

## New and interesting cribellate spiders from Abkhazia (Aranei: Amaurobiidae, Zoropsidae)

### Новые и интересные кривеллятные пауки из Абхазии (Aranei: Amaurobiidae, Zoropsidae)

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KEY WORDS: Aranei, spiders, Abkhazia, new species, new record, *Amaurobius*, *Zoropsis*.

КЛЮЧЕВЫЕ СЛОВА: Aranei, пауки, Абхазия, новый вид, новая находка, *Amaurobius*, *Zoropsis*.

ABSTRACT. One new species, *Amaurobius antipovae* sp.n. (♂♀) is described, and one new family, Zoropsidae (*Zoropsis spinimana* (Dufour, 1820) is reported from Abkhazia, Caucasus. Two species are illustrated. *Zoropsis spinimana* was apparently recently introduced to Caucasus by UN observers.

РЕЗЮМЕ. Описан один новый вид, *Amaurobius antipovae* sp.n. (♂♀) и одно новое семейство Zoropsidae (*Zoropsis spinimana* (Dufour, 1820) отмечено из Абхазии. Оба вида иллюстрированы. *Zoropsis spinimana*, по всей видимости был недавно интродуцирован наблюдателями ООН.

### Introduction

In December 2003 a short collecting trip was undertaken by the first author and Mrs. Galina N. Antipova to Sukhum, Abkhazia. During this trip several new and interesting spiders were collected. The goal of this paper to describe a new species of *Amaurobius* and to report a new family for Caucasus, Zoropsidae.

All measurements are given in mm. In body measurements the first figure refers to the specimen in which legs were measured, the following figures in parentheses correspond to variations in length or width. In the description of *Amaurobius* spinal notation follows Ono [1988]. Because of the large number of spines in *Zoropsis* spination is shown in a different way: numbers refer to total number of spines dorsally (d), prolaterally (p), retrolaterally (r) and ventrally (v).

Material treated herein is deposited in Zoological Museum of the Moscow State University (ZMMU), Zoological Museum, University of Turku (ZMUT) and Yu.M. Marusik's temporary collection in ZMUT (YMT).

### AMAUROBIIDAE

#### *Amaurobius* C. L. Koch, 1837

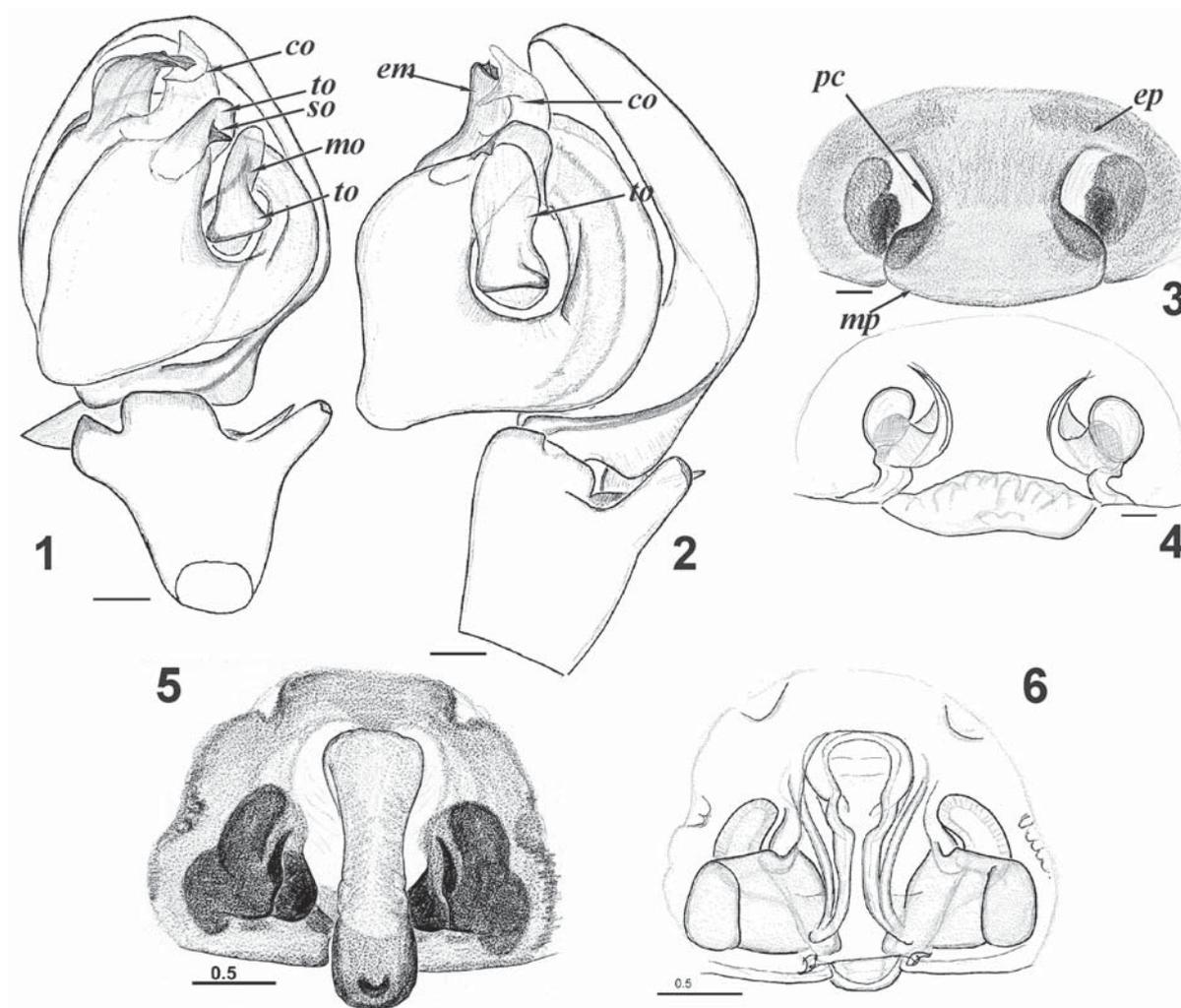
Sixty-nine species, found mainly in the Holarctic, are considered to belong in *Amaurobius* [Petrunkevitch, 1958; Platnick, 2004]. Besides Holarctic *Amaurobius* is known from Paraguay, Argentina, Ethiopia, India and Micronesia. Most probably, species outside of the Holarctic are misplaced. Four *Amaurobius* species were described from Baltic amber. Of these, only *A. succini* Petrunkevitch, 1942 is properly described, and most probably congeneric with *A. fenestralis* (Ström, 1768), the type species of the genus.

The highest species diversity of *Amaurobius* is in the Mediterranean region.

The fauna of the former Soviet Union includes 7 species of *Amaurobius* [Mikhailov, 1997; Kovblyuk, 2002], accounting the newest records and to modern taxonomy. Two of these species have been reported from Caucasus: *Amaurobius fenestralis* and *A. similis* (Blackwall, 1859).

Although, Mkheidze [1997] reported two species from Georgia (*A. similis* (Blackwall, 1859) and *A. pallidus* L. Koch, 1868), we are not accounting these species. Figures [Mkheidze, 1997: tab. V, figs. 35, 37] provided by Mkheidze were taken from Tyshchenko [1971: figs. 80, 83]. Judging from distribution of the *pallidus*-group and considering that females of this group are difficult to distinguish, it seems that record of *A. pallidus* from Georgia was based on a misidentification.

The taxonomy and faunistic of Mediterranean *Amaurobius* were recently surveyed by Thaler and Knoflach in several papers [1990, 1991, 1993, 1995, 1998a, 2002].



Figs. 1–6. Copulatory organs of *Amaurobius antipovae* sp.n. (1–4) and *Zoropsis spinimana* (5–6): 1–2 — male palp, ventral and lateral, respectively; 3, 5 — epigyne, ventral; 4, 6 — epigyne, dorsal. Scale = 0.1 mm if not otherwise indicated.

Abbreviations: *co* — conductor; *em* — embolus; *ep* — epigynal plate; *ma* — median apophysis; *mp* — median plate; *pc* — contraction of the median plate; *so* — spine-like outgrowth; *ta* — tegular apophysis; *to* — triangle outgrowth.

Рис. 1–6. Копулятивные органы *Amaurobius antipovae* sp.n. (1–4) и *Zoropsis spinimana* (5–6): 1–2 — палепа самца, снизу и сбоку, соответственно; 3, 5 — эпигина, снизу; 4, 6 — эпигина, сверху. Масштаб = 0,1 мм если не указано иначе.

Сокращения: *co* — кондуктор; *em* — эмболюс; *ep* — пластинка эпигины; *ma* — срединный отросток; *mp* — медиальная пластинка эпигины; *pc* — сужение медиальной пластинки; *so* — шиповидный вырост; *ta* — тегулярный отросток; *to* — треугольный вырост.

#### *Amaurobius antipovae* sp.n.

Figs. 1–4, 7–11, 18–21, Map.

MATERIAL: Holotype ♂ (ZMMU) and paratypes 7 ♂♂ 6 ♀♀ (ZMMU, ZMUT, YMT), [A-02], W. Caucasus, Abkhazia, Sukhum, Kelasur, University Campus and nearby, 42°58.4'N 41°04.044'E, mainly under *Eucalyptus* bark, 9–10.12.2003 (Yu.M. Marusik & G.N. Antipova).

ETYMOLOGY. The specific name is a patronym in honour of Mrs. Galina N. Antipova who collected part of the type series.

DESCRIPTION. Male/female (n = 5/5). Measurements: total length 5.8 (5.3–5.8)/5.6 (5.6–6.8); carapace length 2.6 (2.6–2.8)/2.8 (2.8–3.1); carapace width 2.0 (1.8–2.1)/2.0 (1.7–2.0). Femur I length 2.6 (2.2–2.6)/2.0 (1.8–2.2). Carapace length/femur I ratio 1.00–1.13/1.38–1.49.

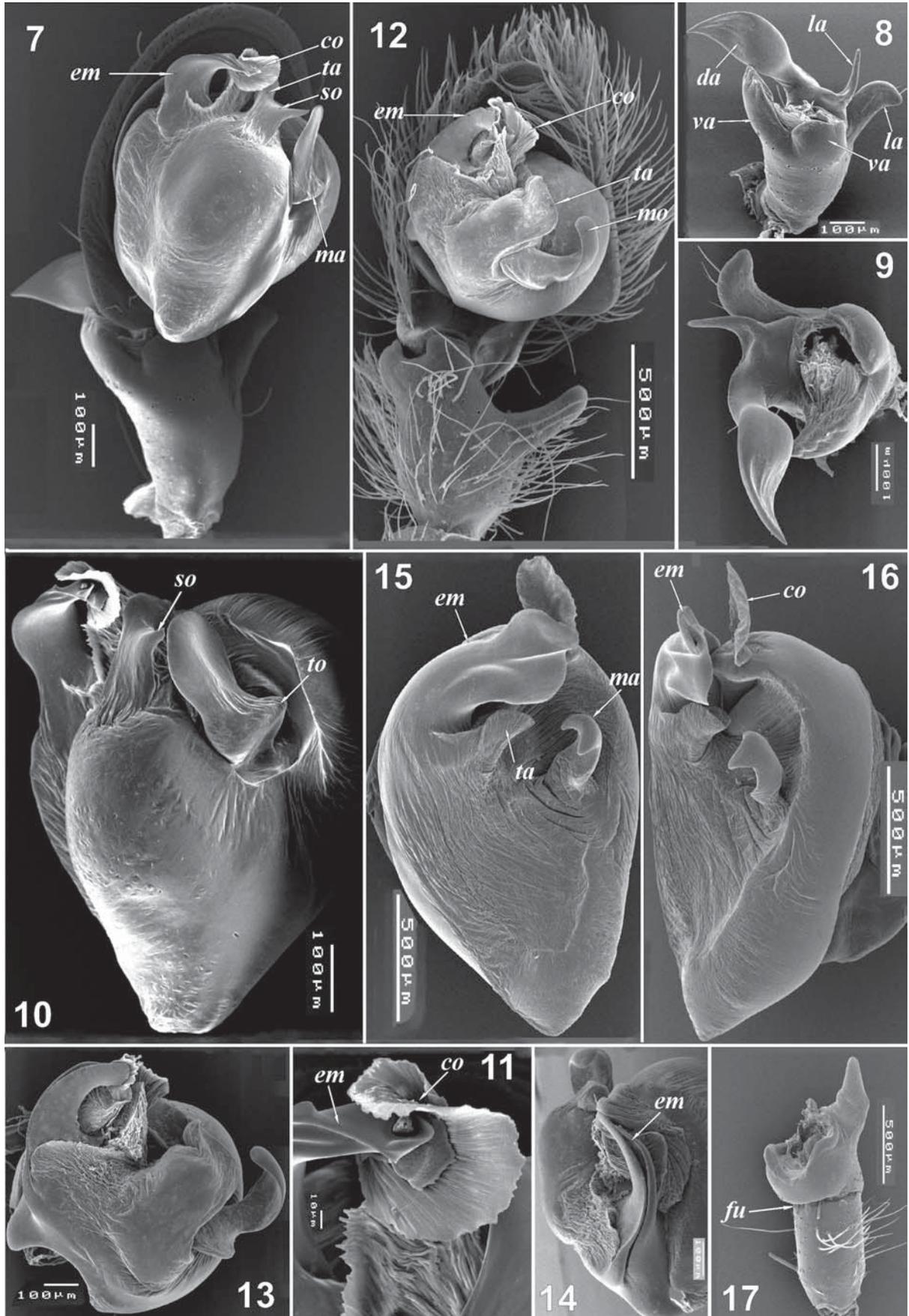
#### Length of legs segments:

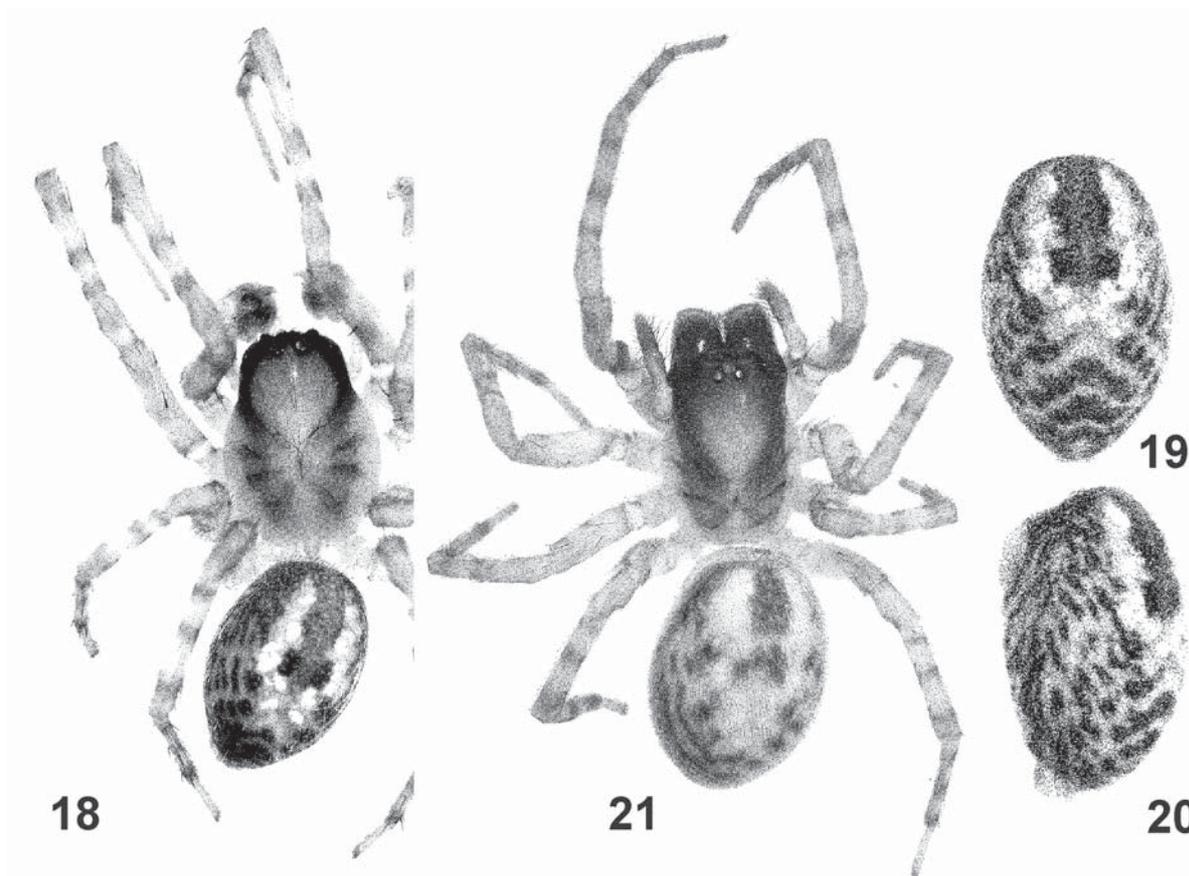
	femur	patella	tibia	metatarsus	tarsus
I	2.6/2.0	0.9/0.9	2.5/1.7	2.4/1.6	1.2/0.9
II	2.2/1.7	0.8/0.7	1.8/1.3	1.7/1.3	0.9/0.7
III	2.0/1.6	0.8/0.8	1.4/1.0	1.6/1.2	0.8/0.6
IV	2.2/2.0	0.8/0.8	2.0/1.5	2.0/1.5	0.8/0.6

Legs spination as in Table 1.(male/female, if different):

Coloration. General color yellow brown. Carapace yellow with dark margin of cephalic part and dark radial stripes (Fig. 18). Median stripe distinct. Chelicera brown. Legs yellow, femur, tibia and metatarsus with 3 gray rings. Abdomen with white band around heart mark and longitudinal and transverse dark stripes (Figs. 18–20). Venter of abdomen light with small dark-gray dots. Female lighter than male (Fig. 21).

Palp as in Figs. 1–2, 7–11. Tibia with 5 distinct apophyses (Figs. 1–2, 8–9): two ventral (*va*), two lateral (*la*) and one





Figs. 18–21. General view of *Amaurobius antipovae* sp.n.: 18 — male, dorsal; 19–20 — male's abdomen, dorsal and lateral; 21 — female, dorsal.

Рис. 18–21. Внешний вид *Amaurobius antipovae* sp.n.: 18 — самец, сверху; 19–20 — брюшко самца, сверху и сбоку; 21 — самка, сверху.

dorsal (*da*). Tegulum rather long in lateral view (Fig. 2). Median apophysis (*ma*=tegular apophysis *sensu* Thaler & Knoflach, 1990, 1991, etc.) straight, with triangle shaped outgrowth (*to*) in basal part. Tegular apophysis (*ta*=tegular process *sensu* Thaler & Knoflach, 1991) bifurcate, with spine-like outgrowth (*so*). Conductor (*co*) originates from the base of embolus (*em*). Embolus with thick base and thin terminal part.

Epigyne as in Figs. 3–4. Median plate (*mp*) not separated from the rest of epigynal plate (*ep*). Median plate with contraction (*pc*) in mid part. Receptacula small and simple.

DIAGNOSIS. The new species can be easily separated from the genotype, *A. fenestralis* (Figs. 12–14), by its large, lanceolate dorsal tibial apophysis, shorter median apophysis, bifurcate tegular apophysis and relatively smaller embolus.

By the shape of male palpal tibia, tegular and median apophyses it can be easily separated from all *Amaurobius* species. Female epigyne of *A. antipovae* sp.n. differs from all other species by having median plate not separated from the rest of epigynal plate.

According to the classification of Lehtinen [1967] the new species belongs to group III (*pallidus*). It appears that *A. antipovae* is most closely related to *A. hercegovinensis* Kulczyński, 1915, known from Bosnia [cf. Kulczyński, 1915: 901–903, pl. 66, f. 1–5], although they can be separated by leaf-like dorsal tibial apophysis in the new species, and absence of median plate contraction in *A. hercegovinensis*. The two species can be also separated by the larger size of the Balkan species (♂ 3.2, ♀ 3.7).

Figs. 7–17. SEM micrographs of the male palp of *Amaurobius antipovae* sp.n. (7–11), *A. fenestralis* (12–14) and *Zoropsis spinimana* (15–17): 7, 12 — ventral; 8–9 — tibia, ventral and apical; 10, 16 — bulbus, lateral; 11 — terminal part of embolus and conductor, sublateral; 13, 15 — bulbus, ventral; 14 — bulbus, terminal part, apical; 17 — tibia, ventral.

Abbreviations: *co* — conductor; *da* — dorsal apophysis; *em* — embolus; *fu* — furrow; *la* — lateral apophysis; *ma* — median apophysis; *so* — spine-like outgrowth; *ta* — tegular apophysis; *to* — triangle outgrowth; *va* — ventral apophysis.

Рис. 7–17. Сканирующие фотографии пальпы самцов *Amaurobius antipovae* sp.n. (7–11), *A. fenestralis* (12–14) и *Zoropsis spinimana* (15–17): 7, 12 — снизу; 8–9 — голень, снизу и сбоку; 10, 16 — бульбус, сбоку; 11 — верхняя часть эмболюса и кондуктора, сбоку; 13, 15 — бульбус, снизу; 14 — бульбус, верхняя часть, сверху; 17 — голень, снизу.

Сокращения: *co* — кондуктор; *da* — дорзальный отросток; *em* — эмболюс; *fu* — щель; *la* — латеральный отросток; *ma* — срединный отросток; *so* — шиповидный вырост; *ta* — тегулярный отросток; *to* — треугольный вырост; *va* — вентральный отросток.



Map 1. Study area.  
Карта 1. Район исследований.

Table 1. Legs spination in *Amaurobius antipovae* sp.n. (male/female, if different).  
Таблица 1. Вооружение ног у *Amaurobius antipovae* sp.n. (самец/самка, если показатели разные)

Leg	Segment	spines			
		dorsal	prolateral	retrolateral	ventral
I	femur	1-1 a/1	1	1/0	0
	patella	0	1 or 0/0	1/0	0
	tibia	0	1-1	1-1 or 1-1-1/1-1	2-2-2a
	metat.	0	1-1-2a/1-2a	1-2-2a/1-2a	2-2-1a
II	femur	0 or 1-1/1	1	1-1/1	0
	patella	0	1/0	1/0	0
	tibia	0	1-1	1-1	2-2-2a/1-1-2a
	metat.	0	1-1-2a /1-1a	1-1-2a /1-1	2-2-1a
III	femur	1 or 1-1/0	1 or 2-1/1	1-1/1	0
	patella	0	1/0	1	0
	tibia	0	1-1	1-1	1-2-2a or 2-2-2a/1-1-2a
	metat.	0	1-1-2a	1-1-2a	2-2-1a /2-1-1a
IV	femur	0/1 or 0	1/0	1	0
	patella	0	0	1/0	0
	tibia	0/1 or 0	1/0	1-1	1-1-2a/1-1-2a or 1-2-2a
	metat.	0	1-1-2a/1-1	1-1-2a/1-1	2-1-1a or 3-1-1a/2-2-1a

## ZOROPSIDAE

*Zoropsis* Simon, 1878

The spider genus *Zoropsis* encompasses 13 species [Platnick, 2004] found in the Palaearctic. Most *Zoropsis* species are restricted to the Mediterranean.

*Zoropsis spinimana* (Dufour, 1820)

Figs. 5–6, 15–17.

Z. s. Wunderlich, 1995: 724, f. 1–2 (♂♀).

Z. s. Thaler & Knoflach, 1998b: 174, f. 2–6, 23 (♂♀).

MATERIAL EXAMINED: 3 ♂♂ 9 ♀♀, [A-01] W. Caucasus, Abkhazia, Sukhum, Kelasur, Sukhum University Campus, 42°58.4'N 41°04.04'E, under *Eucalyptus* bark, 7.12.2003 (Yu.M.Marusik & G.N.Antipova).

DESCRIPTION. Male/female (n = 3/5). Measurements: total length 14.9 (11.0–14.9) / 21.3 (10.5–21.3); carapace length 7.0 (5.5–7.0) / 8.2 (4.9–8.2); carapace width 5.4 (4.3–5.4)/6.3 (3.7–6.3).

Length of legs segments:

	femur	patella	tibia	metatarsus	tarsus
I	6.8/6.5	2.8/3.0	7.8/6.8	7.5/5.8	2.0/1.8
II	6.3/5.9	2.6/3.0	6.3/5.6	6.5/5.1	1.9/1.7
III	5.3/5.0	2.4/2.6	4.6/4.0	5.5/4.7	1.9/1.6
IV	6.7/6.5	2.5/2.6	6.4/5.6	7.9/7.0	2.0/2.0

Spination of legs in ♀ as in Table 2.

Coloration. General coloration yellow-brown. All femora light colored, tibia, metatarsi and tarsi I–II black, tibia III–IV with two wide black rings, metatarsi and tarsi III and IV black with light ring on proximal end.

Palp as in Figs. 15–17. Tibia with one apophysis, terminal part of tibia separated from the rest of tibia by furrow (*fu*). Tegulum longer than wide, median apophysis (*ma*) bifurcate, tegular apophysis (*ta*) short, embolus wide, conductor (*co*) small.

DIAGNOSIS. *Zoropsis spinimana* can be easily separated from *Z. lutea* Thorell, 1875 (Greece-Crimea) and *Z. kirghizicus* Ovtchinnikov & Zonstein, 2001 (Kyrgyzstan) by the shape of its epigyne and palp.

COMMENTS. Although the bulbus of *Zoropsis* and *Amaurobius* are similar in the number and position of apophyses, it appears that they are not homologous. Judging from the position and flexibility of the median apophysis in these two genera they are homologous. The conductor in *Amaurobius* originates at the base of the embolus, while in *Zoropsis* it originates from a separate part of the tegulum. It is possible that the tegular apophysis of *Zoropsis* is homologous to the conductor of *Amaurobius*.

DISTRIBUTION. Until recently this species was known in western Mediterranean to southern border of the Alps in Italy and eastward to Croatia [Thaler & Knoflach, 1998b]. In 1997 it was found in North and South Tirol and thought to be

an expansive species [Thaler and Knoflach, 1998b]. The present records extends the known distribution 25° to the East. It seems that occurrence of this species in Abkhazia is caused by its occasional introduction by UN observers which came to Caucasus in the beginning of 90<sup>th</sup> from several countries, including France, Italy and Spain. Like in Austria all specimens have been collected in urban places: under *Eucalyptus* bark in university campus and along the seashore near apartment buildings.

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## References

- Kovblyuk M.M. 2002. Redescription of *Amaurobius strandi* Charitonov, 1937, stat.n. from the Crimea (Aranei: Amaurobiidae) // Arthropoda Selecta. Vol.10 (for 2001). No.3. P.213–216.
- Kulczyński W. 1915. Fragmenta arachnologica, X. XVIII. Araneorum species nonnullae novae aut minus cognitae. Descriptiones et adnotationes // Bulletin International De L'Academie des sciences de Cracovie. Classe des sciences mathematiques et naturelles. Serie B: Sciences naturelles. P.897–942.
- Lehtinen P.T. 1967. Classification of the Cribellate spiders and some allied families, with notes on the evolution of the suborder Araneomorpha // Annales Zoologici Fennici. Vol.4. P.199–468.
- Mcheidze T.S. 1997. [Spiders of Georgia: Systematics, Ecology, Zoogeographic Review]. Tbilisi Univ. 390 pp. [in Georgian].
- Mikhailov K.G. 1997. Catalogue of the spiders of the territories of the former Soviet Union (Arachnida, Aranei). Moscow: Zool. Mus. Moscow State Univ. 416 pp.
- Petrunkevitch A. 1958. Amber spiders in European collections // Trans. Connect. Acad. Arts Sci. Vol.41. P.97–400.
- Platnick N.I. 2004. The World Spider Catalog, Version 4.5, online at 2004 American Museum of Natural History. <http://research.amnh.org/entomology/spiders/catalog/index.html>.
- Thaler K. 1990. *Amaurobius ruffoi* n.sp., eine weitere Reliktart der Südalpen-mit Bemerkungen über die Amaurobiidae der Alpen (Arachnida: Aranei) // Zool. Anz. Bd.225. S.241–252.
- Thaler K. & Knoflach B. 1991. Eine neue *Amaurobius*-Art aus Griechenland (Arachnida: Araneae, Amaurobiidae) // Mitt. schweiz. ent. Ges. Bd.64. S.265–268.
- Thaler K. & Knoflach B. 1993. Two new *Amaurobius* species (Araneae: Amaurobiidae) from Greece // Bull. Br. arachnol.

Table 2. Spination of legs in ♀ of *Zoropsis spinimana* (without apical).  
Таблица 2. Вооружение ног самки *Zoropsis spinimana* (апикальные шипы не указаны).

Leg:	femur	patella	tibia	metatarsus
I	3 or 4d+2 or 3p+4r	0	3p+3r+5-5v+a2v	2p+2r+3-3v
II	3d+3p+4r	0	3p+3r+5-5v+a2v	2p+2r+3-3v
III	3d+4p+4r	1p+1r	1d+2p+2r+2-2v+a2v	6p+4r+2-2v+a1v
IV	3d+2p+1r	1r	1d+2p+3r+2-2v+a1pv	4p+5r+2-1-2v+a1v

- Soc. Vol.9. P.132–136.
- Thaler K. & Knoflach B. 1995. Über Vorkommen und Verbreitung von *Amaurobius*-Arten in Peloponnes und Ägäis (Araneida: Amaurobiidae) // *Revue suisse Zool.* T.102. S.41–60.
- Thaler K. & Knoflach B. 1998a. Two new species and new records of the genus *Amaurobius* (Araneae, Amaurobiidae) from Greece // Seldon P.A. (ed.). *Proceedings of the 17th European Colloquium of Arachnology, Edinburgh 1997.* Edinburgh. P.107–114.
- Thaler K. & Knoflach B. 1998b. *Zoropsis spinimana* (Dufour), eine für Österreich neue Adventivart (Araneae, Zoropsidae) // *Ber. net.-med. Verein Innsbruck.* Bd.85. S.173–185.
- Thaler K. & Knoflach B. 2002. A superspecies in the genus *Amaurobius* on Crete, and additional records from Greece (Araneae: Amaurobiidae) // Toft S. & N. Scharff (eds.). *European Arachnology 2000: Proceedings of the 19th European Colloquium of Arachnology.* Aarhus Univ. Press. P.337–344.
- Tyshchenko V.P. 1971. *Opredelitel' paukov evropejskoj casti SSSR.* Leningrad. 281 pp. [in Russian]
- Wunderlich J. 1995. Zur Kenntnis der west-paläarktischen Arten der Gattung *Zoropsis* Simon 1878 (Arachnida: Araneae: Zoropsidae) // *Beitr. Araneol.* Bd.4. S.723–727.