly and dorsally partly smooth; mesosternal suture deep and distinctly crenulate; epicnemial area rugose-punctate dorsally; prepectal carina complete, strong; precoxal sulcus smooth, developed as a shallow depression; mesopleuron smooth except for some punctation dorsally and antero-ventrally below precoxal sulcus; metapleuron coarsely reticulate-rugose; notauli complete, crenulate and narrow anteriorly, and somewhat widened posteriorly; mesoscutal lobes punctate or punctulate and densely setose; scutellar sulcus deep, wide and with one long carina; scutellum with a deep longitudinal groove (but absent in paratypes), remainder convex and largely smooth medially, and coarsely punctate laterally; surface of propodeum partly smooth anteriorly and remainder densely and coarsely reticulate, its median carina irregular, rather short and areola obscured by sculpture, anterior transverse carina weakly developed; propodeal tubercle medium-sized, obtuse.

Wings.— Fore wing: distance from apex of marginal cell of fore wing to apex of wing 0.36 times vein 1-R1 (fig. 22); first discal cell shortly petiolate; r:3-SR+SR1:2-SR = 6:39:13; 1-SR+M straight; SR1 rather curved (fig. 22); cu-a strongly oblique and not widened posteriorly (fig. 22); 1-CU1:2-CU1 = 1:6; 1-CU1 slightly widened and subhorizontal; m-cu distinctly antefurcal, straight and converging to 1-M posteriorly. Hind wing: 2-M weakly sinuate (fig. 22); 1-M slightly shorter than 1r-m; M+CU:1-M = 5:2; cu-a weakly curved and subvertical.

Legs.— Hind coxa distinctly rugose dorsally and somewhat punctate laterally; tarsal claws rather robust, simple, bristly setose; hind femur superficially rugose ventrally, rather abruptly narrowed ventro-basally; length of femur, tibia and basitarsus of hind leg 3.6, 8.1, and 4.8 times their width, respectively; hind tibia slightly narrowed apically; length of hind tibial spurs 0.4 and 0.5 times hind basitarsus.

Metasoma.— Length of first tergite 0.9 times its apical width, slightly depressed medio-posteriorly, its surface longitudinally rugose, but basally mainly punctate, its dorsal carinae complete; second tergite densely longitudinally rugose, with a narrow smooth and convex area posteriorly, with lateral crease, and 1.3 times as long as third tergite; second suture narrow and smooth; third tergite smooth except for some oblique striae laterally and without lateral crease, tergites densely setose; fourth-seventh tergites somewhat exposed; length of ovipositor sheath 0.18 times fore wing, 0.5 times hind tibia, and 0.5 times length of three basal metasomal segments combined; hypopygium rather large and apically truncate.

Colour.— Black; frons and face laterally dark orange-brown and remainder black; ventral and inner sides of four basal antennal segments, malar space ventrally, vein C+SC+R of fore wing largely, veins M+CU1 and 1-M of fore wing yellowish-brown; remainder of antenna, clypeus, remainder of veins of fore wing and ventral half of side of pronotum brown; hind tibia dorsally (except basally), metasomal sternites, ovipositor sheath, pterostigma, part of humeral plate and apex of metaso-

ma dark brown; tegulum, remainder of humeral plate, coxae, trochanters and trochantelli, palpi and mandible (except apically) and base of hind tibia pale yellowish; hind tarsus brown; remainder of legs, epipleura of first-third tergites and ventral part of following epipleura brownish-yellow; apical half of membrane of fore wing weakly infuscate.

Variation.— Antenna of ♀ with 29 (1), 31 (1) or 32 (1) segments; length of fore wing 3.3-4.2 mm, and of body 3.2-4.0 mm; length of ovipositor sheath 0.15-0.18 times fore wing; nearly whole area below precoxal sulcus may be coarsely punctate, but often only anteriorly so; paratypes have face and frons laterally more or less brown, slightly paler than surroundings; pronotum sometimes ventrally and medio-laterally brown.

Biology.— Unknown, but reared from a dead tree infested by coleopterous larvae.

Distribution.— Belgium, Netherlands, Zweden.

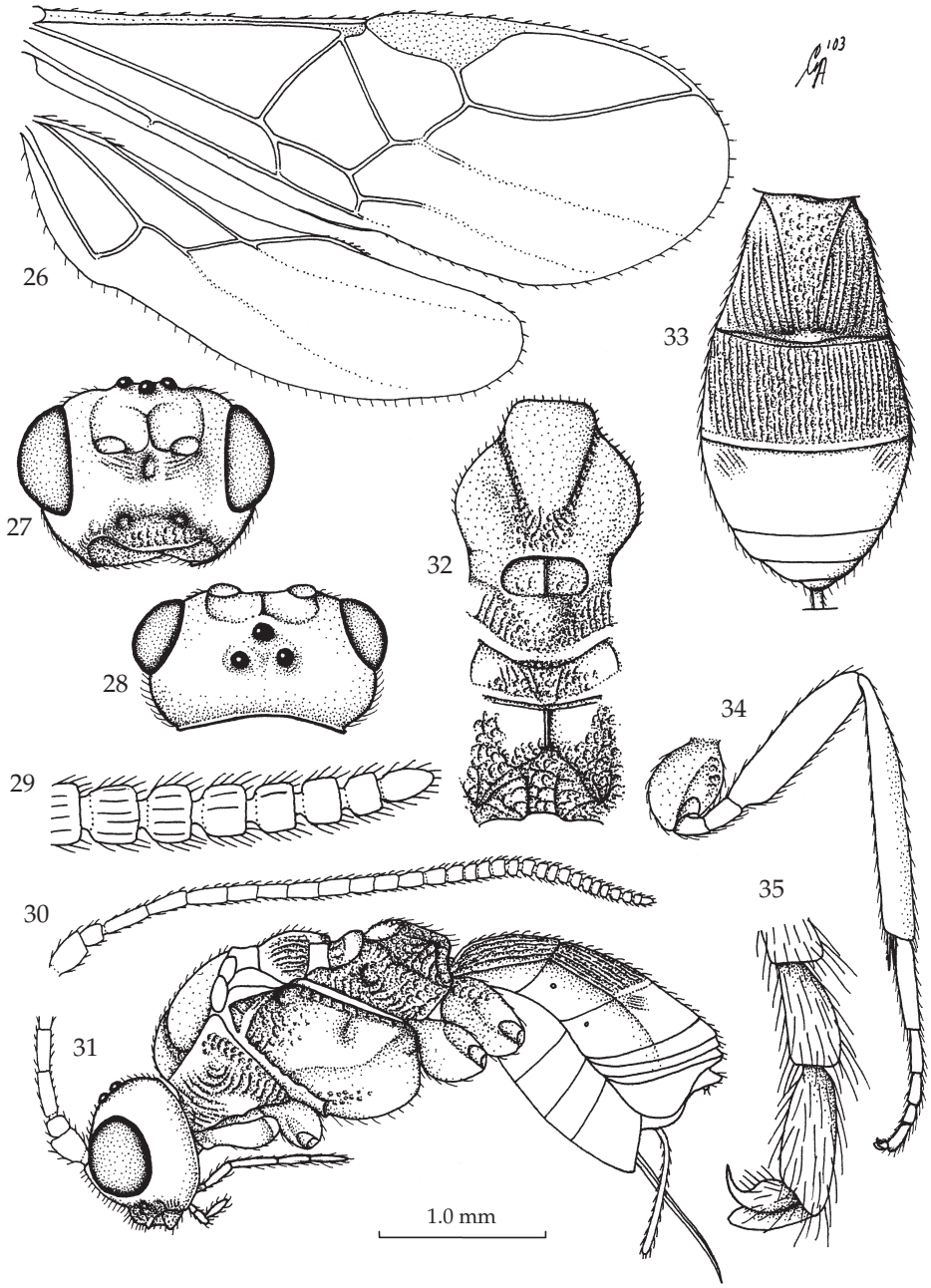
Eubazus (*Aliolus*) *punctifer* spec. nov.
(figs 25-35)

Material.— Holotype, ♀ (RMNH), "SW **Bulgaria**, near Rila, Pastra, Mal. tr. 7, c 850 m, 1-28.vi.1998, C. v. Achterberg, R. de Vries, P.V. Atanassova, RMNH, [19]98".

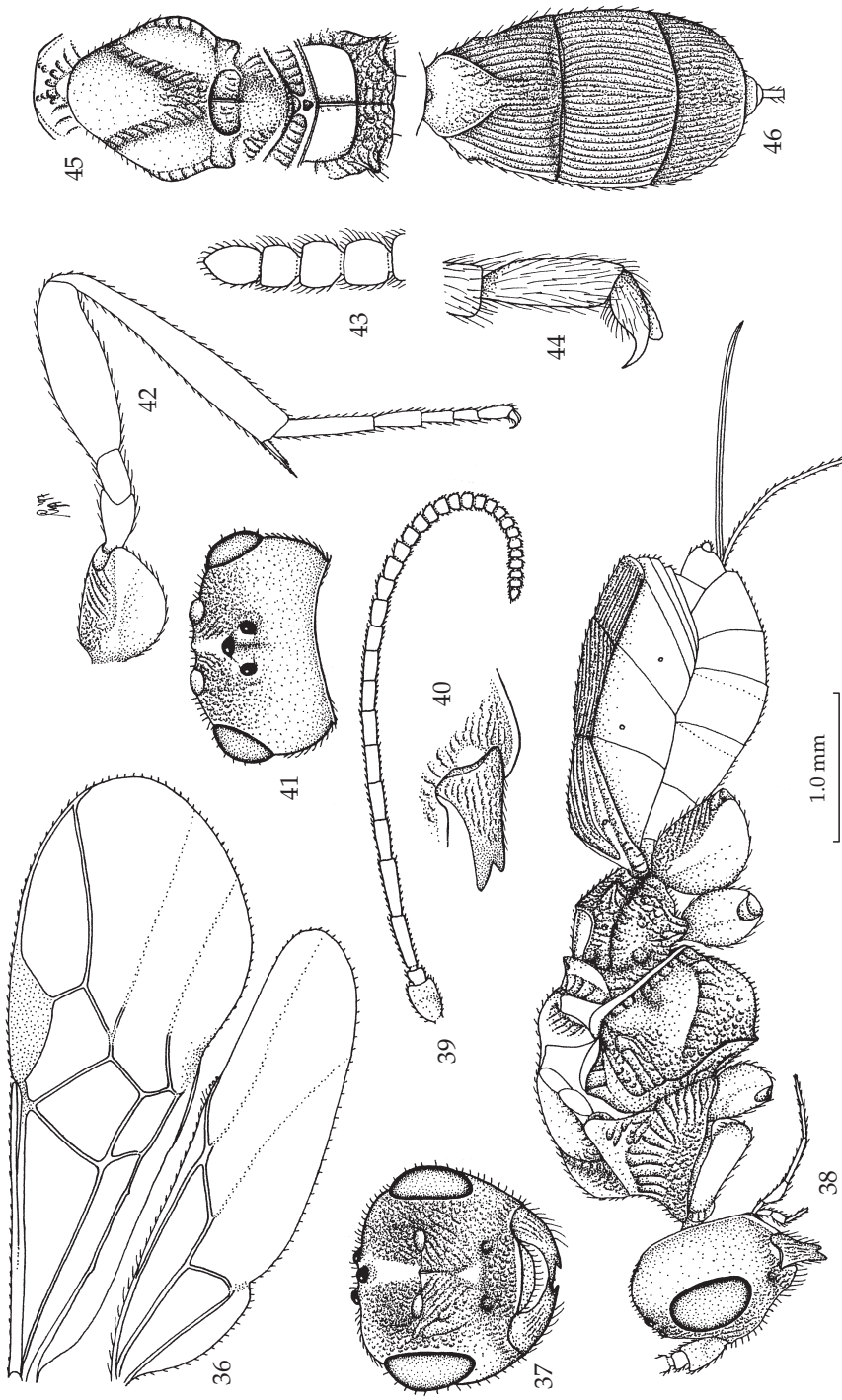
Holotype, ♀, length of body 4.4 mm, of fore wing 4.2 mm, of ovipositor sheath 0.7 mm.

Head.— Antenna densely and rather bristly setose, with 31 segments, third segment 1.1 times longer than fourth segment, length of third, fourth and penultimate segments 3.2, 2.8 and 1.0 times their width, respectively, subapical segments comparatively robust, submoniliform, petiolate (figs 29, 30); scapus punctulate, normally setose; length of maxillary palp 1.1 times height of head; OOL:diameter of posterior ocellus:POL = 9:3:5; occipital carina complete, distinct and subhorizontal mediodorsally; frons weakly concave medially and with distinct median carina and largely smooth, laterally moderately narrow, slightly convex, sparsely punctate and with medium-sized setae (fig. 28); in dorsal view length of eye 1.4 times temple; vertex convex, smooth and densely setose; temples roundly narrowed behind eyes (fig. 28); face 1.8 times higher than clypeus, transverse, smooth (except for some striae dorsally) and with deep and oval medio-dorsal pit (fig. 27); clypeus distinctly furcate-punctate, but dorsally and ventrally narrowly smooth, moderately convex, medioventrally without a tooth (fig. 27); length of malar space 1.1 times basal width of mandible, area partly depressed and remainder striate ventrally (figs 27, 31); mandible mainly punctate, distinctly twisted; occipital flange medium-sized, not protruding (fig. 27).

Mesosoma.— Length of mesosoma 1.4 times its height; pronope not well visible; side of pronotum largely crenulate-rugose, antero-ventrally more finely so than posteriorly and dorsally smooth (fig. 31); mesosternal suture deep and distinctly crenulate; epicnemial area rugose-punctate dorsally; prepectal carina complete, strong; precoxal sulcus smooth, developed as a shallow depression; mesopleuron above precoxal sulcus smooth except for some punctation dorsally, below precoxal sulcus smooth except for some punctures antero-ventrally (fig. 31); metapleuron reticulate-rugose; notauli complete, crenulate and narrow anteriorly, and widened posteriorly



Figs 26-35, *Eubazus punctifer* spec. nov., ♀, holotype. 26, wings; 27, head, frontal aspect; 28, head, dorsal aspect; 29, apex of antenna; 30, antenna; 31, habitus, lateral aspect; 32, mesosoma, dorsal aspect; 33, metasoma, dorsal aspect; 34, hind leg; 35, outer hind claw. 26, 30, 31, 34: scale-line (= 1.0 x); 27, 28, 32, 33: 1.4 x; 29, 35: 5.0 x.



Figs 36-46, *Eubazus trilobatus* (Say), ♀, neotype. 36, wings; 37, head, frontal aspect; 38, habitus, lateral aspect; 39, antenna; 40, detail of mandible, lateral aspect; 41, head, dorsal aspect; 42, hind leg; 43, apex of antenna; 44, inner hind claw; 45, mesosoma, dorsal aspect; 46, metasoma, dorsal aspect. 36, 38, 39, 42, 45, 46: scale-line (= 1.0 x); 37, 41: 1.3 x; 40: 2.0 x; 43, 44: 5.0 x.

(fig. 32); mesoscutal lobes punctate and densely setose; scutellar sulcus deep, wide and with one long carina; scutellum convex and largely smooth but laterally coarsely punctate; surface of propodeum partly smooth anteriorly and remainder densely and coarsely reticulate, its median carina medium-sized and areola incomplete and rather narrow (fig. 32), anterior transverse carina weakly developed; propodeal tubercle medium-sized, obtuse (fig. 31).

Wings.— Fore wing: distance from apex of marginal cell of fore wing to apex of wing 0.31 times vein 1-R1 (fig. 26); first discal cell shortly petiolate; r:3-SR+SR1:2-SR = 6:42:11; 1-SR+M straight; SR1 weakly curved (fig. 26); cu-a oblique and not widened posteriorly (fig. 26); 1-CU1:2-CU1 = 2:7; 1-CU1 slightly widened and subhorizontal; m-cu distinctly antefurcal, straight and converging to 1-M posteriorly. Hind wing: 2-M weakly sinuate (fig. 26); 1-M slightly shorter than 1r-m; M+CU:1-M = 3:1; cu-a weakly curved and subvertical.

Legs.— Hind coxa distinctly rugose dorsally and somewhat punctate laterally; tarsal claws rather robust, simple, bristly setose (fig. 35); hind femur superficially punctate ventrally; length of femur, tibia and basitarsus of hind leg 4.1, 8.1, and 5.2 times their width, respectively; hind tibia subparallel-sided apically; length of hind tibial spurs about 0.4 times hind basitarsus.

Metasoma.— Length of first tergite 0.8 times its apical width, slightly depressed medio-posteriorly, its surface longitudinally rugose, but basally mainly punctate (fig. 33), its dorsal carinae about complete, dorsope absent; second tergite densely longitudinally rugose, with a narrow smooth and convex area posteriorly (fig. 33), with lateral crease, and 1.3 times as long as third tergite (figs 31, 33); second suture narrow and smooth; third tergite smooth except for some oblique striae laterally and only basally with lateral crease (figs 31, 33), tergites densely setose; fourth-seventh tergites somewhat exposed; length of ovipositor sheath 0.16 times fore wing, 0.5 times hind tibia, and 0.5 times length of three basal metasomal segments combined; hypopygium rather large and apically truncate.

Colour.— Black; four basal antennal segments largely, vein C+SC+R of fore wing basally, veins M+CU1 and 1-M of fore wing yellowish-brown; remainder of antenna, clypeus, ventral half of side of pronotum, hind tibia dorsally (except basally), metasomal sternites, ovipositor sheath, pterostigma, humeral plate, telotarsi and apex of metasoma dark brown; remainder of veins of fore wing brown; tegulum, coxae, trochanters and trochantelli, palpi and mandible (except apically) and base of hind tibia ivory; hind tarsus brown; remainder of legs, epipleura of first-third tergites and ventral part of following epipleura brownish-yellow; apical half of membrane of fore wing weakly infuscate.

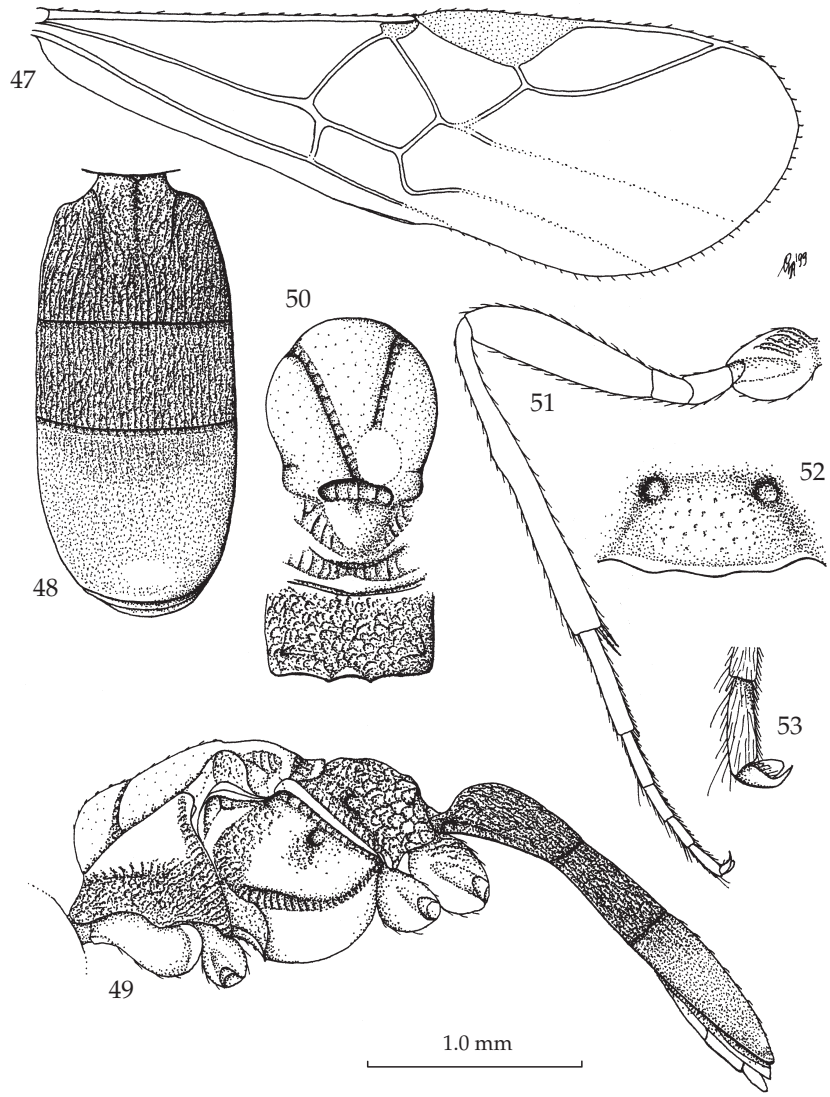
Biology.— Unknown.

Distribution.— Bulgaria.

Notes on *Triaspis thomsoni* Fahringer, 1934

(figs 47-53)

Under *Sigalphus striatulus* sensu Thomson, 1874 (not Nees, 1816) in the Thomson collection (Lund) are six specimens, of which only one specimen fits the original description. It has its legs partly darkened and the length of the body about 4.5 mm;



Figs 47-53, *Triaspis thomsoni* Fahringer, ♂, lectotype. 47, fore wing; 48, metasoma, dorsal aspect; 49, habitus, lateral aspect; 50, mesosoma, dorsal aspect; 51, hind leg; 52, detail of clypeus, frontal aspect; 53, outer hind claw. 47-51: scale-line (= 1.0 x); 52, 53: 2.5 x.

unfortunately the head is largely missing. This specimen is here designated as lectotype (Zoological Institute, Lund: ♂, "V.G. {= ?Gottland}", "*striatulus* N.", "1990, 204", "ZML 1999 073". It has the third metasomal tergite much longer than the second tergite and both tergites are flattened (figs 48, 49). Thomson (1874) does not indicate the sex of his specimens but he referred to the length of the ovipositor. It is clear that he had more than one specimen and that at least one was a female. Unfortunately, this female specimen seems to be lost and therefore, the damage male is designated lectotype.

Close to *Triaspis algirica* (Šnoflák, 1953), but it has the apex of the third metasomal tergite not flattened, the prepectal carina reduced and the precoxal sulcus absent anteriorly. The length of the ovipositor sheath is about 0.5 times the fore wing; ovipositor of *T. thomsoni* according to Thomson (1874) "..... corpore multo breviore."

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I wish to express my gratitude to Dr S.A. Belokobylskij (St. Petersburg) and Dr R. Danielsson (Lund) for their kindness to loan many types of similar (East Palaearctic) species of the group, Dr M.R. Shaw (Edinburgh) for his valuable remarks on an earlier version of this paper and for the opportunity to examine his important collection of Brachistinae, Dr P.V. Atanassova (= P.V. Ivanova, Helmond), R. de Vries (Leiden), Prof. Dr M. Shishiniova (Sofia), and E. Nenova (Sofia) for their help during my fieldwork in Bulgaria.

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