

# FIRST RECORD OF THREE ORIBATID MITES SPECIES (ACARI: ORIBATIDA) IN THE ROMANIAN FAUNA

IOANA NAE\*, OTILIA IVAN\*\*

*Abstract.* The authors present three new records of oribatid mites species from Piatra Craiului Mountains, Romania. *Ommatocepheus ocellatus*, *Eupelops plicatus*, and *Oribatella longispina* are presented as new records for the Romanian fauna, with notes on their morphology, taxonomic status and distribution.

*Key words:* oribatid mites, *Eupelops plicatus*, *Ommatocepheus ocellatus*, *Oribatella longispina*, Romania, Piatra Craiului.

## 1. INTRODUCTION

Studies regarding oribatid mites fauna from Romania are usually related to their main environment soil litter. Papers dealing with oribatid species from subterranean environments, mainly caves are few (COOREMAN, 1951; DUMITRESCU *et al.*, 1967, 1969; IVAN & VASILIU, 2010; VASILIU & IVAN, 2011). As for the mesovoid shallow substratum (MSS), in Europe very recent studies contain information about oribatid mites (ARILLO & SUBIAS, 1994; PIPAN *et al.*, 2014). The most recent study regarding oribatid mites from Piatra Craiului National Park was published in 2003 by HONCIUC & STĂNESCU in which 124 species were identified, from different types of litter.

The Mesovoid Shallow Substratum was described by JUBERTHIE *et al.* 1980, JUBERTHIE, 1983 as an intermediate habitat between the base of the soil and the bedrock, representing a system of fissures and voids with similar abiotic characteristics with the deep subterranean environment (caves). This environment was studied in Romania and data regarding the invertebrate fauna communities (Araneae, Coleoptera, Isopoda, Diplopoda, Colembolla, Opilionidae) have been published by DECU *et al.*, 2004; NITZU & ILIE, 2002, NITZU *et al.*, 2006, NITZU *et al.*, 2010, NITZU *et al.*, 2014.

In our study we describe the specimens captured in MSS and soil belonging to three species recorded for the first time in the Romanian fauna.

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\* “Emil Racovitza” Institute of Speleology, of the Romanian Academy, Bucharest, Romania  
E-mail: ioana.iser@gmail.com

\*\* Institute of Biological Research, Lascar Catargiu str., 47, 700107 – Iasi, Romania E-mail:  
otilia.ivan@ymail.com

## 2. MATERIALS AND METHODS

The study area was Piatra Craiului Mountains, also a national park, situated in the Meridional Carpathians, Romania. The main feature of the massif is its limestone ridge with altitudes above 2000 m and one of the largest scree surfaces from the Romanian Carpathians, Marele Grohotiș.

The animals were captured using pitfall Barber traps. To sample the invertebrate fauna in the MSS (mesovoid shallow substratum) PVC tubes were placed in drillings buried in the scree. Each tube was perforated in the posterior part and ended with a Barber trap with ethylene glycol as preservative agent. The upper end was covered with a plastic lid to prevent debris fallout.

We sampled two types of environments: edaphic and MSS. For the MSS we used PVC tubes placed in drillings of 0.5 and 0.75 cm in depth. For the soil (edaphic) fauna we used 5 Barber traps placed in a 25 m<sup>2</sup> square areas in several stations. The studied areas were: Cerdacul Stanciului and Marele Grohotiș (nude and mobile scree) Valea Seacă (covered and fixed scree), both sampled for Oribatid fauna in MSS and edaphic environments.

The sample stations

- Cerdacul Stanciului – two drillings (0.5 and 0.75 m) at altitudes of 1637 m and 1672 m.
- Marele Grohotiș – two drillings (0.5 and 0.75 m) at altitudes of 1578 and 1579 m.
- Valea Seacă – one drilling (0.5 m) at an altitude of 1087 m.
- Edaphic sample in subalpine zone – nude scree near Cerdacul Stanciului drillings; altitude 1526 m.
- Edaphic sample in subalpine zone, at the base of the limestone ridge, half the distance between Marele Grohotiș and Cerdacul Stanciului; altitude 1643 m.
- Edaphic sample in fir and beech forest on Padina Lăncii Valley, bellow Marele Grohotiș; altitude 1343 m.
- Edaphic sample in beech forest on Valea Seacă at 1085 m altitude.
- Edaphic sample in beech forest on Padina Lăncii Valley near the river with the same name; altitude 1102 m.

The specimens were preserved in 70% ethylic alcohol, temporarily mounted in glycerin, examined and determined using an Olympus CH2 microscope. 2% hydrogen peroxide was used for discoloration. The same microscope with drawing attachments was used for drawings (20x10 lens), but this time each individual was mounted into a mixture of gelatin Merck and anhydrous glycerol. After drawing, each specimen was washed with 70% ethylic alcohol, and placed in tubes containing that same type of alcohol. All measurements used in drawings are in micrometers. The studied animals are deposited in the collection of “Emil Racovitza” Institute of Speleology, Bucharest.

For the identification we used the identification keys published by VAN DER HAMMEN (1952), BERNINI (1978), PÉREZ IÑIGO (1993), PÉREZ IÑIGO (1997), WEIGMANN (2006).

The systematic ranking of the species is according to SUBIAS (2004), updated in 2015.

### 3. NEW RECORDED SPECIES

Suprafamily EUTEGAEOIDAEA Balogh, 1965  
Family COMPACTOZETIDAE Luxton, 1988

#### *Ommatocephus ocellatus* (Michael, 1882)

*Material examined*: 1 specimen – Piatra Craiului, (edaphic sample) in fir and beech forest on Padina Lăncii Valley, bellow Marele Grohotiș; May, 2008, leg. Dr. Augustin nae.

Sensillus with round shaped head and short stem, almost entirely comprised in the cavity formed by the bothridial walls; lateral lamellae with well developed cuspis; no translamellae; setae *ro* short, curved and smooth; setae *le* thick, smooth, curved, elongated, they may overlap at the end; interlamellar setate rod shaped and acute; acute humeral angles; bothrydia with characteristic shape; notogaster with alveolar ornamentation; 7 pairs of short notogastral setae, trydactil legs. The specimen was little deteriorated during the sampling period, and some characters were difficult to observe (the right lamella is broken, interlamellar setae are broken, the shape of the rostrum is damaged, some notogastral setate and the legs are missing). Also, the ventral side of the animal is badly damaged. Yet the shape of sensillus and bothridia were visible, and also, the body ornamentation (Fig. 1).

The body length is a little smaller than that given by MICHAEL, 1882 (600  $\mu\text{m}$ ), but the other data from the older papers are close to its value: 595  $\mu\text{m}$  (SELLNICK, 1928); 565  $\mu\text{m}$  (WILMANN, 1931); 583  $\mu\text{m}$  (COLLOFF, 1984); 614  $\mu\text{m}$  (PÉREZ IÑIGO, 1997); 545 – 605  $\mu\text{m}$  (WEIGMANN, 2006).

Body measurements:

- Body length: 585  $\mu\text{m}$
- Length of prodorsum: 143  $\mu\text{m}$
- Length of notogaster: 442  $\mu\text{m}$

Distribution. Palearctic species (SUBIAS, 2015). *O. ocellatus* is commonly found in lichens that grow on tree bark (WEIGMANN, 2006). Not recorded for the Romanian fauna up to present.

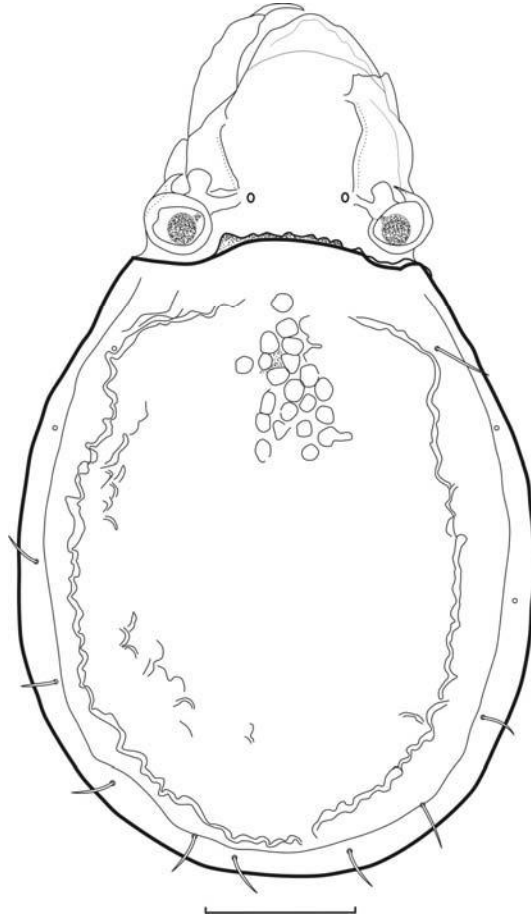


Fig. 1. *Ommatocephues ocellatus* (Michael, 1882) – dorsal view. Scale – 100  $\mu$ m.

Superfamily PHENOPELOPOIDAEA Petrunkevich, 1955  
 Family PHENOPELOPTIDAE Petrunkevich, 1955

***Eupelops plicatus* (Koch, 1835)**

*Material examined:* 6 specimens – Piatra Craiului Mountains: 1 specimen from 0.5 m depth (Cerdacul Stanciului – MSS) 30.07.2008, 5 specimens from edaphic (beech forest, Valea Seacă), 21.05.2008, all leg. Dr. Augustin Nae.

*Material description:* Notogastral setae *lp* and *h3* apart from one another, between them, the A1 *area porosa* is not visible; sensillus smooth, fine and long; notogastral setae long and fine, setae *h1* more or less widened, setae *ps1* and *h2* may be thicker than the others.



Fig. 2. *Eupelops plicatus* (Koch, 1835) – dorsal view. Scale – 100  $\mu\text{m}$ .

The species was described by various authors (WILLMANN, 1931; PÉREZ IÑIGO, 1974, 1976, 1993; VAN DER HAMMEN, 1952, WEIGMANN, 2006) and our specimens are not different from those except for the *areae porosae* which are very little (they were not visible even at 40x10 lenses), the anterior border of notogaster is not three-lobed, setae *hl* is toothed and the sensillus is covered by fine points. The adhering secretions from the notogaster surface, which varies with the age of the animal, may interfere in the correct view of the shapes and length of notogastral hairs and *areae porosae*. In our case, the specimens were also covered with a thick layer of secretions. The main characters of the species were visible after discoloration with 2 % hydroxide peroxide.

Body length for three specimens: 663  $\mu\text{m}$ ; 598  $\mu\text{m}$ ; 650  $\mu\text{m}$

Distribution. *E. plicatus* (Fig. 2) is a Holarctic species (SUBIAS, 2015), quite frequent in forest soils and on trees (WEIGMANN, 2006).

Superfamily ORIBATELLOIDEA Woolley, 1956  
Family ORIBATELLIDAE Jacot, 1925

***Oribatella longispina* Berlese, 1914**

*Material examined:* 306 specimens– Piatra Craiului Mountains area: 234 specimens from 0.5 m drillings (MSS), 43 specimens from 0.75 m drillings (MSS) and 29 specimens from edaphic; March, May, June, July, August, October 2008; April, May, June, July, August, September, October, November 2009, leg. Dr. Augustin Nae.

The species was described by BERLESE in 1914, and, in 1978 BERNINI re-described it based on material from Italy and Tyrol.

The species has trydactil legs, 10 pairs of notogastral setae, lamellar outer teeth longer and stronger than the inner ones, intercuspidal tooth lacking, epimeral hairs *4c* dense, but shorter than the custodial points. Some features from the investigated populations may be underlined. On a large number of specimens the morphology of lamellae is variable; some may have on the outer border some small denticles present either on both lamellae, either only on one of them. Some specimens also have a small trace of interlamellar tooth as shown in BERNINI, 1978. Also, adanal setae *ad1* and *ad2* are located one above the other.

Body measurements (for the specimen in the drawing):

- Body length: 507  $\mu\text{m}$
- Length of prodorsum: 143  $\mu\text{m}$
- Length of notogaster: 364  $\mu\text{m}$

Table 1

Body length values for *Oribatella longispina*

Species	Number of specimens	Station	Minimum body length	Maximum body length	Medium body length
<i>Oribatella longispina</i>	12	Marele Grohotiș, 0.5 m drilling	494 $\mu\text{m}$	559 $\mu\text{m}$	508.91 $\mu\text{m}$
	20	Cerdacul Stanciului, 0.75 m drilling	494 $\mu\text{m}$	546 $\mu\text{m}$	491.4 $\mu\text{m}$

Distribution. *O. longispina* (Fig. 3) is an East European element (SUBIAS, 2015), being recorded for the first time in Romanian fauna. BERNINI, 1978 considers *O. longispina* a mountain species, localized in Central Alps and Tyrol. Our specimens were collected from high altitudes, also.

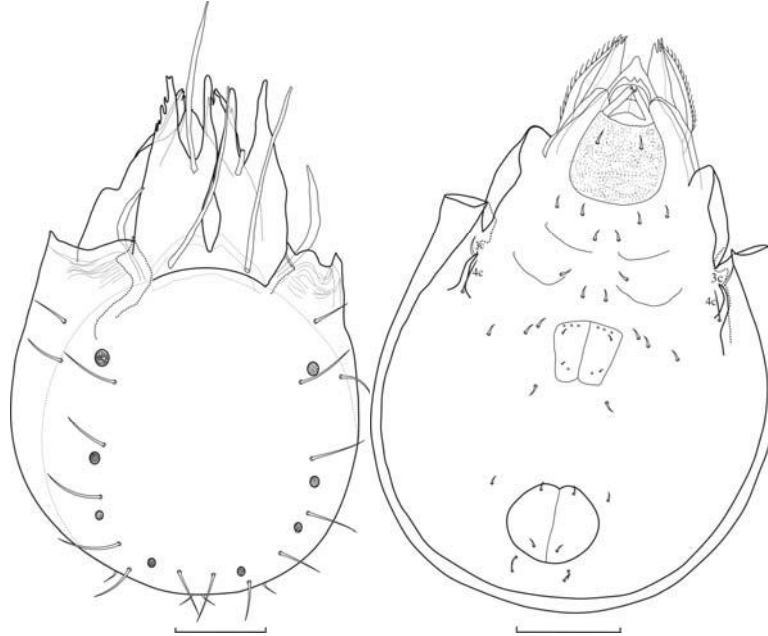


Fig. 3. *Oribatella longispina* Berlese, 1914 – dorsal and ventral view. Scale – 100  $\mu$ m.

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\* "Emil Racovitza" Institute of Speleology,  
of the Romanian Academy, Bucharest, Romania  
E-mail: ioana.iser@gmail.com

\*\*Institute of Biological Research,  
no. 47, Lascar Catargiu str., 700107 – Iasi, Romania  
E-mail: otilia.ivan@ymail.com