

## New data on the occurrence of Orthoptera in Bulgaria

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### Abstract

Six species – *Poecilimon marmaraensis*, *Meconema meridionale*, *Saga* cf. *hellenica*, *Gryllomorpha* cf. *miramae*, *Stenonemobius bicolor ponticus*, and *Notostaurus anaticus*, and one subspecies – *Saga campbelli gracilis* are reported as new for the Bulgarian fauna. Some of them are compared morphologically with other similar taxa. *N. anaticus* and male *G.* cf. *miramae* are described in some detail. New data about the occurrence of *Leptophyes punctatissima*, *Barbitistes constrictus*, *Arachnocephalus vestitus*, and *Epacromius tergestinus* are presented. The author discusses their distribution within Bulgaria and the neighbouring countries.

### Zusammenfassung

Sechs Arten - *Poecilimon marmaraensis*, *Meconema meridionale*, *Saga* cf. *hellenica*, *Gryllomorpha* cf. *miramae*, *Stenonemobius bicolor ponticus* und *Notostaurus anaticus* und eine Unterart – *Saga campbelli gracilis*, konnten neu für die bulgarische Fauna nachgewiesen werden. Die Morphologie einiger Arten wurde mit ähnlichen Taxa verglichen. *Notostaurus anaticus* und männliche *G.* cf. *miramae* sind ausführlich beschrieben. Zusätzlich werden neue Meldungen über das Vorkommen von *Leptophyes punctatissima*, *Barbitistes constrictus*, *Arachnocephalus vestitus* und *Epacromius tergestinus* mitgeteilt. Ergänzt wird dies durch Überlegungen über die wahrscheinliche Verbreitung der Arten in Bulgarien und in den benachbarten Ländern.

### Introduction

The Orthopteran fauna of Bulgaria is comparatively well known. According to HUBENOV et al. (1998) for the country are reported 207 species. Anyway the distribution and/or the taxonomic status of some of these species is questionable and need revision. Likewise, there are species which occur in the neighbouring countries and could be found here. Thus, the number of Bulgarian Orthoptera species at the moment varies about 200 (unpublished data).

The only complete works about Bulgarian Orthoptera up till now are the articles by BURESH & PESHEV (1955, 1957, 1958). After them the works by PESHEV (1959-1985), PESHEV & ANDREEVA (1986, 1988), etc. complemented the species-composition with new taxons and described the species-communities in separate habitats.

In recent times several interesting findings were accumulated and some mistakes were cleared up about the Orthoptera-fauna in Bulgaria. Some of them are repor-

ted here. Five species and one subspecies are added to Bulgarian Orthoptera list, and one species – *Notostaurus anatolicus* - substitutes the wrongly reported *N. albicornis*. The author presents new localities of rare species (most of them with only one locality known up till now) and discusses the distribution area and the possible reasons for the discovering of the species in Bulgaria.

## Material and methods

During the researches for the present work it were surveyed materials from several collections - the National Museum of Natural History and Institute of Zoology, Bulgarian Academy of Sciences, Sofia, and the author's private collection, abbreviated NMNH, IZ, and A, respectively. The most part of the checked material was not reported before with exception of the individuals of *Saga cf. hellenica* (reported as *S. pedo*) and the PESHEV's materials of *Notostaurus anatolicus* (reported as *N. albicornis*). The main part of the material consists of dry mounted specimens, but some it (A) is preserved in ethanol. For all collected specimens the date of collecting, locality, collector and depository are given. The species are presented with remarks and measurements of body dimensions (measured with vernier on dry or alcohol material, which is marked under each species). For the species reported before the full literature data are given after the species name. The spelling of the species is according the Check-List of European Orthoptera (HELLER et al. 1998).

## ENSIFERA

### Phaneropteridae

#### *Leptophyes punctatissima* (BOSC, 1792)

1. PESHEV 1962a: 181 (Belasitsa Mtn. (SW Bulgaria), northern slope, between 400 and 1000 m alt., 20. 07. and 12. 08. 1960; on *Quercus cerris*, *Q. sp.*, *Carpinus orientalis*, *Castanea sativa*, *Fraxinus sp.*, *Fagus sylvatica*; very rare) – 2. PESHEV 1962b: 63, 96, 102 (same data, but to 1300 m alt.) – 3. PESHEV 1970b: 201 (Belasitsa – same data, and Alibotush Mtn. (SW Bulgaria), 800 – 1400 m alt., 30. 07. 1959 and 2. 08. 1960 (2 ♂♂, 5 ♀♀); on deciduous vegetation; very rare) – 4. PESHEV 1974a: 106 (*L. discoidalis*?), 123 (East Rhodope Mts. (SE Bulgaria); mesohygrophilous meadows in the submediterranean vegetation-belt) – 5. PESHEV 1975: 94 (East Rhodope Mts.: Ivalyovgrad, 3. 08. 1963, Krumovgrad, 4. 08. 1963; very rare; up to 1000 m alt.; euryzonal species) – 6. PESHEV & ANDREEVA 1986: 87 (Belasitsa Mtn., same data as in 1., 2., 3, but from foothills to 1400 m alt., vii – ix; euryzonal mesohygrobiont) – 7. PESHEV & ANDREEVA 1988: 102, 107 (same data as the previous) – 8. PESHEV & MARAN 1963: 31, 54, 59 (Slavyanka (Alibotush) Mtn., same data as in 3., but 13. 07. 1959 and 20. 08. 1960 (?)) – 9. MATZKE 2000: 12 (northern Black Sea coast (NE Bulgaria), near Golden sands resort, between 22. 07. and 4. 08. 2000).

#### Material examined

1. Central western Bulgaria: Tsegilovtsi vill. (Sofia district, 60 km E from Sofia), N slope of Karvav kamuk Mtn., ~800 – 1000 m alt. – 9. 09. 1973 (2 ♂♂), leg. PESHEV (NMNH).  
2. North Bulgarian Black Sea coast: St. St. Konstantin and Elena resort (Varna district, N from Varna), Botanic garden of the Sofia University, ~80 – 100 m alt. – 11. 07. 2002 (4 ♀♀ on *Quercus cerris* and *Q. pubescens*), 19 – 20. 07. 2002 (midnight) (1 ♀ feeding on *Ulmus minor*), 26. and 27. 07. 2002 (♀♀ on *Q. pubescens* and *Corylus avellana*), all leg. CHOBANOV (A).

## Discussion

The species is distributed in western and central Europe and the eastern boundaries of its range reach the western half of the Balkan peninsula (HARZ 1969; HELLER et al. 1998). In Bulgaria it is known from the mountains of Belasitsa, Slavyanka (Alibotush), and Rhodope (1-8). In the collections (NMNH, IZ) there is no material from these localities. However the males from Tsegilovtsi vill. confirm that the range includes the territories on the western frontiers of Bulgaria (mainly the mountains). The distribution in the eastern Rhodope Mts. needs confirmation, as this locality is quite isolated from the populations in the western Balkans. In his paper (4) Peshev also mentions *L. discoidalis* (possibly mistaken?), which would be even more unexpected.

*L. punctatissima* was recently reported from the northern coast of the Bulgarian Black Sea (9) but without exact information about the locality. In 2002 it was found at one locality, near the places mentioned by MATZKE (9). That is one or more mesomorphous coppices in the Botanic garden, north from Varna. The population of *L. punctatissima* was comparatively small, probably local, and was found to contain only females, solely in the vicinity of the garden. Possibly the population was accidentally introduced. This could have happened several years ago (the population seems to be stable but it is limited to a restricted territory). It is possible that the species was transported with young trees for afforestation from central or western Europe (with *Quercus sp.*).

Dimensions in mm (♀♀ - alcohol material): body 14 - 16, pronotum 2.7 - 3, elytra (visible part ~ real size) 1.5 - 1.6, postfemora 13.3 - 13.5, ovipositor 7.9 - 8.2.

#### *Barbitistes constrictus* BRUNNER VON WATTENWYL, 1882

1. RAMME 1921: 151 (Rila Mtn., Sitnyakovo place above Borovets, 1730 m alt., summer of 1916, 1 ♀) – 2. BURESCH & PESHEV 1958: 25 (cited same data) – 3. HARZ 1969: 75 (cited same data).

#### Material examined

Rila Mtn.: Borovets resort – 20. 07. 1922 (1 ♀), 21. 07. 1921 (1 ♀), 26. 07. 1939 (1 ♂ - 1300 m alt.), 10. 08. 1923 (1 ♂), 23. 08. 1926 (1 ♂), all leg. BURESCH; "towards Mousalla peak" (probably above Borovets) – 24. 08. 1923 (1 ♂), leg. ? (NMNH)

## Discussion

The species occurs in central and eastern Europe (from eastern Germany eastwards up to the Volga river) (HARZ 1969; HELLER et al. 1998). Southwards it reaches northern Hungary, and the southern Carpathians in Ukraine and Romania; the southernmost locality lies in southern Romania in the region of Craiova (GALVAGNI & FONTANA 2000).

RAMME (1) first reported the species for Bulgaria, based on one female only. Later BURESCH & PESHEV (2) cited this data, emphasizing that they had not seen any Bulgarian material of *B. constrictus*. Nevertheless, in the collection of Museum of Natural History in Sofia currently four males and two females are present, collected by BURESCH, from the same locality, years before this work (2) had been published.

The locality in Rila Mtn. appears to be the southernmost site and significantly isolated from the main range of the species. One possible explanation is that the

population in Rila Mtn. is a relict of a formerly wider range in the other Bulgarian mountains. There is also a possibility that *B. constrictus* is introduced to Bulgaria with plant material for afforestation. This would be possible especially in the surroundings of Bulgarian King's residence in Sitnyakovo, and in Borovets resort in the beginning of 20th century - with a lot of afforested *Larix decidua* (A. POPOV, pers. commun.) and other coniferous trees.

The species occurs in the coniferous belt (with the main presence of *Picea abies*, *Abies alba*, *Pinus peuce*, *P. sylvestris*) above Borovets. Its spreading in the country needs new researches.

Dimensions in mm (dry material): body ♂ 16, ♀ 16; pronotum ♂ 3, ♀ 3.6; postfemora ♂ 14.8, ♀ 14.5; elytra ♂ 4, ♀ 2.5; ovipositor 10 (♂ - 23. 08. 1924, ♀ - 30. 07. 1922, both Borovets).

### ***Poecilimon marmaraensis* NASKRECKI, 1991**

New for the Bulgarian fauna.

#### Material examined

East Stara planina Mts.: near the road Sliven – Byala vill. (~11 km from Sliven), xeromesomorphous meadow, 725 m alt., N 42°42', E 26°12' – 27. 06. 2002 (8 ♂♂, 4 ♀♀; common - mainly on *Vicia dalmatica* (det. R. TSONEV)), leg. CHOBANOV & BERGER (A).

#### Discussion

Originally the species was described from the European part of Turkey (20 km east of Tekirdag, along the Marmara Sea, 28 – 30. 06. 1987 – 2 ♂♂, 2 ♀♀, leg. NASKRECKI) (NASKRECKI 1991). Later some other localities were found (20 km east from Tekirdag, near Yenciftlik, 500 m from the coast, May, 1996; 15 km south of Corlu, May, 1996; 10 km west of Luleburgaz, branching off to Saricaali, May, 1996) (HELLER & LEHMANN, in press). The present locality of *P. marmaraensis* is situated in the north and differs from the others by its higher altitude. Probably the species is distributed in all low mountains of southeastern Bulgaria (eastern Stara planina, Strandzha, in wet biotopes in Sakar, and East Rhodope). It is possible that *P. marmaraensis* also occurs in northeastern Greece.

Bulgarian specimens do not show fundamental differences from the data that NASKRECKI mentioned in his article (NASKRECKI 1991). The song of captured animals consists of seldomly repeated syllables series with a duration of about 1 – 2 s, consisting of about 10 syllables (~25°C) in accordance with the data by HELLER & LEHMANN (in press) (syllable repetition rate 10 – 13 Hz (T=23 – 25°C), syllables with duration 1 – 3 s contained 8 – 20 impulses).

Dimensions in mm (alcohol material): body ♂ 20-21, ♀ ~20.5; pronotum ♂ 5-5.4, ♀ 4.5 - 4.7; lat. pronoti ♂ 4 - 4.5, ♀ 4; elytra (visible part) ♂ 2.4 - 2.6, ♀ 0; elytra (whole length) ♂ ~4; lat. elytri ♂ ~4; postfemora ♂ 14 – 15.2, ♀ 14.2 - 16; subgenital plate ♂ ~4; ovipositor 9.

Morphological remarks (in addition to NASKRECKI 1991): sometimes the tenth tergite is reddish. In the middle of the occiput a thin white line with dark borders is present, in dark colored specimens it is reddish, bordered with black spots on each side basally. This line continues on the pronotum and abdomen, in dark colored specimens only in the prozona of the pronotum, and distally from the black triangles (see NASKRECKI 1991). Sometimes a red stripe is present on the middle of the pronotum (or only metazona). Towards the end it turns into a reddish triangle, connected with the lateral stripes.

### **Meconematidae**

*Meconema meridionale* Costa, 1860

New for the Bulgarian fauna.

#### Material examined

North Bulgarian Black Sea coast: St. St. Konstantin and Elena resort (Varna district, N from Varna), Botanic garden of the Sofia University, ~80 – 100 m alt. – 11. 07. 2002 (3 last instar nymphs (1 ♂ and 2 ♀♀) on *Quercus cerris* and *Q. pubescens*), 26. and 27. 07. 2002 (1 ♂, ♀♀ on *Q. pubescens* and *Prunus mahaleb*), all leg. CHOBANOV (A).

#### Discussion

The range of the species spreads over central and western Europe, in the east to Slovenia and Croatia (HARZ 1969; HELLER et al. 1998). It does not occur in the main part of Balkan peninsula but *M. meridionale* is at the moment increasing its range at many points (HELLER, pers. commun.). Anyway the locality near Varna is quite isolated from the rest of the range. Thus, the population of this species in Bulgaria may be introduced together with that of *L. punctatissima* (see under that species). The specimens from Bulgaria do not exhibit any difference from other populations. The small Bulgarian population in the tree communities in the district of the Botanic garden is probably the only one in the country. The removing of this garden or even a small intervention in it may cause the extinction of the species in Bulgaria.

Dimensions in mm (alcohol material): imago - body ♂ 13.5, ♀ 13.9; pronotum ♂ 2.6 (the length of the red spots in metazona ~0.6 – 0.7), ♀ 3 (red spots ~0.8); elytra (whole length) ♂ 2, ♀ 3; elytra (visible part) ♂ 1.2; ♀ 2; postfemora ♂ 8.8, ♀ 9.6; cercus ♂ 4; width of the last tergite ♂ 2.7; ovipositor 7.3 – 8; last instar nymph – corp. ♂ 12, ♀ 12.5; pron. ♂ 2.5 – 2.8, ♀ 2.8; postfem. ♂ ♀ 7 – 8; cerc. ♂ 2.5; ovip. 5.8 – 6.

### **Tettigoniidae**

*Saga cf. hellenica* KALTENBACH, 1967

New for the Bulgarian fauna.

1. BURESCH & PESHEV 1958: 69 – 71 (as *Saga pedo* Pall.=*S. serrata* Fabr.) ("Southwestern Bulgaria: on Lyulin Mtn. (West from Sofia) in the sunbaked places in the gorge of the Vladaya river above Knyazhevo. In the Zoological Museum, BAS six female specimens are preserved, collected on 18. 07. 1938, and 15. 07. 1940 by the taxidermist Georgi STOYANOV, and on 6. 07. 1939 (2 female nymphs) by Dr. Neno ATANASOV.").

### Material examined

Central western Bulgaria: Lyulin Mtn. (near Sofia in southwestern direction) – 6. 07. 1939 (1♀ imaginal moult just before preparation or last instar nymph, 1♀ last but one instar nymph), leg. N. ATANASOV, 15. 07. 1940 (3 ♀♀), and 18. 07. 1938 (1♀), leg. G. STOYANOV (all ZI).

### Discussion

The range of the species extends southwards of the mentioned locality and covers Greece (excluding East Makedhonia, and Thraki), parts of Albania, and Republic of Macedonia (KALTENBACH 1967; HARZ 1969; WILLEMSE 1984). The species seems to be attached to mediterranean and submediterranean zone. Nevertheless, the northeastern point of its area is Vodno Hill near Skopje (500 – 800 m alt.) (RAMME 1951; KALTENBACH 1967; KARAMAN 1975 – as *S. italica*).

The discovery of specimens of *S. hellenica* near Sofia is really unexpected, moreover there are no males in the checked collections. The specimens of *S. pedo* (which also occurs near Sofia) show the typical appearance of this species and differ strongly from these six females.

The specimen of *S. natoliae* mentioned by PESHEV from the western Stara planina Mtn. (PESHEV 1970a: 181, 191, 197; PESHEV 1974c: 75 – Iskar gorge near Cherepish – 18. 07. 1966 (1♀); PESHEV 1974b: 6 (the same data, but 18. 08. 1966)) could also belong to *S. cf. hellenica*. However, this could not be checked this specimen lacks in the examined collections.

The species has not been caught since 1940, which is corresponding with the intensive human interventions in the region after 1950, and the scarce investigations in the area west of Sofia (Kraishte region). New finds may be expected in the low mountains between Sofia and Kyustendil.

Our specimens do not exhibit considerable differences from that described by KALTENBACH (1967) with the exception of the length of the ovipositor. For two of the specimens the ovipositor is longer when compared to the literature data. It is possible that this is a peculiarity of the Bulgarian population. In table 1 features, dimensions, and indexes of the examined specimens are presented, compared with the data of three Bulgarian and one Macedonian (Galichitsa Mtn., SW MK, ~1700 m alt.) specimens of *S. pedo* (the last one is remarkable with a shorter ovipositor than the others), and with the data, proposed by KALTENBACH (1967) for the species of *S. hellenica*, *S. pedo*, and *S. natoliae*.

The table of data shows that our specimens are related to the species *Saga hellenica*. The most distinct characteristics are the general view of the body, the coloration of the tergites, and the index length/width of the hind femur. The characteristic number of the dots on the frons, form of the subgenital plate, etc. are not used because of their bad preservation.

### Supplementary dimensions in mm (min. – max. (mean)) (dry material):

femur ant. 18.5 – 20 (19.3); tibia ant. 19 – 20 (19.8); tibia post. 43.4; caput 13.1 – 14.7 (13.8).

Tab. 1: Comparison of the data of Bulgarian specimens of *Saga cf. hellenica* with the data of four specimens of *S. pedo* (dry material) and with the literature data (KALTENBACH 1967) for females of three species of the genus (the dimensions in the table are given as follows – minimum-maximum/mean).

SPECIES	<i>S. cf. hellenica</i> (BG) <sup>1</sup> (4 ind.)	<i>S. pedo</i> (BG) (4 ind.)	<i>S. hellenica</i> (by Kaltenbach)	<i>S. pedo</i> (by Kaltenbach)	<i>S. natoliae</i> (by Kaltenbach)
Design of abdominal tergite	coincides with <i>S. hellenica</i>	coincides with <i>S. pedo</i>	inner borders of the median spots with tendency to fuse distally; forms V	median spots - in the lateral parts of tergite, almost parallel to each other	med. spots – parallel with the distal end of tergites, with tendency to increase proximally
Hind margin of pronotum	weakly bent upwards	barely bent upwards	weakly to considerably bent upwards	barely bent upwards	strongly bent upwards
Corpus <sup>2</sup>	58–64/61	60–66.4/64	55.8–78 (55–75)	53–75 (55–70)	60–88.6 (60–80)
Pronotum <sup>2</sup>	12–13.4/ 12.8	10.5–11.5/ 11	10–15.2 (11–14.9)	9.3–13.6 (9–11.9)	11.5–20 (13–16.9)
Postfemora	40–42/ 40.9 <sup>3</sup>	41–43.2/ 42.1	37–50.8	36.3–48.5	38–54
Ovipositor	35.3–39/ 37.1	35.3 <sup>4</sup> -38.8/ 37.7	26–37	31–40.6	31–45
Femur-spine Index <sup>5</sup>	10.1–10.8/ 10.4	9.9–10.1/ 10.1	9.5 – 11.9 (10–11)	9–11.4 (9.5 – 10.4)	9.5–11.4 (9.5–10.4)
Tibia-spine Index <sup>5</sup>	10.75–11.8/ 11.3	10.6–11.6/ 10.9	10.5 – 13.9 (11–12.4)	9–11.4 (9.5–11)	10.5–13.4 (11–12.4)
Ratio long./lat. postfemora	11.4 – 12.8 / 12.3	16.4–17.3/ 16.9	10 – 17.9 (11 – 14.9)	14 – 20.9 (16 – 18.9)	8 – 13.9 (9 – 11.9)
Ratio long. ovipositori/ long. pronoti	2.6 – 3/ 2.9	3.3–3.7/ 3.5	some under three times	some more than three times	some under three times

1. The data included are taken from 4 of the females; specimens from 06.07.1939 are badly preserved, they are used only for the spine indexes.
2. The main percentage for both sexes are presented between brackets.
3. Only for the 3 females with preserved hind legs.
4. The specimen from Macedonia differs from Bulgarian specimens by the shorter ovipositor – 35.3 mm (for the others – 38, 38.6, and 38.8 mm, respectively).
5. Mean number of the spines of 1 spine row (accordingly on femur or tibia), from the first two pairs of legs; some values of the indexes are not really correct because of the absence of legs in some specimens.



***Saga campbelli gracilis* Kis, 1962**

New for the Bulgarian fauna.

1. HUBENOV et al. 1998: 224 (East Bulgaria).

**Material examined**

1. Sakar Mtn. (SE Bulgaria): Matochina vill. – 10. 05. 1959 (7 small nymphs, 1 – 2nd instar (1.5 – 2 cm)); "Sakar" – 3. 06. 1951 (1 ♀ nymph, 4th instar); Sakar, 780 m alt. – 28. 07. 1962 (2 ♂♂), all leg. PESHEV (NMNH and ZI).

2. Eastern Rhodope Mts. (SE Bulgaria): Plevun vill. – 20. 06. 1969 (1 ♂, 1 ♀ last instar nymphs (6)); Ivaylovgrad – 20. 07. 1964 (1 ♀), 3. 08. 1963 (1 ♂), all leg. PESHEV (NMNH and ZI).

**Discussion**

The subspecies was recorded from the north of Dobrudzha in Romania, eastern Thrace (European Turkey), and the northern Aegean Islands in Greece (KALTENBACH 1967). KALTENBACH (1964) shows a single male of *Saga campbelli* (syn. *S. italica gracilis* Kis) from Bulgaria (Upper Thrace, Popovitsa vill.=Papasi) but later (KALTENBACH 1967) determined this specimen as *Saga rammei*. In the same work (l.c.) Kaltenbach also emphasized that *S. campbelli gracilis* should be found along the Bulgarian Black Sea coast. On account of this POPOV (1) indicates the species for East Bulgaria without giving an exact locality. With the present article it is shown that *S. campbelli gracilis* occupies territories of the Upper Thrace lowland, which is the natural continuation of its known area. It is also possible that the indication for *S. rammei* from Upper Thrace can be related to *S. campbelli gracilis*.

The dimensions of Bulgarian specimens from Sakar and the eastern Rhodope Mts. show differences to those given by KALTENBACH (1967). Therefore the presentation is for each specimen separately, compared with two representatives from the Bulgarian population of *S. campbelli campbelli* (Kresna gorge, 1 ♂, 1 ♀-20.07. 1997), and with KALTENBACH's data.

The distinguishing feature – the index mean number of spines for one spine row on the femur and tibia (first two pairs of legs) (see Table 2) shows a difference with the literature data in Bulgarian *S. campbelli gracilis* – specimens. This is especially clear in the femur spine number of the male from Ivaylovgrad – this number is bigger even than that, defined for the nominal subspecies. Nevertheless KALTENBACH (1967) emphasizes that in the population of *S. campbelli gracilis* from Thrace transitional states to a bigger spine number (intermediate between the two subspecies) exist. According to Dr. K.-G. HELLER (pers. commun.) the data in the table indicate that the separation of *S. campbelli* in two subspecies might not be valid.

Tab. 2: Comparison between the dimensions of Bulgarian specimens of *S. campbelli campbelli* and *S. campbelli gracilis* (dry material) with the literature data (KALTENBACH 1967).

SPEC. ORIGIN OR SOURCE	DIMENSIONS (MM)								INDEX	
	Corp.	Pron.	Elytra	Ovip.	Fem. Post.	Tibia post.	Femur ant. / med.	Tibia ant. / med.	Fem. spi-nes	Tibial spi-nes
<i>S.c.grac.</i> ♂-Sakar	49	8.4	6.5	-	37	39	16/16	16/15.5	10.1	12.1
<i>S.c.grac.</i> ♂-Sakar	50	8.5	6	-	36	39	16/16	16/15.5	10.5	12.6
<i>S.c.grac.</i> ♂-E.Rodope	55	10	7.3	-	41	46.5	18.5/18.5	19/18	13.3	11.5
<i>S.c.grac.</i> ♀-E.Rodope	61	10	-	29.5	41.5	47	18/18	18/18	10.5	12.8
<i>S.c.grac.</i> (Kalt. 1967 ♂)	49.5-67	7.8-12	6.4-8.2	-	36.7-48.5	-	-	-	9.9-11.5	10.5-12.4
<i>S.c.grac.</i> (Kalt. 1967 ♀)	54-63.3	8.2-9.8	-	24.5-31	35.5-41	-	-	-		
<i>S.c.camp.</i> (Kalt. 1967 ♂)	49.5-58.5	8.6-9.6	6-7	-	40-44.7	-	-	-	10.7-13	12.1-14.9
<i>S.c.camp.</i> (Kalt. 1967 ♀)	5-68.5	9-11.6	-	28.3-31.7	39-48	-	-	-		
<i>S.c.camp.</i> ♂-Kresna	48	7.5	5.5	-	37	39	14.5/14.5	15/14	12.2	12.5
<i>S.c.camp.</i> ♀-Kresna	55	8.5	-	29	38.5	41	15/15	16/16	11.8	13.2

**Gryllidae*****Gryllomorpha (Gryllomorphella) cf. miramae* MEDVEDEV, 1933**

New for the Balkan peninsula.

**Material examined**

1. Struma valley (SW Bulgaria): 2 km south of Kamenitsa village, UTM: FM71, 170 – 240 m a.s.l., *Quercus coccifera*-community, fell into soil pitfall traps exposed in the period between: 23.06. – 8.08.2002 (1 ♂, 1 nymph (♂)), leg. D. CHOBANOV; 8.08. – 7.09.2002 (2 ♂♂, 2 ♀♀, 2 nymphs last but one instar ♂ and ♀), leg. M. LANGOUROV; 7.09. – 27.09.2002 (6 ♂♂, 3 ♀♀, 1 nymph last instar (♀)), leg. M. LANGOUROV; 27.09. – 2.11.2002 (1 ♂, 1 nymph last instar (♂)), leg. LANGOUROV (A).

2. Eastern Rhodope Mts. (SE Bulgaria) (possibly belongs to the same taxon): above Ivaylovgrad, ~300 m alt. – 25. 08. 1998 (1 ♀ - under stone), leg. D. CHOBANOV (A).

## Discussion

The subgenus *Gryllomorphella* has a few species which are difficult to identify in Europe. Up to now two species were known to occur in the Balkan mainland - *Gryllomorpha guentheri* HARZ, 1976 - described by one male from the district of Saloniki, and *G. albanica* EBNER, 1910 - described by the female. Later a male was described by HARZ 1976 (the species is known from northern Albania, southwestern part of the Greek mainland and Peloponnissos, according to HARZ 1969: 703, 1976: 56; F. WILLEMSE 1984: 81, 202-map. 98). These species are similar but differ by the shape of the male genitalia (HARZ 1976: 57-Fig. 3, 15; F. WILLEMSE 1985: 26, 101-Figs 68 and 69).

Recently one species of the subgenus was gathered in southwestern Bulgaria using pitfall traps, in this way 20 specimens were collected. This species appears to be most closely related to *G. miramae* Medvedev, 1933 on account of the similarities in male genitalia (compare GOROCHOV 1984: 16-Fig. 2 (2, 6, 10) with the present work: Figs 1-4) and its wide distribution from the southern Ukraine (HARZ 1969: 703; GOROCHOV 1984: 17) and the Black Sea coasts (Crimea and Turkey, according to Dr. Andrej GOROCHOV, pers. commun.) to Middle Asia and Kazakhstan (GOROCHOV 1984, 1986). It slightly differs from *G. miramae* by the shape of the male epiproct (compare HARZ 1969: 704-Fig. 2235 with present work: Fig. 5) but this could be due to the dried material.

The female specimen from the eastern Rhodope mountains is thought to belong to the same species but new researches are needed to prove this.

*G. cf. miramae* is similar to *G. albanica* because of its coloration and the shape of male genitalia, but the forked genital structure (11th sternit) lacks in *G. albanica* (if this is not an omission) (compare HARZ 1976: 57-Figs 3, 15 with the present work: Figs 1-4). Using the data by HARZ (1976: 54, 57-Fig. 14) there are significant differences in the shape of male epiproct between *G. miramae* and both *G. albanica* and *G. guentheri* (in the last two the lateral horn-shaped structures are absent). Nevertheless, according to Dr. Andrej GOROCHOV (pers. commun.) the shape of male epiproct is similar in the three species and the horn-shaped structures are present in each. *Gryllomorpha cf. miramae* is similar in body shape also to *G. uclensis* Pantel, 1890 (southwestern Europe in the east to Switzerland, northeastern Africa? (HARZ 1969: 703-704; GOROCHOV & LLORENTE 2001: 103-104)), only the ovipositor of the dried Bulgarian specimen is not upcurved but slightly downcurved (see HARZ 1969: 704). Anyway male genitalia of these species differ considerably (compare GOROCHOV & LLORENTE 2001: 99-Fig. 1 I-L with present work, Fig. 1-4).

The dimensions of *G. cf. miramae* are given in table 3.

Note on ecology and biology: The phenology is not clear yet due to the capture of both imaginal and larval stages in the period between July and October (in the traps exposed from April till June there are no captured specimens); possibly adults (and nymphs?) hibernate. Active at night, during the day in the soil, in dead foliage, under stones, possibly also in caves.

Tab. 3: Dimensions in mm of the Bulgarian specimens of *Gryllomorpha cf. miramae*.

LOCALITY	SEX / STAGE	CORPUS	PRON. LONG.	PRON. LAT.	CAPUT LAT.	FEMUR POST.	OVIP.
Strouma valley	♂/imago (10 ind.)	9.5–11.3	1.4–1.6	2.3–2.8	2.3–2.7	5.5–6.7	-
	♀/imago (5 ind.)	10-1	1.5–1.8	2.6–2.8	2.6–2.8	6–6.8	7-8
	♂♀/last stage nymphs (2 ind.)	7.5	1.2	2	2.2	5	3.5
	♀/last but one stage (1 ind.)	6.8	~1	1.9	2	4.6	~1.6
	♂/previous stage (1 ind.)	6	<1	1.7	1.8	4.1	-
East Rhodope	♀/imago (1 ind.)	8.8	2	3	3	7.5	7.8

\* This individual is a dry mounted specimen, while the others are conserved in ethanol being caught in a formalin trap.

## *Stenonemobius (Ocellonemobius) bicolor ponticus* GOROCHOV, 1984

New for the Bulgarian fauna.

### Material examined

Upper Thrace lowland (central part of southern Bulgaria): Zlato pole vill. (~10 km E from Dimitrovgrad), left riverbank of Maritsa riv., hayfield – 22. 08. 1998 (1 ♀ - in the night, came to the light of fire from the direction of the river), leg. CHOBANOV (A).

### Discussion

*Stenonemobius bicolor* (SAUSSURE, 1877) was known to occur in southeastern Asia (GOROCHOV 1984a). GOROCHOV (1984a) mentions it from the Crimea (Ukraine) and described *S. bicolor ponticus* from Transkaukasus (GOROCHOV 1984b: 622). In the DORSA-collections (RIEDE et al. Web version) one specimen of this subspecies is preserved (det. GOROCHOV), collected in Croatia, Senj (Zenng, 1912, leg. M. PADEWITH; depository: ZMB, Germany).

HARZ (1985a) mentions one other species of this genus, *Stenonemobius (s. str.) gracilis* (JAKOVLEV, 1871), from Bulgaria (Ograzhden Mtn., as *Pteronemobius*) but later (HARZ 1985b, 1986) placed it in *Pteronemobius heydenii tartarus* SAUSSURE, 1874 (det. GOROCHOV).

In table 4 the differences are given between the specimen of *S. bicolor* and a specimen of *P. heydenii*, both from Bulgaria.

New researches have to be done for the determination of the area of *S. bicolor ponticus* in Bulgaria.

Dimensions in mm (♀- dry material): body 6.3; pronotum 1.2; elytra 3.4; ala 10.4; postfemora 4; ovipositor 2.4.

Tab. 4: Differences between the Bulgarian specimen of *Stenonemobius bicolor ponticus* and a female specimen of *Pteronemobius heydenii heydenii* from SE Bulgaria.

STENONEMOBIUS – THRACE	PTERONEMOBIUS – S BLACK SEA COAST
Three outer and four inner dorsal spurs on the hind tibia	Four outer and four inner dorsal spurs on the hind tibia
Eyes are small, as broad as the scape, as high as the mandibulae	Eyes are bigger, much broader than scape, higher than the mandibulae (in absolute size - two times broader and higher than in the other species)
Small, indistinct ocelli	Ocelli bigger
Frons between antennae almost twice as narrow than scape	Frons between antennae as broad to broader than scape
Scape narrower	Scape broader
Ovipositor longer (~2.4 mm) and broader, dorsal epiphyses not notched	Ovipositor shorter (~2 mm) and narrower, dorsal epiphyses weakly notched at the end
Light brown colored, with elytra brownish-yellow	Dark brown colored
Hind wings strongly developed, long (also in <i>P. heydenii tartarus</i> )	Hind wings weakly developed, covered by tegmen

## Mogoplistidae

### *Arachnocephalus vestitus* COSTA, 1855

1. FREY-GESSNER 1892: 403 (Sozopol and Anhialo (at present Pomorie), as *A. Yersini* Sauss. (6 specimens from both the places, the middle of August) and *A. vestitus* Costa (1 spec. from Sozopol), leg. A. Forel) – 2. NEDELKOV 1907: 436 (Varna, as *A. yersini* Saus., vii; Sozopol, "in the vineyards", as *A. vestitus*) – 3. NEDELKOV 1909: 13 (Varna, as *A. Yersini* [sic.!] Saus - vii; Sozopol, as *A. vestitus* – viii) – 4. BURESCH & PESHEV 1958: 340, 341 (cited the previous data for *A. yersini* and *A. vestitus*).

### Material examined

1. Northern Black Sea coast (NE Bulgaria): Rusalka resort (50 km ENE from Varna) – 9. 08. 1998 (1 ♀ in high dry grass), leg. CHOBANOV (A).
2. Southern Black Sea coast (SE Bulgaria): Resovo vill. (near the frontier with Turkey) – 30. 08. 1998 (1 ♀ in high dry grass); "Zlatna ribka" camping (near Sozopol) – 20. – 25. 08. 2001 (2 ♂♂, all leg. CHOBANOV (A).
3. Eastern Rhodope Mts. (SE Bulgaria): Kardzhali – 25. 09. 1955 (1 ♀, leg. PESHEV (NMNH).
4. Strouma valley (SW Bulgaria): 2 km south of Kamenitsa vill. (UTM: FM71), 170 – 240 m alt., *Quercus coccifera*-community: soil traps – 5. 04. – 9. 05. 2002 (1 nymph - 3.7 mm), leg. LANGOUROV, 23. 06. – 8. 08. 2002 (2 ♂♂ nymphs), leg. CHOBANOV, 7 – 27. 09. 2002 (2 ♂♂, 1 ♀, leg. LANGOUROV, 27. 09. – 2. 11. 2002 (1 ♀, leg. LANGOUROV; tree traps – 23. 06. – 8. 08. 2002 (8 nymphs - 4 ♂♂ and 3 ♀♀ last instar, 1 smaller), leg. CHOBANOV, 8. 08. – 7. 09. 2002 (1 ♂, 2 ♀♀, 3 last instar nymphs (1 ♂, 2 ♀♀)), leg. LANGOUROV, 7. – 27. 09. 2002 (13 ♀♀, leg. Langourov, 27. 09. – 2. 11. 2002 (1 ♂, 6 ♀♀), leg. LANGOUROV (all A).
6. Southern Pirin Mtn. (SW Bulgaria): Sveti Iliya hill, near Kalimantsi vill. (UTM: GL09), 400 – 500 m alt., *Q. coccifera*-community: soil traps – 28. 09. – 3. 11. 2002 (1 ♂, leg. Langourov; tree traps – 6. 08. – 8. 09. 2002 (5 ♀♀ nymphs (4 - last and 1 - last but one instar)), 8. – 28. 09. 2002 (4 ♀♀, 28. 09. – 3. 11. 2002 (6 ♀♀), all leg. Langourov (all A).

## Discussion

The scarce knowledge of the distribution of the species is the result of its poorly known biology and small size. The frequent captures in tree traps and its rare occurrence in soil traps in southwestern Bulgaria, indicates that *A. vestitus* inhabits the crown of bushes and trees. Rarely this species also occurs in high grass and on the ground. It can be common in scrubs throughout southern Bulgaria and along the Black Sea coast.

Dimensions in mm (alcohol conserved after formaline-trap capturing): body ♂ 8 – 8.5, ♀ 9 – 10; pronotum ♂ 1.1 – 1.2, ♀ 1.5 – 1.6; postfemora ♂ 3 – 3.5, ♀ 3.5 – 5; ovipositor 5.5 – 5.7.

## CAELIFERA

### Acrididae

### *Epacromius tergestinus* (CHARPENTIER, 1825)

1. BURESCH & PESHEV 1955: 67 (under line) (as *Aiolopus (Epacromius) tergestinus* (Charp.), det. UVAROV; a very badly preserved specimen from Varna, 20.07.1935, leg. P. CHORBADZHEV) – 2. PESHEV 1962b: 81, 90, 102 (The valley of Strumeshnitsa riv., only in the lowland (near Petrich, southwestern Bulgaria), single specimen, imago, 10. – 16. 06. 1959; moderately hygrophilous; in an uncultivated land along the riverbank, on dry, sandy, and gravelly places overgrown with *Phleum serrulatus*, *Bromus*, *Lolium*, and *Hordeum*.) – 3. PESHEV 1970b: 222 (The same data) – [4. PESHEV 1974a: 126 (Rhodope Mts., included in the table - probably mistake – lacking in the text and lacking in all other Peshev's works about this region)] – 5. PESHEV & ANDREEVA 1986: 105 (The same data; very rare; vi – viii; stenozonal mesohygrobiont) – 6. PESHEV & ANDREEVA 1988: 104.

### Material examined

Northern Black Sea coast (NE Bulgaria): southeastern shore of Durankulak lake, near the beach (moderately wet place with sandy soil, overgrown with very low grass) – 11. 08. 1998 (2 ♀♀), 12. 08. 1998 (1 ♀), leg. CHOBANOV (A).

## Discussion

At present there are only two published reports about *Epacromius* from Bulgaria – *E. tergestinus* from Petrich (2) and *E. coerulipes* from Sozopol (PESHEV 1970b). BURESCH & PESHEV (1) communicated that in IZ a damaged specimen was preserved, determined by Uvarov in 1936 as *Aiolopus tergestinus* but the authors specified that they could not identify it. These reports need confirmation, especially for *E. coerulipes*. It is necessary to examine the typical biotopes of these quite rare species (along the Black Sea coast and the riverbanks of the big rivers in their lower course).

Dimensions in mm (for each specimen (3 ♀♀) separately) (dry material): body 27.2, 30, 31.5; pronotum 4.8, 5.3, 5.4; elytra 28, 31.4, 31; postfemora 14.2, 16.7, 16.5.

Colouration: two of the females – brownish with dark spots, one specimen – uniformly greenish-grey. Alae with a blue shade.

**Notostaurus anaticus KRAUSS, 1896**

New for the Bulgarian fauna.

1. PESHEV 1962a: 181, 184 (as *N. albicornis*) (Besapara hills, near Pazardzhik, between Upper Thrace lowland and Rhodope Mts., 2. 10. 1960 (2 ♀♀), leg. Peshev; on the southern slope in dry, open, sunny but grassy places (low grass); carstic basis) – 2. PESHEV 1962b: 78, 84, 102 (as *N. albicornis*) (southern Struma valley near Petrich, 22. 06. 1957 (single specimens, imago); in sunny, dry places with sparsely grass vegetation) – 3. PESHEV 1964: 107, 123 – 124, 131, 132, 134, 136 (as *N. albicornis*) (Besapara hills, 2. 10. 1960; Levka vill. (Sakar Mtn.), 27. 07. 1962 (9 ♂♂, 21 ♀♀); both localities on ~400 m alt., the same biotope characteristics) – 4. PESHEV 1970b: 219 (as *N. albicornis*) (Petrich, Besapara hills, Levka vill., the same data but to 500 m alt.) – 5. PESHEV 1974a: 104, 105, 112, 113, 125, 127 (as *N. albicornis*) (E Rhodope - ecological data) – 6. PESHEV 1975: 101, 107, 111, 115 (as *N. albicornis albicornis*) (E Rhodope Mts., Ivaylovgrad, 20. 07. 1968) – 7. PESHEV & ANDREEVA 1986: 101, 112 (as *N. albicornis albicornis*) (SW Bulgaria, only in the lowland: Marino pole vill., 22. 06. 1957, 27. 07. 1974, 27. 07. 1975, 30. 06. 1976; Sandanski, 11. 07. 1970, 29. 08. 1973; Levunovo vill., 29. 08. 1973, 30. 08. 1974; Hursovo vill., 10. 08. 1981, 22. 08. 1979, 26. 08. 1979, 27. 08. 1983, 4. 10. 1981; rare; vi – x; stenozonal xerobiont; in the same biotopes as the previous) – 8. PESHEV & ANDREEVA 1988: 103, 106 (as *N. anaticus*) (ecological data).

**Material examined**

1. Southeastern Bulgaria: Levka vill. (S slope of Sakar Mtn.) – 27. 07. 1962 (7 ♂♂, 13 ♀♀); Ivaylovgrad (E Rhodope Mts.) – 20. 07. 1968 (1 ♂, 2 ♀♀), 22. 07. 1968 (1 ♂, 2 ♀♀), all leg. PESHEV (NMNH and ZI).  
2. Central southern Bulgaria: Ognyanovo vill. (Besapara hills, Upper Thrace lowland) – 2. 10. 1960 (2 ♀♀), leg. PESHEV (NMNH).  
3. Southwestern Bulgaria: Levunovo vill. (southern Struma valley) – 22. 07. 1972 (5 ♂♂, 11 ♀♀), leg. PESHEV (NMNH); Hursovo vill. (the same region) – 3. 08. 1997 (2 ♂♂, 6 ♀♀), leg. CHOBANOV (A); Sandanski (the same region) – 29. 08. 1973 (1 ♂, 2 ♀♀), leg. PESHEV (NMNH).

**Discussion**

Examination of material of *Notostaurus* showed that the Bulgarian specimens belong to *N. anaticus* and not to *N. albicornis*. The dimensions of our specimens lie at the lower edge of those of *N. anaticus*. Sometimes they are resurfaced with the data, given in the literature for *N. albicornis* (HARZ 1975). Nevertheless, HARZ (1975) indicates that the Macedonian specimens are smaller. In the table 5 the dimensions within the two Bulgarian populations (from southwestern and southeastern Bulgaria) are compared with those of *N. anaticus* and *N. albicornis* (as indicated by HARZ).

The dimensions given in the table refer to dry material. Four females from Hursovo vill. are preserved in alcohol. Their measurements are: corpus 24.3 – 28 (mean 26.3); pronotum 4.8 – 5.2 (4.95); elytra 15.5 – 16.5 (15.9); femur post 15.5 – 16.5 (16).

The southwestern population shows smaller dimensions, which corresponds with the report of HARZ (1975) for the Macedonian population.

Description of the Bulgarian specimens: Fastigium in the female with an obtusely angled apex (in some females, mainly from southwestern Bulgaria, near 90°); in the male – under 90°. Foveolae in the female with parallel sides, some more than

1.25 times longer than broad; in the male slightly attenuated towards the apex or parallel, usually about 1.5 times longer than broad. X-shaped pattern variable – usually the light pattern in metazona slightly broader than that in prozona (~1.1 – 1.5 times). Postfemora in male with dark (but not black) knees (including the lower lobe) and male posttibia with a black (not only dark) base (for *N. anaticus* with black base on posttibia in male, but not female as in HARZ, 1969 (see BEY-BIENKO, 1951)); in females the lower knee lobe only a little darker than the other part of the femur, the hind tibia with one black ring right behind the base (this ring is better visible and darker on the inner side of tibia).

Tab. 5: Comparison of the measurements of Bulgarian specimens of *Notostaurus* (dry material) with these given by HARZ (1975) for *N. anaticus* and *N. albicornis*.

Species (popul./reference)	Corpus (min- max/ mean)		Pronotum (min-max/mean)		Elytra (min-max/ mean)		Femur post. (min-max/ mean)	
	♂	♀	♂	♀	♂	♀	♂	♀
<i>N. anaticus</i> (Harz 1975)	14-20	23-30	2.2-3.2	5	8.5-17	16-26	10.5	17
<i>N. anaticus</i> (SE Bulgaria)	16-18/ 17	23- 28/ 25.3	3-3.6/ 3.2	4.3- 5.4/ 4.9	10.3- 13.2/ 11.7	13.3-18/ 16.3	11- 12.7/ 11.8	14.8- 18.3/ 16.4
<i>N. anaticus</i> (SW Bulgaria)*	15.1- 18.3/ 16.6	22- 25.2/ 23.6	3-3.5/ 3.3	4.1- 5.1/ 4.6	9.8- 11.6/ 10.4	12.9- 16.8/ 14.6	11.5- 12.3/ 12	13.3- 17.1/ 15.6
<i>N. albicornis</i> (Harz 1975)	11.5-16	16-22	2.1-2.8	3.5-4	6.5-13	11.5-15	8.5-10	11.7-13

\* In this data are not included the specimens from Sandanski (see under Material examined).

The range of the species coincides with that reported by PESHEV (1 – 8) for *N. albicornis*, and covers uncultivated xeromorphous biotopes in low altitudes (up to 500 m alt.) of the southern Struma valley (south of the Kresna gorge), Thrace lowland, Sakar, and eastern Rhodope Mts. This is the natural continuation of the area of the species in Greece (HARZ 1975; WILLEMSE 1984).

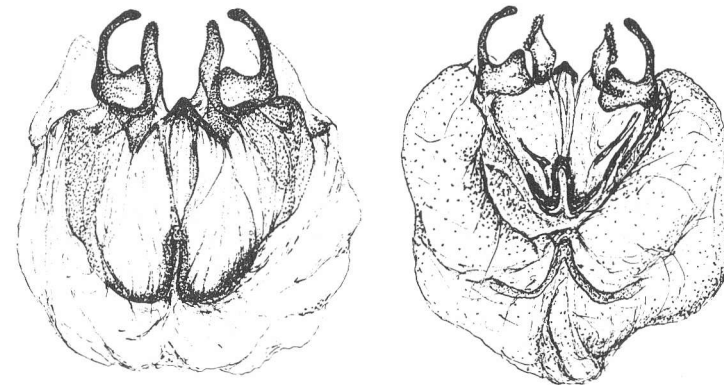


Fig. 1. Male genitalia of a Bulgarian specimen of *Gryllomorpha* cf. *miramae* with muscles – dorsal view.

Fig. 2. Male genitalia of a Bulgarian specimen of *Gryllomorpha* cf. *miramae* with muscles – ventral view.



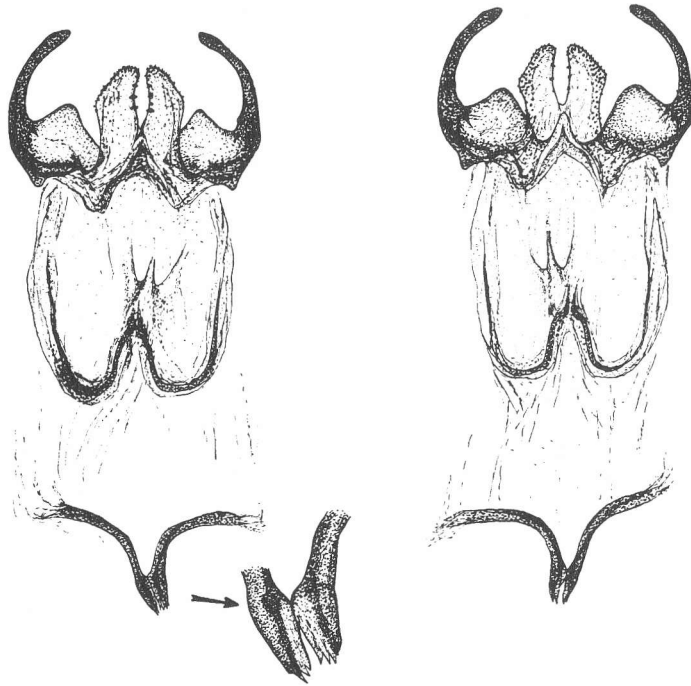


Fig. 3. Male genitalia of a Bulgarian specimen of *Gryllomorpha* cf. *miramae* (only sclerotized parts) – dorsal view (the structure in form of a "V" lies over the main genital armature).

Fig. 4. The same but: ventral view (the structure in form of a "V" lies over the main genital armature).

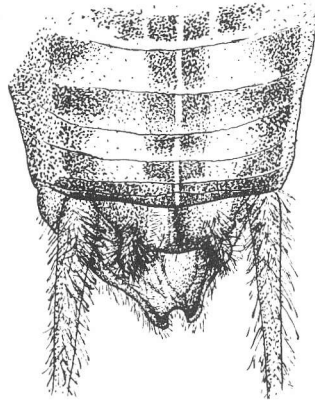


Fig. 5. The tip of the male abdomen (dorsal) of *Gryllomorpha* cf. *miramae*.

## Results

Six species and one subspecies are reported as new for the Bulgarian fauna. Four other species which are rare in the country are presented with unpublished localities, most of them found in the recent years. This way the Bulgarian ranges or known localities of the species could be summarized and some additional notes could be proposed, as follow:

*Leptophyes punctatissima* – naturally distributed in the foothills and low mountain belt of the western boundary mountains and introduced in the Sofia University's Botanic garden near Varna. The localities in East Rhodope Mts. (PESHEV 1974a, 1975) need confirmation.

*Barbitistes constrictus* – the species is known only from the northern slope of Rila Mt. Its occurrence in Bulgaria after RAMME (1921) was confirmed with a material collected in the 20<sup>th</sup>. It is quite possible that *B. constrictus* still occurs in the area but new researches are necessary to clarify its present range.

*Poecilimon marmaraensis* – the species was found to be common in a middle-mountain hayfield in East Stara planina Mts. above Sliven. It seems to be common at many sites in European Turkey in connection with the information by HELLER & LEHMANN (in press). On account of this it could be found at some other mountains in southeastern Bulgaria.

*Meconema meridionale* – possibly it is introduced together with *L. punctatissima* in the Varna Botanic garden of the Sofia University and this is the only one known locality of the species in Bulgaria.

The recognition of the nymphs (last instar only) from these of *M. thalassinum* could be accomplished recognizing the development of the nymphal pads and somewhat the cercus-shape. Moreover in the vicinity of the garden was not found the latter species.

*Saga* cf. *hellenica* – the species had been collected in the 30<sup>th</sup> near Sofia and has never been caught after that (possibly extinct in Lyulin Mt.). The only possible new locality is of one female reported as *S. natoliae* from Iskar gorge, North of Sofia (PESHEV 1970a, 1974b, 1974c). The occurrence of this species in Bulgaria is quite interesting and needs new researches.

*Saga campbelly gracilis* – this subspecies was not be surely reported for the country. The present data shows that its range spreads over Sakar and East Rhodope Mts. but its populations are widely separated. Possibly in the past this taxon had been widely distributed all over Thrace lowland but today its populations are extinct as a result of the agricultural utilization of the territory.

The supposition that this subspecies is a synonym of the nominate form, which arises from the table data (K.-G. HELLER, pers. commun.), is not an aim of the present work and needs supplementary investigations.

The differentiation of the nymphs from the nymphs of *S. natoliae* is not difficult on account of the differences in the body proportions. As for the differentiation from *S. pedo* and *S. rammei* it is somewhat artificial but these species has never been surely reported for the region.

*Gryllomorpha* cf. *miramae* – the species was collected with pitfall traps in a *Quercus coccifera*-community at the middle Struma valley. It was not be found in the Balkans up till now. The species is very similar to *G. guentheri* and *G. albatica* – thereby exist a possibility for synonymization of some of these taxons with



*G. miramae* (Dr. Andrej GOROCHOV, pers. commun.), which needs careful verification.

The nymphs are well distinguishable from these of *G. dalmatina* (occurs in the same regions) by the shape of male genital plate, the relative head-width, the black body pattern, etc.

*Stenonemobius bicolor ponticus* – the subspecies and the species was not known in the literature for the Balkan peninsula up till now. The only report is from Croatia in the DORSA-collections (see Riede et al. web version). The present report concerns the only specimen from Thrace lowland. Possibly the range of the subspecies on the Balkan covers its southern half and the sea-coasts but the populations are rare.

*Arachnocephalus vestitus* – after careful collection with entomological sack and pitfall traps it is clarified that this species is common in the low places of southern Bulgaria and the Black Sea-coast. It keeps mainly on bushes and high grasses.

*Epacromius tergestinus* – the species is quite rare in the country due to obscure reasons and new investigations need to identify its area in Bulgaria. It is known only from the district of Petrich (SW Bulgaria) (PESHEV, 1962b, 1970b; PESHEV & ANDREEVA, 1986, 1988), the shore of Durankulak lake (NE BG) (present work), and possibly also the district of Varna (NE BG) (BURESCH & PESHEV, 1955).

*Notostaurus anatolicus* – the species is distributed in southwestern (the southern parts of the Bulgarian Strouma valley) and southeastern (Thrace lowland, Sakar, and East Rhodope Mts.) Bulgaria. Its populations are separated of each other and inhabit only low, desert-like, long time-uncultivated grass-habitats.

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