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First records of some Oribatid mite species (Acari, Oribatida) from Ukraine

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Abstract: Four species of oribatid mites known mainly from central Europe: *Oppiella hygrophila* (Mahunka, 1987), *Oxyoppia europaea* Mahunka, 1982, *Achipteria* cf. *quadridentata* Willmann, 1951 and *Ceratozetes* cf. *psammophilus* Horak, 2000 are recorded from Ukraine for the first time. The new records of the first three species extend the known areas of their occurrence to the east of Europe (Zakarpattia region).

Key words: Acariformes, Oribatida, mites, first records, Transcarpathian lowland, Ukraine

INTRODUCTION

The contemporary fauna of the oribarid mites of the world consists of more than 11 thousand species (1278 genera and 163 families) (Subias 2018). More than 700 species (ca. 7 % of the world fauna are known from Ukraine) (Yaroshenko 2000). But the fauna is being studied, the number of taxa is increasing (Melamud 2003, 2008, 2009, Hushtan 2015, 2017). Transcarpathia (Zakarpattia) is one of the richest in the taxonomic relation of the regions of Ukraine. No less interesting for taxonomists is the Transcarpathian lowland. The oribatid mites remained poorly studied in this territory (Hushtan 2017). While identifying the material from the samples collected in the Transcarpathian plain, four oribatid species, previously known only from neighboring Central European countries, were found.

MATERIAL AND METHODS

All of these studies are conducted according to generally accepted methods of soil zoology (Krantz & Walter 2009, Potapov & Kuznetsova 2011). Samples were taken using a cenometer (125 cm^3) (Potapov & Kuznetsova 2011). Extraction of mites from soil was carried out using Tullgren funnel metod. Permanent preparations were prepared. Identification of the specimens was carried out using a microscope (Olympus BX 42) and the key of Weigmann & Miko (2006). In the four types of habitats: hygrophilic, hydromeliorated, mesophilic grasslands and floodplain meadow, were found thirty five specimens belonging to four species of the Oribatida which were previously unknown from Ukraine. I follow the classification provided by Weigmann & Miko (2006). Distribution of species was summarized based on the works of Weigmann & Miko (2006) and Subias (2018).

The specimens of all species are deposited in the collection of the State Museum of Natural History, National Academy of Sciences of Ukraine, Lviv.

Below are the places where the samples were collected in Zakarpattia Region (Fig. 1):

(1) Berehove district (1), vicinity of Velyki Berehy, hygrophilic grassland (48.222434º N, 22.781095º E);
(2) Uzhhorod district, vicinity of Chop, hydromeliorated grasslands (48.453431º N, 22.209134º E);

(3) Uzhhorod district, vicinity of Mala Dobron', hydromeliorated grassland (48.460253º N, 22.351246º E);
(4) Berehove district, vicinity of Kvasovo, hygrophilic grassland (48.204063º N, 22.753935º E);
(5) Vicinity of Mukachevo, mesophilic grassland (48.379776º N, 22.668843º E);
(6) Uzhhorod district, vicinity of Mala Dobron', floodplain meadow (48.467879º N, 22.341546º E);
(7) Uzhhorod district, vicinity of Chop, floodplaine meadow (48.454518º N, 22.205337º E).

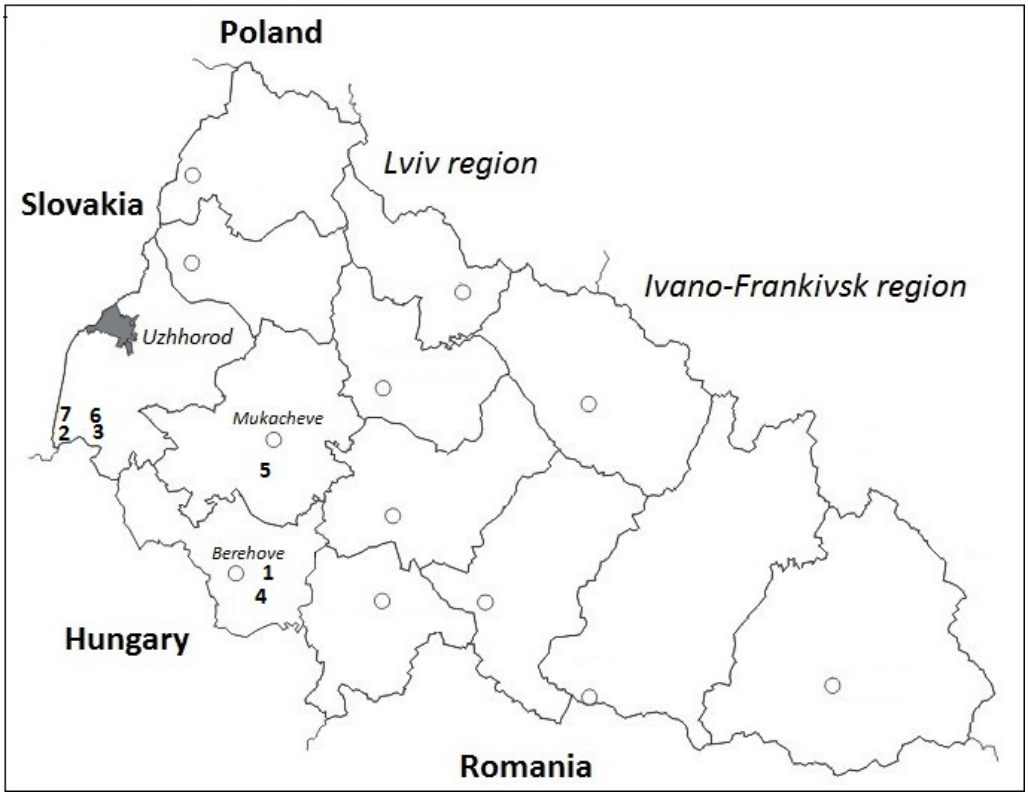

Fig. 1. Sites of sampling in Zakarpattia Region (Ukraine) for Oribatida (explanations in the text).

RESULTS

Family Oppiidae Grandjean, 1951

Oppiella (Rhinoppia) hygrophila (Mahunka, 1987)

Within the genus there are 40 species approximately (Subias 2017). About 15 species are presented to Europe (Subias 2017). For Ukraine, including the Transcarpathian region, the genus *Oppiella* has 5 species (including *O. hygrophila*) (Yaroshenko 2000, Melamud 2009).

Material. 2 adults, Ukraine, Zakarpattia Region, Berehove district, vicinity of Velyki Berehy, 48.222434º N, 22.781095º E, hygrophilic meadow, Borzhava river basin, 26 Oct 2013, leg. H. H. Hushtan (Fig.1, study site 1).

Distribution. Central-eastern Europe (Subias 2018). Ukraine (first record). Currently, the position in Zakarpattia is the easternmost place of the occurrence.

Ecology. Moist soil of meadows, steppes, woody plants and bogs (Weigmann & Miko 2006).

Diagnosis. Body length 315–355 µm. Sensillus spindle-shaped or weakly clavicular, distal with a few short bristles. Lamellar costulae reduced, but at least partially preserved in the proximal part of the bothridia. Notogaster keels is hardly recognizable (in dorsal view) (Weigmann & Miko 2006).

Oxyoppia europaea Mahunka, 1982

About 50 species are presented to world (Subias 2018). For Europe known 1 species (Weigmann & Miko 2006). For the first time genus *Oxyoppia* is recorded in Ukraine.

Material. 2 adults, 1 nph., Ukraine, Zakarpattia Region, Uzhhorod district, vicinity of Chop, 48.453431º N, 22.209134º E, hydromeliorated grassland, Latorica river basin, 23 Jul 2013, leg. H. H. Hushtan (Fig.1, study site 2).

7 adults, Ukraine, Zakarpattia Region, Uzhhorod district, vicinity of Chop, 48.453431º N, 22.209134º E, hydromeliorated grassland, Latorica river basin, 10 Feb 2014, leg. H. H. Hushtan (Fig.1, study site 2).

8 adults, Ukraine, Zakarpattia Region, Uzhhorod district, vicinity of Mala Dobron', 48.460253º N, 22.351246º E, hydromeliorated grassland, Latorica river basin, 12 Oct 2013, leg. H. H. Hushtan (Fig.1, study site 3).

7 adults, Ukraine, Zakarpattia Region, Uzhhorod district, vicinity of Mala Dobron', 48.460253º N, 22.351246º E, hydromeliorated grassland, Latorica river basin, 10 Feb 2014 , leg. H. H. Hushtan (Fig.1, number of study site 3).

5 adults, Ukraine, Zakarpattia Region, Uzhhorod district, vicinity of Mala Dobron', 48.467879º N, 22.341546º E, floodplain meadow, Latorica river basin, 10 Feb 2014, leg. H. H. Hushtan (Fig.1, study site 6).

Distribution. Central and southern Europe (Subias, 2018). First record in Ukraine. Presently, Zakarpattia is the easternmost region of its known occurrence.

Ecology. Forests (Mahunka 1982), hydromeliorated and floodplain grasslands.

Diagnosis. According to Mahhunka (1982): “Length 284–310 µm. Rostrum narrowed, near nasiform. Rostral setae arising on the dorsal surface of prodorsum, but far from each other. Short costulae present, lamellar setae originating on anterior end, comparatively short. Relative length of prodorsal setae: interlamellar < exobotridial < lamellar < rostral. Interbotridial region with two pairs of large foveolae. Sensilus fusiform, with asymmetric head, unilaterally barbed. Apodemes well developed, sejugal and apodemes IV wide, latter ones around the genital opening”.

Family Achipteriidae Thor, 1929

Achipteria cf. *quadridentata* Willmann, 1951

Within the genus there are 30 species approximately (Subias 2018). About 13 species are presented to Europe (Subias 2018). For Ukraine the genus *Achipteria* has 6 species, including *A.* cf. *quadridentata* (Yaroshenko 2000). Five species are presented to Zakarpattia Region, including *A.* cf. *quadridentata* (Melamud 2009).

Material. 1 adult, Ukraine, Zakarpattia Region, Uzhhorod district, vicinity of Chop, 48.454518º N, 22.205337º E, floodplaine meadow, Latorica river basin, 23 Jul 2013, leg. H. H. Hushtan (Fig.1, study site 7).

1 adult, Ukraine, Zakarpattia Region, Beregove district, vicinity of Kvasovo, 48.204063º N, 22.753935º E, hygrophilic meadow, Borzhava river basin, 3 Aug 2013, leg. H. H. Hushtan (Fig.1, study site 4).

Distribution. Central and western Europe (Subias 2018). The positions in Zakarpattia are currently the easternmost.

Ecology. In meadow bogs and wet forests (Weigmann & Miko 2006).

Diagnosis. Body length 645–690 µm. Tutoria with wide free part, ending in 3–4 tips. Sensillus slim- clubform, directed forward. Rostrum with whole margin (Weigmann & Miko 2006).

Family Ceratozetidae Jacot, 1925

Ceratozetes cf. *psammophilus* Horak, 2000

Within the genus there are 49 species (Subias 2018). About 10 species are presented to Europe (Subias, 2018). Six species are presented to Zakarpattia Region (including *C.* cf. *psammophilus*) (Melamud 2009).

Material. 1 adult, Ukraine, Zakarpattia Region, vicinity of Mukachevo, 48.379776º N, 22.668843º E, mesophilic grassland, Latorica river basin, 23 Jul 2013, leg. H. H. Hushtan (Fig.1, study site 5).

Distribution. Europe (Subias 2018).

Ecology. Pine forests, ruderal grasslands (Weigmann & Miko 2006).

Diagnosis. Body length 355–415 µm. Notogaster bristles short, front *ng* (c_2, c_3) 3–5 µm long. Sensillus at the distal part with short bristles quite close to each other. Rostral incisura round or in the middle with small tip (variable) (Weigmann & Miko 2006).

Discussion

Oribatid species registered for the first time in Ukraine were found in floodplain (*A.* cf. *quadridentata*, *O. europaea*), and in hydromeliorated (*O. europaea*, *A.* cf. *quadridentata*), hygrophilic (*O. hygrophila*, *A.* cf. *quadridentata*) and mesophilic (*C.* cf. *psammophilus*) grasslands of the Transcarpathian lowland. These species have been found in Ukraine in similar habitats in which they occur in central Europe (Weigmann & Miko 2006). Only *O. europaea* was noted in central Europe also in arable field with alluvial soils and in forests (Weigmann & Miko 2006, Ľuptáčik et al. 2012). Finding of the species on the investigated area was expected as they were registered at the neighboring territories (in particular the central European countries). It is also likely that these species will be found in other regions of Ukraine in appropriate biotopes.

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STRESZCZENIE

[**Pierwsze stwierdzenia kilku gatunków roztoczy (Acari, Oribatida) na Ukrainie**]

Cztery gatunki roztoczy (*Oppiella hygrophila*, *Oxyoppia europaea*, *Achipteria* cf. *quadridentata*, *Ceratozetes* cf. *psammophilus*) zostały wykazane jako nowe dla fauny Ukrainy. Wykrycie tych gatunków w Ukrainie na Zakarpaciu było spodziewane, jako że były wykazane z sąsiednich terytoriów (szczególnie w krajach centralnej Europy). Jest również prawdopodobne, że w odpowiednio wilgotnych i średnio wilgotnych biotopach będzie je można znaleźć także w innych regionach Ukrainy.

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