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TWO 'RARE' WASPS, *DIODONTUS BREVILABRIS* AND *POLEMISTUS ABNORMIS*, (HYMENOPTERA, SPHECIDAE) FROM SOUTH-WEST RUSSIA

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Abstract. Additional data on the distribution of the species *Diodontus brevilabris* and *Polemistus abnormis* are presented. *D. brevilabris* have been found being distributed in Armenia, Azerbaijan, Bulgaria, Cyprus, Greece, Hungary, Israel, Lebanon, Russia, Turkmenistan, and the Ukraine. Females *P. abnormis* have been found in south-west Russia, Belgorod region, settlement Borisovka (50°36'N, 36°04'E), nesting in the exit-holes of xylophagous insects in dead dry branches in the upper part of the canopy of oak trees, and after a purposeful search they have not been found neither on oak trunks near the ground nor on dry fallen wood in a forest glade nearby.
Key words: distribution, nesting habits, Pemphredonini, *Diodontus*, *Passaloecus*, *Polemistus*

Introduction

In 1981, while a second-year-student of St. Petersburg (that time Leningrad) University, I was making my field practice studies on biology in one of the university field stations in south-west Russia, Belgorod region, settlement Borisovka (50°36'N, 36°04'E), near Natural Reserve 'Les na Vorskle' ('Forest on the Vorskla River').

The environs of Borisovka include several habitats. The reserve territory is covered mainly by deciduous oak (*Quercus robur*) forest. The oak trees are about 300 years old. Branches at their tops are dead and dry, and one of the interesting wasps was found on such branches of one of the oak trees. Other abundant tree species of the forest are elms (*Ulmus scabra*, *Ulmus laevis*), small-leafed lime (*Tilia cordata*) and maples (*Acer platanoides*, *Acer pseudoplatanus*, *Acer campestre*, *Acer tataricum*). Sandy terraces of the valley of the Vorskla River are covered by small Scotch pine (*Pinus sylvestris*) forests. In the environs of Borisovka, one can find also typical steppe habitats.

At that time, I was collecting my 'passion' insects - pemphredonine digger wasps. Now this small collection of mine is at the Institute of Ecology, Vilnius (IEV). Another material being mentioned in the article is deposited at the following museums:

BMNH – the Natural History Museum, London
BZL – Biologisches Zentrum, Linz
FSAG – Faculte des Sciences Agronomiques de Gembloux
IZK – the Institute of Zoology, Kiev
RMNH – Rijksmuseum van Natuurlijke Historie, Leiden
TAU – the George S. Wise Faculty of Life Sciences, Tel Aviv University
ZISP – Zoological Institute, Sanct Petersburg
ZMMU – the Zoological Museum of Moscow University

In addition, certain material from collections of Prof. K. Schmidt, Dr. C. Schmid-Egger (Karlsruhe, Germany) and Mr. T. Ljubomirov (Sofia, Bulgaria) has been used in the article.

Material and methods

The faunal data have been managed using the database managing system Borland Paradox 4.5 for DOS. The distribution map has been prepared using the mapping program Carto Fauna-Flora, version 1.2, by Yvan Barbier & Pierre Rasmont (Université de Mons-Hainaut, Mons, Belgium).

Results and discussion

The wasps were collected in five different habitats: 1) in the administration territory of Natural Reserve

'Les na Vorskle', near walls of wooden and brick buildings surrounded by garden, 2) on sand in the terrace of the valley of the Vorskla River, 3) on fallen trunks and branches in the pine forest glade, 4) on fallen trunks and branches in the oak forest glade, and 5) on dead, dry branches at the top of an old oak tree, 12-15 m above the ground.

The results were as follows:

The administration territory of Natural Reserve:

Diodontus brevilabris Beaumont: 3♂, 07 06 1981; 1♂, 23 06 1981; 2♀, 26 06 1981; 1♂, 10 07 1981;

Diodontus tristis (Vander Linden): 1♂, 10 07 1981;

Passaloecus corniger Shuckard: 2♀, 10 07 1981;

Passaloecus singularis Dahlbom: 1♂, 10 07 1981;

Stigmus pendulus Panzer: 1♀, 08 07 1981; 1♀, 12 07 1981;

Stigmus solskyi A.Morawitz 1♀, 10 07 1981.

On sand in the valley of the Vorskla River:

Diodontus minutus (Fabricius): 1♀1♂, 01 07 1981;

Passaloecus turionum Dahlbom: 1♀, 01 07 1981.

On fallen trunks and branches in the pine forest glade:

Passaloecus turionum Dahlbom: 1♀, 01 07 1981; 5♀, 05 07 1981.

On fallen trunks and branches in the oak forest glade:

Passaloecus insignis (Vander Linden): 1♀, 10 07 1981;

Stigmus pendulus Panzer: 1♀, 10 07 1981; 1♀, 12 07 1981.

On dead, dry branches at the top of an old oak tree:

Passaloecus corniger Shuckard: 1♂, 05 07 1981; 1♀1♂, 10 07 1981;

Polemistus abnormis (Kohl): 2♀, 05 07 1981; 1♀, 10 07 1981.

Some two of the above-enlisted species are of a particular interest.

Diodontus brevilabris was described from Turkey (Beaumont, 1967: 345). The studied material from the type territory includes 2♀ (holotype and paratype), Amasya, 09 06 1959; Ankara, Kavaklidere, 7♀1♂, (paratypes), 06 08 1960, 2♀ (paratypes), 08 08 1960, leg. Guichard & Harvey - BMNH. Other specimens from Turkey: Icel, S Aydinlar, SE Guzeloluk, 1000-1350 m, 1♀, 28-29 05 1983, leg. H. & U. Aspoeck, H. & R. Rausch, F. Ressl - NHMW; Tunceli, 17 km W Ovacik, 2♀, 19 08 1985, leg. R. Hensen - RMNH; Urfa, Halfeti env., 1♀, 03-05 05 1994, leg. K. Denes - BZL; Hakkari, Varegos, Mt. Sat, 1650 m, 1♀, 07 08 1983; Aksehir, 2100 m, 1♂, 02 08 1991, leg. Warncke - coll. K. Schmidt; Urgup, 1♂, 23 04 1989, leg. Perraudin - coll. Schmid-Egger. Later the species was recorded from Lebanon (Leclercq, 1974).

After the study of new material, *D. brevilabris* was found to be widely distributed in south-east Europe and West Asia. Now the species is known to me from Armenia (Vedi, 1♀, 06 06 1982; 1♀, 19 06 1982, leg. Nesterov - IZK), Azerbaijan (Baku, 1♂, 11 06 1988, leg. W.H. Liebig - coll. Jacobs), Bulgaria (Banitsa, 4♀, 21-26 08 1994; 1♂, 24 05-2 06 1995; Etropole, 1♀, 08 07 1994; Etropole hotel, 1♂, 17 07 1993, leg. T. Ljubomirov; Maglish, 2♀1♂, 11-24 06 1995; Maglish, 5♀1♂, 25-30 06 1995; 8♀5♂, 01-06 07 1995; 6♀, 07-31 07 1995; 1♀, 17 07 1995; Passarel, 1♂, 11 06 1995, leg. I. Stoyanov - coll. T. Ljubomirov), Cyprus (Limassol, 1♂, 27 04 1956, leg. Mavromoustakis - RMNH), Greece (Rhodos: road SW of Lindos, 1♀, 20 05 1971, leg. J.P. van Lith - RMNH; Korfas, Chios, 1♀, 26 05 1985 leg. I. Perraudin - coll. K. Schmidt), Hungary (Keszthely, 7♂, 21 07 1984; Sümeg, 3♂, 24 07 1984, leg. H.-J. Jacobs - coll. Jacobs), Israel (Mt. Hermon: 1700 m, 1♂, 28 06 1971, 1900 m, 1♀, 01 07 1986, 2000 m, 1♂, 13 08 1973, leg. Bytinski-Salz, A. Freidberg - TAU), Lebanon (Cedars, 1♀, 06 07 1960, leg. Mavromoustakis - FSAG), Russia (Belgorod reg.: Borisovka - data listed above; and Voronezh reg.: Voronezh, 1♀, 11 06 1979, 1♀, 10 06 1980, leg. Fursov - IZK), Turkmenistan (Ai-Dere, 1♂, 25 04 1986; 1♀1♂, 27 04 1986; 1♂, 28 04 1986, leg. E. Budrys - IEV; Firyuza, 1♂, 19 05 1928, leg. V.V. Gussakovskij - ZISP), and the Ukraine (Kiev, 11♂, 14 06 1977, leg. Nesterov; Kirovskiy col. farm, 1♂, 12 07 1967, leg. Bartenyev; Panchevo, 1♂, 10 07 1984, leg. Romasenko; Cherkassy, 1♂, 11 07 1982, leg. Butovskiy - all IZK; Crimea pen.: Karadag, 1♂, 26 06 1983, leg. A.V. Antropov - ZMMU). One more specimen, slightly different, but possibly conspecific with *D. brevilabris*, was found in Yemen: Wadi Dhat, 1♂, 29 05 1987, leg. Mühle - coll. Schmid-Egger.

The distribution map of *D. brevilabris* is in the fig. 1.

Some material of the species *D. brevilabris* was misidentified in different collections, mainly as *D. minutus* or *D. insidiosus*. The female *D. brevilabris* might be distinguished from the rest of the species of the genus by a trapezoidal labrum with a shallow arcuate apex (females of other *Diodontus* species have a semicircular or subtriangular labrum with a narrow medial notch apex). The male *D. brevilabris* might be distinguished by a relatively slender and rather short flagellum, and a rather wide pronotum: the relation of the width of the flagellomere 6 (W6F - for explanation of measurements see: Budrys, 1996) to the width of the pronotum (PRN) is less than 0.09, while in other European *Diodontus* (except for some males *D. tristis*) W6F: PRN > 0.09. The head of the female *D. brevilabris* as in fig. 2; the head of the male - as in fig. 3; the pygidial plate of the female - as in fig. 4; the flagellum of the antenna of the male - as in fig. 5; the genitalia of the male - as in fig. 6.

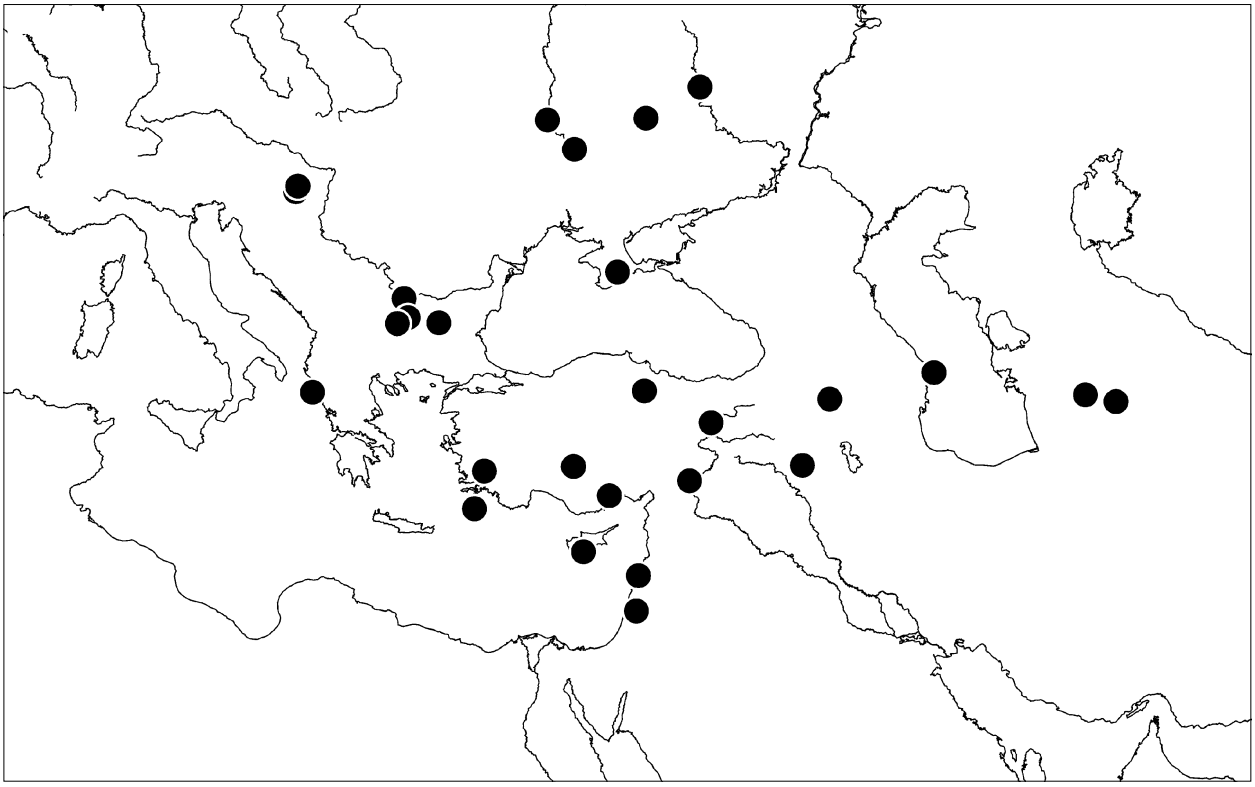
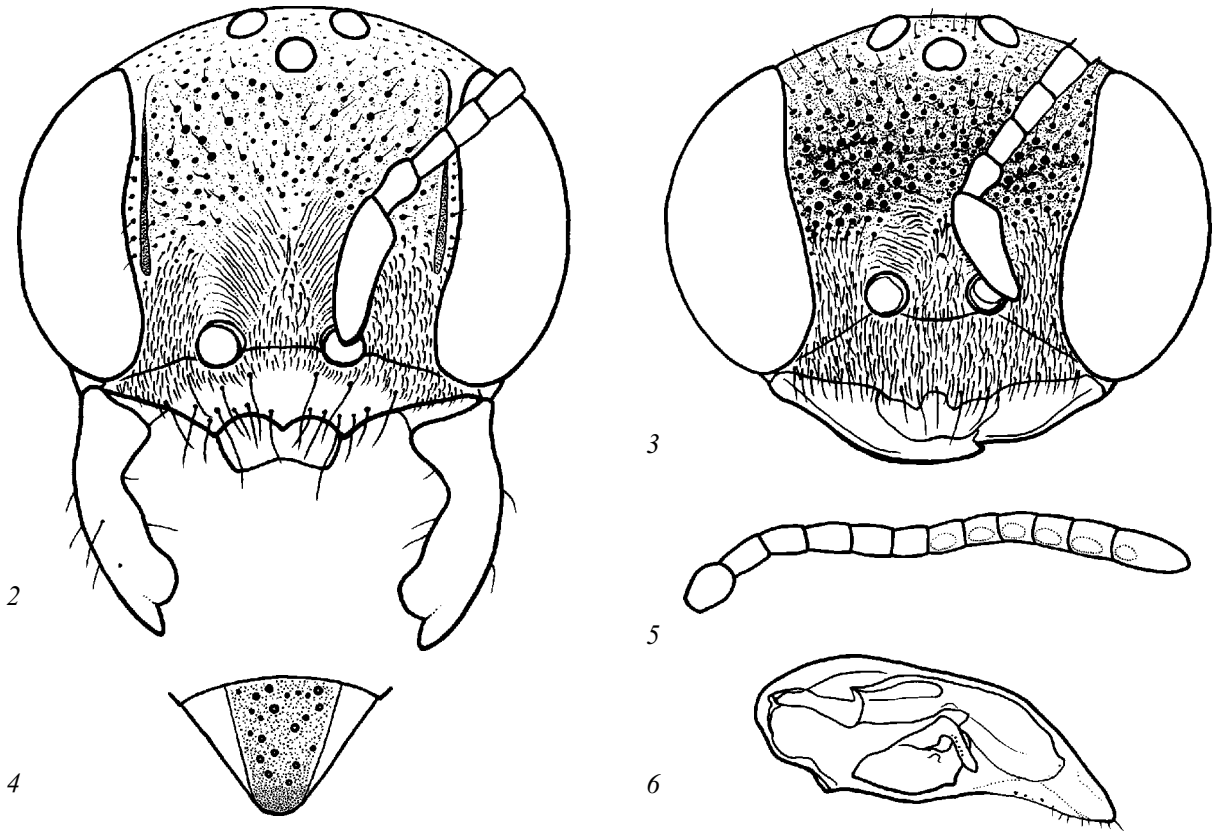


Figure 1. The distribution of *D. brevilabris*



Figures 2-6. D. brevilabris: the head of the female (2) and the male (3), the frontal aspect; the pygidial plate of the female (4); the flagellum of the male (5); the genitalia of the male, right half, the medial (inside) aspect (6)

Polemistus abnormis was described from Slovenia, Vipava (Kohl, 1888). Later this sole Palaearctic representative of a nearly world-wide distributed genus, *Polemistus*, was discovered in Japan and Korea (Tsuneki, 1955), Austria (Dollfuss H., Ressl F., 1981), Germany (Schmidt, 1984), Switzerland (Amiet, 1989).

This species was also collected by me in Far East Russia (Primorskiy territory: Shkotovskiy district: Anisimovka, 43°09' N 132°46' E). Its nesting habits observed there corresponded well with the data of Tsuneki (1955): females visiting nests were collected on rotten trunk 0.5-2 m above the ground.

In Borisovka, females *Polemistus abnormis* were captured and observed nesting in small (ca. 2 mm diameter) beetle exit-holes (probably Scolytidae or Anobiidae) in thick (ca. 15-25 cm diameter) dead dry barkless branches at the top of an oak tree on the edge of a large forest glade called "Sukachiovskaya Polyana". The observed nesting places were 12-15 m above the ground; a height of the tree was not measured exactly, it was approx. 20-25 m.

At times females failed to land at the very nest entrance and searched it on foot. One female was observed carrying a small greenish prey, possibly an aphid, however I did not obtain or identify it.

Having captured females *Polemistus abnormis* at the top of the tree, I tried to find this species on dead wood on the ground also, but I failed. Even on fallen oak trunks and branches in the same forest glade with similar beetle exit-holes, only nesting *Passaloecus insignis* and *Stigmus pendulus* could be found.

My hypothesis was that the European population of *Polemistus abnormis* seemed to prefer nesting in dead branches of the canopy of the trees. This is why this species is being considered very rare in Europe. On the other hand, the rarity of the species in collections indirectly confirms its unusual nesting behaviour.

The preference to nest in nesting sites as high as possible, up to 12 metres above the ground, shown by a solitary bee *Chelostoma florisomne*, was described by Vardy (1989).

These days that the rainforest canopy is receiving so much attention because of deforestation in tropical countries, it is easy to overlook the fact that temperate forest canopy is also considerably under-investigated. The discovery of the European population of *Polemistus abnormis* nesting in dead branches at the tops of oak trees is of a special interest in this respect.

The obtained data on the nesting habits of *Polemistus abnormis* are too fragmentary and insufficient to draw conclusions. Due to recent political and economical changes in the territory of the former USSR, it is rather difficult to plan new field research trips there. However, I hope to continue the exploration of habits of this species in Borisovka, e.g. using trap nests, one day.

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Dvi ‘retos’ vapsvų rūšys, *Diodontus brevilabris* ir *Polemistus abnormis* (Hymenoptera, Sphecidae) iš pietvakarių Rusijos

E. Budrys

Santrauka

Straipsnyje pateikti nauji žiedvapsvių *Diodontus brevilabris* ir *Polemistus abnormis* paplitimo duomenys. *D. brevilabris* paplitęs Armėnijoje, Azerbaidžane, Bulgarijoje, Graikijoje, Izraelyje, Kipre, Libane, Rusijoje, Turkmėnijoje, Ukrainoje ir Vengrijoje. Rūšies *P. abnormis* patelės buvo aptiktos pietvakarių Rusijoje, Belgorodo srityje, Borisovkos (50°36’N, 36°04’E) apylinkėse. Jos darė lizdus vabzdžių ksilofagų takų išėjimo angose negyvoje sausų šakų, esančių ąžuolų lajos viršutinėje dalyje, medienoje ir net po kruopščių paieškų nebuvo aptiktos prie žemės, ant ąžuolų kelmų ir nukritusių sausų ąžuolo šakų greta esančioje laukymėje.

Два ‘редких’ вида роющих ос, *Diodontus brevilabris* и *Polemistus abnormis* (Hymenoptera, Sphecidae) из юго-западной России

Э. Будрис

Резюме

В статье приводятся новые данные о распространении роющих ос *Diodontus brevilabris* и *Polemistus abnormis*. *D. brevilabris* распространен в Армении, Азербайджане, Болгарии, Венгрии, Греции, Израиле, Кипре, Ливане, России, Туркменистане и Украине. Самки *P. abnormis* были обнаружены в окрестностях Борисовки (50°36’N, 36°04’E, Белгородская обл. Россия). Они гнездились в ходах насекомых-ксилофагов в сухой древесине мертвых ветвей дуба, находящихся в верхней части его кроны, и даже после целенаправленных поисков не были найдены близ земли, у пней и упавших ветвей дуба в рядом находящейся поляне.

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