

An annotated checklist of Tetranychidae (Acari: Trombidiformes) of the Transcarpathian region (Ukraine)

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abstract

The first checklist of spider mites (Tetranychidae) of Transcarpathia, Ukraine is compiled based on the revision of collection materials stored in I. I. Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine. The mite collections of I. Akimov, A. Putrashik, and of the authors were studied, thus covering a 45 year-long period of research of spider mites in the study region. The checklist includes 28 species of 10 genera of tetranychid mites, which is about 40% of the species diversity of spider mites in Ukraine. For each species, information is provided on the number of individuals (males, females, nymphs, and larvae), host plants, record localities (for own collections — with geographic coordinates), as well as data on distribution in other regions of Ukraine. The largest part of the collection includes the findings of common species, such as *Amphitettranychus viennensis*, *Bryobia rubrioculus*, and *Panonychus ulmi*. The genus *Eotetranychus* is represented by the largest number of species (8). Two species (*Eotetranychus quercicola* Auger & Migeon, 2014 and *Schizotetranychus beckeri* Wainstein, 1958) are recorded for the first time for the fauna of Ukraine. In addition, 21 species of spider mites are noted for the first time for the territory of Transcarpathia. Three of the 11 species previously indicated for Transcarpathia, namely *Oligonychus brevipilosus* Zacher, 1932, *Oligonychus lagodechii* Liv. et Mitr., 1969, and *Schizotetranychus jachontovi* Reck, 1953 are not represented among the collection materials. In addition to the two taxa noted here for the first time in Ukraine, five species of tetranychids (*Bryobia praetiosa*, *Bryobia lagodechiana*, *Eurytetranychus furcisetus*, *Schizotetranychus spireaefolia*, and *Tetranychus frater*), which were previously discovered in other regions of Ukraine, should be included in the electronic database of Spider Mites Web as those recorded in Ukraine. Eight host plant species are indicated for the first time for six spider mite species (*Eupatorium cannabinum* for *B. praetiosa*, *Armoracia rusticana*, *Betonica officinalis*, and *Melilotus officinalis* for *B. lagodechiana*, *Picea abies* for *E. furcisetus*, *Ribes nigrum* for *A. viennensis*, *Quercus robur* for *E. quercicola*, and *Salix glauca* for *S. shizopus*).

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Анотований контрольний список кліщів родини Tetranychidae (Acari: Trombidiformes) Закарпаття (Україна)

Ольга Жовнерчук, Андрія Дудинська

Резюме. На основі проведеної ревізії колекційних матеріалів павутинних кліщів (Tetranychidae) Закарпаття, яка зберігається в Інституті зоології ім. І.І. Шмальгаузена НАН України, складено перший анотований список тетраніхід даного регіону. Опрацьовано колекції кліщів І. Акімова, А. Путрашик та власні збори авторів цієї публікації, таким чином охоплено 45-річний період дослідження тетраніхід на даній території. Складений анотований список налічує 28 видів з 10 родів тетраніхових кліщів, що становить близько 40% від видового різноманіття тетраніхід України. Для кожного виду надано інформацію про кількість особин (самці, самиці, німфи, личинки), кормові рослини, місця знахідок (для власних зборів з географічними координатами), а також наведено дані щодо поширення у інших регіонах України. У колекції представлено найбільше знахідок широкопоширених видів, таких як *Amphitetranychus viennensis*, *Bryobia*, *rubrioculus* і *Panonychus ulmi*. Найбільшою кількістю видів (8) представлений рід *Eotetranychus*. Два види (*Eotetranychus quercicola* Auger & Migeon, 2014 і *Schizotetranychus beckeri* Wainstein, 1958) вперше відмічені у фауні України. 21 вид кліщів вперше зареєстрований на території Закарпаття. Три з одинадцяти видів, які раніше вказувалися для Закарпаття, а саме *Oligonychus brevipilosus* Zacher, 1932, *Oligonychus lagodechii* Liv. et Mitr., 1969 та *Schizotetranychus jachontovi* Reck, 1953 у колекційних матеріалах не виявлено. Крім двох нових для фауни України видів кліщів, вказаних у цьому дослідженні, ще п'ять видів тетраніхід (*B. praetiosa*, *B. lagodechiana*, *E. furcisetus*, *S. spireaefolia*, *T. frater*), знахідки яких раніше були виявлені у інших регіонах України можуть бути включеними у електронну базу даних Spider Mites Web як такі, що зареєстровані в Україні. Крім того, вісім видів кормових рослин вказані вперше для шести видів кліщів (*Eupatorium cannabinum* для *B. praetiosa*, *Armoracia rusticana*, *Betonica officinalis*, *Melilotus officinalis* для *B. lagodechiana*, *Picea abies* для *E. furcisetus*, *Ribes nigrum* для *A. viennensis*, *Quercus robur* для *E. quercicola* і *Salix glauca* для *S. shizopus*).

Ключові слова: павутинні кліщі, список видів, нові знахідки, кормові рослини, поширення.

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Introduction

Transcarpathia, or Zakarpattia Oblast, is quite specific in comparison with other regions of Ukraine [Gerenchuk 1981]. Features of the relief and climate, hydrological regime, a wide variety of natural biotopes create unique and promising conditions for investigating the fauna of this region. The Transcarpathian vegetation is also quite diverse and includes almost half of the entire floristic richness of Ukraine.

However, only a few studies were conducted of the economically important plant-inhabiting mites of the Tetranychidae family in this region. Until recently, there was only one publication dedicated to the diversity of spider mites of Transcarpathia, in which 11 species of tetranychids were noted [Putrashyk 2011]. The collected material was, however, only partly identified and published in that work. A few years ago, the entire collection of A. Putrashyk was kindly transferred to the scientific collections of I. I. Schmalhausen Institute of Zoology. As a result of the revision of the materials, we have discovered some errors in the identification of specimens, and, accordingly, in the publication of Putrashyk. Three of the eleven species listed in the cited publication [Putrashyk 2011], namely *Oligonychus brevipilosus* Zacher, 1932, *Oligonychus lagodechii* Liv. et Mitr., 1969, and *Schizotetranychus jachontovi* Reck, 1953 have not been found in the collection. Also, a number of previously unpublished specimens of tetranychid mites from Transcarpathia collected by I. A. Akimov [1976] were identified in the collection materials housed in the Institute. Finally, own mite collections of the authors gathered in 2016–2017 and 2021 are also included in the present study.

Here we present the first checklist of Tetranychidae from the Transcarpathian region of Ukraine.

Material and Methods

The checklist is based on results of the revision of collection materials gathered by Ihor Akimov (1976), Alla Putrashyk (2008–2012), and Olha Zhovnerchuk and Andreia Dudynska (2016–2017 and 2021). Record localities and host plants, the number of specimens of each species are presented. Samples collected in 2016 and later are provided with coordinates and height above sea level; for older samples these data are not available. Data on the species distribution in other regions of Ukraine are also given.

Genera and species are given in alphabetic order. The names of host plants are given according to GBIF (Global Biodiversity Information Facility). All specimens are housed in the scientific collections of I. I. Schmalhausen Institute of Zoology of National Academy of Sciences of Ukraine.



Fig. 1. Typical habitats and localities of the Transcarpathian region investigated by the authors: (a) Khudlovo, Uzhhorod Raion, (b) — by to the biostation of Uzhhorod University, Kolochava, Khust Raion, (c) — the road to Strymba Mountain, Kolochava, Khust Raion, (d) — Kuzii-Trybushany Massif, Carpathian Biosphere Reserve, Rakhiv Raion. Photo by Olha Zhovnerchuk (2016–2017).

Рис. 1. Типові біотопи та місцезнаходження Закарпаття, у яких автори проводили дослідження: (a) Ужгородський район, Худлево, (b) — Хустський район, Колочава, поблизу біобазис УжНУ, (c) — Хустський район, Колочава, дорога на г. Стримба, (d) — Рахівський район, Карпатський біосферний заповідник, Кузій-Трибушанський масив. Фото О. Жовнерчук (2016–2017).

Annotated checklist of species

Family Tetranychidae Donnadieu, 1875

Subfamily Bryobiinae Berlese, 1913

Tribe Bryobiini Reck, 1952

The tribe includes 11 genera of the world fauna [Migeon & Dorkeld 2006–2022], although only one of those is represented in the study region.

Genus *Bryobia* Koch, 1836

There are 147 species in this genus. Fifteen of them are recorded in Ukraine [Migeon & Dorkeld 2006–2022], mostly in southern Crimea [Mitrofanov *et al.* 1987]. Four species of the genus are found in Transcarpathia; of those, two are rather common in Ukraine yet absent in the database Spider Mites Web as present in Ukraine. For two species of the genus, new host plants are noted.

Bryobia praetiosa Koch, 1836

Specimens examined: 1♀, *Fragaria vesca*, Serednie, Uzhhorod Raion, 30.04.2012, A. Putrashyk; 2♂♂, *Eupatorium cannabinum*, Kvasy, Chornohora Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°11'31" N, 24°17'55" E, 586 m, 13.07.2017, O. Zhovnerchuk.

In Ukraine, this species has been previously indicated in the steppe [Akimov 1965] and in Crimea [Mitrofanov *et al.* 1987]. However, the findings of the species in Ukraine were not previously included in the Tetranychidae database [Migeon & Dorkeld 2006–2022]. *Eupatorium cannabinum* is the new recorded host plant for this mite species.

Bryobia lagodechiana Reck, 1953

Specimens examined: 1♂, *Betonica officinalis*, Turia Polyana, Uzhhorod Raion, 04.09.1976, I. Akimov; 1♀, *Melilotus officinalis*, Kvasy, Rakhiv Raion, 48°11'29" N, 24°17'52" E, 590 m, 13.07.2017, O. Zhovnerchuk; 1♂, 1DN, *Armoracia rusticana*, Uzhhorod, 48°37'40" N, 22°17'51" E, 139 m, 28.07.2021, A. Dudynska; 1♂, 1DN, Poaceae, Uzhhorod, 48°37'40" N, 22°17'51" E, 139 m, 28.07.2021, A. Dudynska.

This species is also found in the steppe [Akimov & Zhovnerchuk 2016], and forest steppe zones [Zhovnerchuk 2014b] and in Crimea [Mitrofanov *et al.* 1987] of Ukraine. Despite its sufficiently wide distribution in Ukraine, the findings of this species in Ukraine have not been previously presented in the Tetranychidae database [Migeon & Dorkeld 2006–2022]. *Armoracia rusticana*, *Betonica officinalis*, and *Melilotus officinalis* are the new recorded host plants for *B. lagodechiana*.

Bryobia rubrioculus (Scheuten, 1857)

Specimens examined: 5♂♂, *Malus* sp., Huklyvyi, Mukachevo Raion, 03.09.1976, I. Akimov; 6♂♂, *Malus* sp., Volovets, Mukachevo Raion, 03.09.1976, I. Akimov; 5♀♀, 3DN, 2PN, *Cerasus* sp., Chynadiiovo, Mukachevo Raion, 05.09.1976, I. Akimov; 4♀♀, *Malus* sp., Keretsky, Khust Raion, 05.09.1976, I. Akimov; 2♀♀, 1DN, *Malus* sp., Uzhhorod, 27.05.2008, A. Putrashyk; 1♂, 5L, *Sorbus aucuparia*, Uzhhorod, 21.09.2008, A. Putrashyk; 4♀♀, *Malus* sp., Dorobratovo, Mukachevo Raion, 02.05.2009, A. Putrashyk; 10♀♀, 1DN, *Prunus* sp., Mukachevo, 28.06.2009, A. Putrashyk; 3♀♀, 2DN, *Malus* sp., Bereznyky, Khust Raion, 18.06.2010, A. Putrashyk; 3♀♀, 1L, 6PN, 4DN, *Malus* sp., Kamianytsia, Uzhhorod Raion, 14.07.2010, A. Putrashyk; 4♀♀, *Malus* sp., Bilovartsi, Tiachiv Raion, 30.07.2010, A. Putrashyk; 13♀♀, 1DN, *Malus* sp., Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 2♀♀, *Malus* sp., Petrivka, Uzhhorod Raion, 5.05.2011, A. Putrashyk; 3♀♀, 7DN, 2PN, 1L, *Malus* sp., Huklyvyi, Mukachevo Raion, 27.06.2011, A. Putrashyk; 2♂♂, 3DN, 2PN, *Malus* sp., Liuta, Uzhhorod Raion, 29.06.2011, A. Putrashyk; 5♀♀, 1PN, *Malus* sp., Liuta, Uzhhorod Raion, 24.06.2012, A. Putrashyk; 3♂♂, 1DN, 2PN, 3L, *Malus* sp., Yasinia, Rakhiv Raion, 26.07.2011, A. Putrashyk; 9♀♀, *Sorbus aucuparia*, Uzhhorod, 22.10.2011, A. Putrashyk; 5♀♀, 5DN, 5PN, 2L, *Malus* sp., Batiavo, Berehove Raion, 28.09.2011, A. Putrashyk; 1♂, *Prunus* sp., Uzhhorod, 29.04.2011, A. Putrashyk; 4♀♀, 6PN, 4L, *Prunus* sp., Bozdosh Park, Uzhhorod, 26.05.2012, A. Putrashyk; 3♀♀, 4DN, 5PN, 5L, *Malus* sp., Petrivka, Uzhhorod Raion, 04.06.2012, A. Putrashyk; 1♀, 1PN, *Malus* sp., Svoboda, Berehove Raion, 21.06.2012, A. Putrashyk; 10♀♀, *Malus* sp., Turia Pasika, Uzhhorod Raion, 24.06.2012, A. Putrashyk; 2♂♂, 3DN, 9PN, 13L, *Pyrus* sp., Velyki Luchki, Mukachevo Raion, 25.09.2012, A. Putrashyk; 7♀♀, *Prunus* sp., Uzhhorod, 48°38'17" N, 22°17'06" E, 153 m, 07.06.2016, O. Zhovnerchuk; 2♀♀, *Malus* sp., Uzhhorod, 48°38'17" N, 22°17'06" E, 153 m, 07.06.2016, O. Zhovnerchuk; 6♀♀, *Prunus avium*, Uzhhorod, 48°38'17" N, 22°17'06" E, 153 m, 07.06.2016, O. Zhovnerchuk; 8♀♀, *Prunus* sp., Uzhhorod, 07.06.2016, O. Zhovnerchuk; 1♀, *Chaenomeles japonica*, Botanical Garden of UzhNU, Uzhhorod, 48°37'11" N, 22°18'17" E, 116 m, 07.07.2016, O. Zhovnerchuk; 1♀, *Prunus avium*, Bozdosh Park, Uzhhorod, 48°37'16" N, 22°15'55" E, 122 m, 07.10.2016, O. Zhovnerchuk; 5♀♀, *Prunus* sp., Bozdosh Park, Uzhhorod, 48°37'16" N, 22°15'55" E, 122 m, 07.10.2016, O. Zhovnerchuk.

The species is widely distributed in the world [Migeon & Dorkeld 2006–2022] and in Ukraine [Vojtenko 1969; Mitrofanov *et al.* 1987; Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014*b*; Akimov & Zhovnerchuk 2016].

***Bryobia ulmophila* Reck, 1947**

Specimens examined: 5♀♀, *Ulmus* sp., road to Nevytske Castle, Nevytske, Uzhhorod Raion, 48°40'50" N, 22°24'54" E, 262 m, 07.08.2016, O. Zhovnerchuk.

Previously, the species was recorded in Crimea [Mitrofanov *et al.* 1987], the steppe [Akimov & Zhovnerchuk 2016], forest steppe [Zhovnerchuk 2014*b*], and in the Polissia [Vojtenko 1969] zones of Ukraine.

Tribe Hystrichonychini Pritchard & Baker, 1955

The world fauna of spider mites includes 22 genera of that tribe [Migeon & Dorkeld 2006–2022]. In present study, the tribe is represented by one genus and a singular species.

Genus *Tetranychopsis* Canestrini, 1889

This genus of the tribe Hystrichonychini is represented only by 10 species in the database Spider Mites Web. Three of those species are noted for the fauna of Ukraine [Migeon & Dorkeld 2006–2022]. Only one species of the genus is found in the Transcarpathian region.

***Tetranychopsis horridus* (Canestrini et Fanzago, 1875)**

Specimens examined: 3♀♀, *Corylus avellana*, Dovhe, Khust Raion, 04.09.1976, I. Akimov; 1♀, *Corylus avellana*, Keretsky, Khust Raion, 05.09.1976, I. Akimov; 6♀♀, 2DN, 7PN, *Corylus avellana*, garden, Bilovartsi, Tiachiv Raion, 03.08.2008, A. Putrashyk; 1♀, *Corylus avellana*, forest, Bilovartsi, Tiachiv Raion, 03.08.2008, A. Putrashyk; 1♀, 7L, *Corylus avellana*, Chynadiiovo, Mukachevo Raion, 28.06.2009, A. Putrashyk; 13♀♀, *Corylus avellana*, Berezyinka forestry district, Mukachevo Raion, 02.05.2010, A. Putrashyk; 5♀♀, *Corylus avellana*, street, Dovhe, Khust Raion, 18.06.2010, A. Putrashyk; 5♀♀, 1DN, 2L, *Corylus avellana*, Kamianytsia, Uzhhorod Raion, 14.07.2010, A. Putrashyk; 5♀♀, 5DN, 4PN, 2L, *Corylus avellana*, Zabrid, Uzhhorod Raion, 29.08.2010, A. Putrashyk; 16♀♀, *Corylus avellana*, Petrivka, Uzhhorod Raion, 15.05.2011, A. Putrashyk; 11♀♀, 5DN, 13PN, 2L, *Corylus avellana*, Yasinia, Rakhiv Raion, 26.07.2011, A. Putrashyk; 6♀♀, 4DN, 3PN, *Corylus avellana*, Strypa, Uzhhorod Raion, 23.07.2012, A. Putrashyk; 6♀♀, 4L, *Corylus avellana*, Turia Pasika, Uzhhorod Raion, 24.06.2012, A. Putrashyk; 3♀♀, *Corylus maxima*, Petrivka, Uzhhorod Raion, 29.05.2011, A. Putrashyk; 3♀♀, 3DN, 1PN, *Corylus maxima*, Petrivka, Uzhhorod Raion, 11.06.2010, A. Putrashyk; 7♀♀, *Corylus avellana*, Botanical Garden of UzhNU, Uzhhorod, 48°37'11" N, 22°18'17" E, 116 m, 07.07.2016, O. Zhovnerchuk; 7♀♀, *Corylus avellana*, road to Nevytske Castle, Nevytske, Uzhhorod Raion, 48°40'50" N, 22°24'54" E, 262 m, 08.07.2016, O. Zhovnerchuk; 2♀♀, *Corylus avellana*, Botanical Garden of UzhNU, Uzhhorod, 48°37'11" N, 22°18'17" E, 116 m, 27.09.2021, O. Zhovnerchuk; 3♀♀, *Acer* sp., road to Nevytske Castle, Nevytske, Uzhhorod Raion, 48°40'50" N, 22°24'54" E, 262 m, 07.08.2016, O. Zhovnerchuk.

This species is widespread in Ukraine [Vojtenko 1969; Mitrofanov *et al.* 1987; Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014*b*; Akimov & Zhovnerchuk 2016].

Subfamily Tetranychinae Berlese, 1913

Tribe Eurytetranychini, Reck, 1950

The tribe includes 12 genera in total, one of which is noted in Ukraine [Migeon & Dorkeld 2006–2022].

Genus *Eurytetranychus* Oudemans, 1931

There are 19 species of this genus in the world fauna. One species has been recorded in Ukraine [Migeon & Dorkeld 2006–2022]. We noted two species of the genus in the Transcarpathian region, and a new host plant for one of them.

***Eurytetranychus buxi* (Garman, 1935)**

Specimens examined: 15♀♀, 2♂♂, 1PN, *Buxus sempervirens*, Uzhhorod, 09.05.2012, A. Putrashyk; 10♀♀, 2♂♂, *Buxus sempervirens*, Botanical Garden of UzhNU, Uzhhorod, 48°37'11" N, 22°18'17" E, 116 m, 07.07.2016, O. Zhovnerchuk; 10♀♀, 1♂, *Buxus sempervirens*, Uzhhorod, 48°38'17" N, 22°17'06" E, 153 m, 07.10.2016, O. Zhovnerchuk.

The species often damages *Buxus* [Akimov 1965; Mitrofanov *et al.* 1987; Zhovnerchuk 2014*b*; Akimov & Zhovnerchuk 2016].

***Eurytetranychus furcisetus* Wainstein, 1956**

Specimens examined: 2 ♀♀, *Picea* sp., Kolochava, Khust Raion, 48°24'43" N, 23°40'58" E, 552 m, 03.07.2016, O. Zhovnerchuk; 18 ♀♀, *Picea* sp., Kolochava, Khust Raion, 48°24'51" N, 23°40'53" E, 567 m, 04.07.2016, O. Zhovnerchuk; 3 ♀♀, *Picea* sp., road to Nevyske Castle, Nevyske, Uzhhorod Raion, 48°40'50" N, 22°24'48" E, 248 m, 07.08.2016, O. Zhovnerchuk; 5 ♀♀, *Picea* sp., Velykyi Bereznyi, Uzhhorod Raion, 48°54'35" N, 22°27'28" E, 219 m, 07.08.2016, O. Zhovnerchuk; 1 ♀, *Picea abies*, Kuzii–Trybushany Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°01'39" N, 24°09'40" E, 605 m, 16.07.2017, O. Zhovnerchuk; 3 ♀♀, *Picea pungens*, Kuzii–Trybushany Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°01'31" N, 24°09'59" E, 435 m, 16.07.2017, O. Zhovnerchuk; 1 ♀, *Picea abies*, Kuzii–Trybushany Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 47°56'07" N, 24°06'02" E, 346 m, 18.07.2017, O. Zhovnerchuk; 11 ♀♀, 1DN, *Picea* sp., Synevyr National Nature Park, Synevyrska Poliana, Khust Raion, 48°36'03" N, 23°41'52" E, 843 m, 13.08.2021, A. Dudynska.

In Ukraine, this species was previously found in the forest steppe zone on *Picea pungens* [Zhovnerchuk 2014a, 2014b; Zhovnerchuk *et al.* 2021]. The findings of the species in Ukraine were have not been previously presented in the Tetranychidae database [Migeon & Dorkeld 2006–2022]. *Picea abies* is a newly recorded host plant for this mite.

Tribe Tetranychini, Reck, 1950

This is a largest tribe including 29 genera [Migeon & Dorkeld, 2006–2022]. Seven genera are represented in the studied region.

Genus *Amphitetranychus* Oudemans, 1931

There are three species in this genus, two of which occur in Ukraine [Migeon & Dorkeld 2006–2022]. Only one species is noted in the Transcarpathian region.

***Amphitetranychus viennensis* (Zacher, 1920)**

Specimens examined: 19 ♀♀, 10 ♂♂, *Prunus domestica*, Poroshkovo, Uzhhorod Raion, 02.09.1976, I. Akimov; 14 ♀♀, 10 ♂♂, *Prunus spinosa*, Huklyvyi, Mukachevo Raion, 03.09.1976, I. Akimov; 5 ♀♀, 1 ♂, *Prunus cerasus*, Chynadiiovo, Mukachevo Raion, 05.09.1976, I. Akimov; 13 ♀♀, 5 ♂♂, 1DN, *Malus* sp., Keretsky, Khust Raion, 05.09.1976, I. Akimov; 1 ♀, *Prunus cerasus*, Petrivka, Uzhhorod Raion, 16.06.2008, A. Putrashyk; 4 ♀♀, *Malus* sp., Petrivka, Uzhhorod Raion, 16.06.2008, A. Putrashyk; 2 ♀♀, *Malus* sp., Bilovartsi, Tiachiv Raion, 03.08.2008, A. Putrashyk; 14 ♀♀, 10 ♂♂, *Malus* sp., Uzhhorod, 16.06.2009, A. Putrashyk; 10 ♀♀, *Malus* sp., Uzhhorod, 16.06.2009, A. Putrashyk; 10 ♀♀, 14 ♂, *Malus* sp., Uzhhorod, 16.08.2009, A. Putrashyk; 4 ♀♀, 1 ♂, 1DN, 1L, *Malus* sp., Bilovartsi, Tiachiv Raion, 16.08.2009, A. Putrashyk; 3 ♀♀, 1 ♂, 2DN, 2PN, 2L, *Malus* sp., Vylók, Berehove Raion, 30.05.2010, A. Putrashyk; 1 ♀, 1 ♂, *Sorbus aucuparia*, Petrivka, Uzhhorod Raion, 11.06.2010, A. Putrashyk; 3 ♀♀, 2DN, 3PN, *Malus* sp., Bilovartsi, Tiachiv Raion, 30.07.2010, A. Putrashyk; 2 ♀♀, *Malus* sp., Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 4 ♀♀, 2 ♂♂, *Prunus avium*, Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 4 ♀♀, 2 ♂♂, *Prunus avium*, Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 7 ♀♀, 1 ♂, 4DN, 5PN, *Malus* sp., Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 3DN, 5PN, 8L, *Malus* sp., Petrivka, Uzhhorod Raion, 09.05.2011, A. Putrashyk; 1 ♀, *Pyrus communis*, Petrivka, Uzhhorod Raion, 29.05.2011, A. Putrashyk; 2 ♀♀, 1 ♂, 4N, 4L, *Sorbus domestica* L., Petrivka, Uzhhorod Raion, 14.06.2011, A. Putrashyk; 4 ♀♀, *Pyrus communis*, Petrivka, Uzhhorod Raion, 14.06.2011, A. Putrashyk; 1 ♀, 4PN, 2L, *Malus* sp., Liuta, Uzhhorod Raion, 29.06.2011, A. Putrashyk; 9 ♀♀, *Malus* sp., Drotynsi, Berehove Raion, 10.07.2011, A. Putrashyk; 12 ♀♀, 4 ♂♂, 12DN, 1L, *Prunus cerasifera*, Drotynsi, Berehove Raion, 10.07.2011, A. Putrashyk; 5 ♀♀, 2PN, 2L, *Malus* sp., Yasinia, Rakhiv Raion, 26.07.2011, A. Putrashyk; 8 ♀♀, 1 ♂, 5DN, 4PN, 5L, *Malus* sp., Batovo, Berehove Raion, 28.09.2011, A. Putrashyk; 8 ♀♀, 8 ♂♂, 1L, *Sorbus aucuparia*, Uzhhorod, 22.10.2011, A. Putrashyk; 1 ♀, *Malus* sp., Petrivka, Uzhhorod Raion, 23.10.2011, A. Putrashyk; 10 ♀♀, 2 ♂♂, 1DN, *Prunus domestica*, Bozdosh Park, Uzhhorod, 26.05.2012, A. Putrashyk; 8 ♀♀, 4DN, *Prunus domestica*, Bozdosh Park, Uzhhorod, 26.05.2012, A. Putrashyk; 8 ♀♀, 5 ♂♂, 5DN, *Rosa micrantha*, Bozdosh Park, Uzhhorod, 26.05.2012, A. Putrashyk; 9 ♀♀, 1 ♂, 4DN, 1PN, *Malus* sp., Turia Pasika, Uzhhorod Raion, 24.06.2012, A. Putrashyk; 8 ♀♀, *Malus* sp., Svoboda, Berehove Raion, 21.06.2012, A. Putrashyk; 6 ♀♀, 1 ♂, 7DN, 5PN, *Malus* sp., Strypa, Uzhhorod Raion, 23.07.2012, A. Putrashyk; 1 ♀, *Malus sylvestris*, Kolochava, Khust Raion, 48°24'51" N, 23°40'53" E, 568 m, 03.07.2016, O. Zhovnerchuk; 1 ♀, *Pyrus communis*, Velykyi Bereznyi, Uzhhorod Raion, 48°54'35" N, 22°27'28" E, 217 m, 07.08.2016, O. Zhovnerchuk; 1 ♀, *Prunus avium*, Kvasy, Chornohora Massif, Carpathian Biosphere Reserve, Rakhiv Raion (48°11'28" N, 24°18'00" E), 585 m, 13.07.2017, O. Zhovnerchuk; 4 ♀♀, *Ribes nigrum*, Mali Heivtsi, Uzhhorod Raion, 48°29'57" N, 22°18'13" E, 104 m, 17.07.2021, A. Dudynska; 2 ♀♀, *Prunus domestica*, Mali Heivtsi, Uzhhorod Raion, 48°29'57" N, 22°18'13" E, 104 m, 17.07.2021, A. Dudynska.

The species is widely distributed in the world [Migeon & Dorkeld 2006–2022] and in Ukraine [Akimov 1965; Vojtenko 1969; Mitrofanov *et al.* 1987; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016].

Ribes nigrum is a new recorded host plant for this species of mites.

Genus *Eotetranychus* Oudemans, 1931

The collection materials from the Transcarpathian region include the highest diversity of *Eotetranychus*. Currently, there are 200 species of this genus in the world fauna [Migeon & Dorkeld 2006–2022]. Nine species are known in Ukraine, seven of those are noted in the Transcarpathian region.

Another species, *Eotetranychus quercicola* is recorded in the region on a previously unknown host plant and is new for the fauna of Ukraine.

***Eotetranychus carpini* (Oudemans, 1905)**

Specimens examined: 2♀, 2♂, *Carpinus betulus*, near the 'Karpaty' sanatorium, Mukachevo Raion 28.06.2009, A. Putrashyk; 5♀, 2♂, 2DN, *Carpinus betulus*, Strypa, Uzhhorod Raion, 18.08.2009, A. Putrashyk; 3♀, 2♂, 5DN, 3PN, 4L, *Carpinus betulus*, Lysychevo, Khust Raion, 28.06.2009, A. Putrashyk; 2♂, *Carpinus betulus*, Liuta, Uzhhorod Raion, 29.06.2011, A. Putrashyk; 5♀, 3♂, 2DN, 5PN, 4L, *Carpinus betulus*, Yasinia, Rakhiv Raion, 26.07.2011, A. Putrashyk; 1♂, *Carpinus betulus*, Kopania, Berehove Raion, 27.07.2011, A. Putrashyk; 2♀, 1♂, *Carpinus betulus*, near Khust Castle, Khust Raion, 18.08.2010, A. Putrashyk; 3♂, 5DN, *Fagus sylvatica*, Volosianka, Uzhhorod Raion, 20.09.2011, A. Putrashyk; 11♀, 3♂, 2PN, *Carpinus betulus*, Petrivka, Uzhhorod Raion, 23.10.2011, A. Putrashyk; 2♀, 1♂, *Carpinus betulus*, Kolochava, Khust Raion, 48°24'35" N 23°40'58" E, 565 m, 03.07.2016, O. Zhovnerchuk; 10♀, 2♂, *Alnus* sp., Svydovets Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°11'35" N, 24°17'52" E, 607 m, 13.07.2017; 17♀, 2♂, *Carpinus betulus*, near Nevytske Castle, Nevytske, Uzhhorod Raion, 48°40'50" N, 22°24'34" E, 233 m, 07.08.2016, O. Zhovnerchuk; 1♀, 1♂, *Alnus* sp., Kvasy, Chornohora Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°11'15" N, 24°18'30" E, 640 m, 13.07.2017, O. Zhovnerchuk.

The species is widely distributed in Ukraine [Vojtenko 1969; Mitrofanov *et al.* 1987; Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016].

***Eotetranychus colurnae* Mitrofanov, 1977**

Specimens examined: 9♀, 1♂, 1DN, *Corylus avellana*, Verkhni Vorota, Mukachevo Raion, 03.09.1976, I. Akimov; 11♀, 3♂, *Corylus avellana*, Kersky, Khust Raion, 05.09.1976, I. Akimov; 3♀, 2♂, 5DN, *Corylus avellana*, Zabrid, Uzhhorod Raion, 29.08.2010, A. Putrashyk; 1♀, 1♂, *Corylus avellana*, near Nevytske Castle, Uzhhorod Raion, 48°40'50" N, 22°24'29" E, 209 m, 07.08.2016, O. Zhovnerchuk.

A quite common species in other regions of Ukraine [Mitrofanov *et al.* 1987; Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016].

***Eotetranychus fagi* (Zacher, 1922)**

Specimens examined: 9♀, 10♂, 8DN, *Fagus* sp., Dovhe, Khust Raion, 05.09.1976, I. Akimov.

This is the second find of the species in Ukraine. Previously, it was found on *Fagus sylvatica* in Chernivtsi Oblast [Zhovnerchuk 2012, 2013].

***Eotetranychus populi* (Koch, 1838)**

Specimens examined: 12♀, 4♂, 5DN, *Populus nigra*, Chynadiiovo, Mukachevo Raion, 05.09.1976, I. Akimov.

The species is found on *Populus* in various natural zones of Ukraine: steppe zone [Akimov 1965; Akimov & Zhovnerchuk 2016], forest zone [Vojtenko 1969], forest steppe zone [Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014b], and Crimea [Mitrofanov *et al.* 1987], but in the Transcarpathian region it was found only in 45-year-old samples.

***Eotetranychus pruni* (Oudemans, 1931)**

Specimens examined: 1♀, 2♂, *Acer platanoides*, Bozdosh Park, Uzhhorod, 31.08.2008, A. Putrashyk; 9♀, 1♂, 3N, *Sorbus aucuparia*, Uzhhorod, 22.05.2010, A. Putrashyk; 8♀, 6♂, 4DN, *Aesculus hippocastanum*, Bozdosh Park, Uzhhorod, 27.05.2012, A. Putrashyk; 17♀, 31♂, *Malus* sp., Drotynsi, Berehove Raion, 10.07.2011, A. Putrashyk; 5♀, 6♂, *Acer* sp., Uzhhorod, 08.10.2011, A. Putrashyk; 15♀, 18♂, 5DN, 3PN, *Acer* sp., Uzhhorod, 01.11.2011, A. Putrashyk; 3♀, 4♂, 4DN, 1PN, *Aesculus hippocastanum*, Uzhhorod, 14.07.2012, A. Putrashyk.

The species is widely distributed in various natural zones of Ukraine [Akimov 1965; Vojtenko 1969; Mitrofanov *et al.* 1987; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016].

***Eotetranychus quercicola* Auger & Migeon, 2014**

Specimens examined: 3♂, 4DN, 3PN, *Quercus robur*, near Khust Castle, Khust Raion, 18.08.2010, A. Putrashyk; 6♀, 5♂, 2DN, 1PN, 1L, *Quercus robur*, Yasinia, Rakhiv Raion, 26.07.2011, A. Putrashyk; 10♀, 8♂, *Quercus robur*, Uzhhorod, 22.10.2011, A. Putrashyk; 13♀, 11♂, 1DN, 1PN, *Quercus robur*, Uzhhorod, 20.05.2012, A. Putrashyk; 2♀, 1♂, 1DN, *Quercus robur*, Strypa, Uzhhorod Raion, 23.07.2012, A. Putrashyk.

The first identification of the specimens by the author of the collection turned out to be incorrect. After consulting with Philippe Auger, we have identified the specimens as *E. quercicola*, previously known from southern France and Turkey. In Transcarpathia, it is found in all altitudinal zones. This find is new for Ukraine. *Quercus robur* is a new recorded host plant for this species of mites.

***Eotetranychus rubiphilus* Reck, 1948**

Specimens examined: 1♂, 2L, *Rubus caesius*, Chorna Hora Botanical Sanctuary, Berehove Raion, 20.07.2010, A. Putrashyk; 12♀♀, 1♂, 2DN, 3PN, *Rubus caesius*, near Khust Castle, Khust Raion, 18.08.2012, A. Putrashyk.

The species was previously known in Crimea [Mitrofanov *et al.* 1987]. On the mainland of Ukraine, it has been recently discovered in the Roztochia Biosphere Reserve (Lviv Oblast) [Zhovnerchuk *et al.* 2021].

***Eotetranychus tiliarium* (Herman, 1804)**

Specimens examined: 9♀♀, 4♂♂, *Tilia cordata*, Uzhhorod, 18.05.2008, A. Putrashyk; 7♀♀, 8♂♂, 5DN, 63PN, *Tilia cordata*, Kholmets, Uzhhorod Raion, 05.06.2011, A. Putrashyk; 2♀♀, 1♂, 3PN, *Tilia cordata*, Bozdosh Park, Uzhhorod, 10.07.2010, A. Putrashyk; 12♀♀, 9♂♂, *Tilia cordata*, Uzhhorod, 12.07.2012, A. Putrashyk; 9♀♀, 10♂♂, 3DN, 3PN, *Tilia platyphyllos*, street, Uzhhorod, 20.09.2011, A. Putrashyk; 12♀♀, 14♂♂, *Tilia mandshurica*, Narodna Square, Uzhhorod, 29.10.2011, A. Putrashyk.

The species is widespread in Ukraine, mainly in anthropogenic biotopes [Vojtenko 1969; Mitrofanov *et al.* 1987; Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016].

Genus *Neotetranychus* Tragardh, 1915

The genus includes 11 species, only one of which is recorded in Ukraine [Migeon & Dorkeld 2006–2022].

***Neotetranychus rubi* Tragardh, 1915**

Specimens examined: 15♀♀, 2♂♂, 4DN, 8PN, *Rubus idaeus*, Volovets, Mukachevo Raion, 03.09.1976, I. Akimov; 28♀♀, 10♂♂, *Rubus idaeus*, Huklyvyi, Mukachevo Raion, 06.09.76, I. Akimov; 9♀♀, 2♂♂, *Rubus idaeus*, Volosianka, Uzhhorod Raion, 20.09.2011, A. Putrashyk; 3♀♀, 3♂♂, *Rubus idaeus*, near Lake Synevyr, Synevyr National Nature Park, Khust Raion, 48°37'00" N 23°41'19" E, 967 m, 04.07.2016, O. Zhovnerchuk; 4♀♀, 2♂♂, *Rubus idaeus*, Kvasy, Chornohora Massif, Carpathian Biosphere Reserve, Rakhiv Raion, Chornohora massif, 48°11'09" N, 24°18'46" E, 664 m, 12.0.017, O. Zhovnerchuk; 9♀♀, 1♂, 1DN, *Rubus idaeus*, Kuzii–Trybushany Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°01'38" N, 24°09'42" E, 581m, 14.07.2017, O. Zhovnerchuk; 12♀♀, 2♂♂, *Rubus idaeus*, Kuzii–Trybushany Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°01'38" N, 24°09'42" E, 581m, 16.07.2017, O. Zhovnerchuk; 8♀♀, 1♂, *Rubus idaeus*, Kuzii–Trybushany Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°01'31" N, 24°10'03" E, 419 m, 16.07.2017, O. Zhovnerchuk; 14♀♀, 3♂♂, 1DN, *Rubus idaeus*, Kuzii–Trybushany Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°01'37" N, 24°10'17" E, 441m, 17.07.2017, O. Zhovnerchuk; 8♀♀, 3♂♂, *Rubus idaeus*, Khudlovo, Uzhhorod Raion, 48°35'06" N, 22°28'35" E, 179 m, 08.08.2021, A. Dudynska; 6♀♀, *Rubus idaeus*, Drahovo, Khust Raion, 48°14'01" N, 23°33'04" E, 365 m, 13.08.2021, A. Dudynska.

This species has been previously known from the forest steppe zone of Ukraine [Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014b; Zhovnerchuk *et al.* 2021] and Crimea [Mitrofanov *et al.* 1987]. It is quite common in the Transcarpathian region of Ukraine.

Genus *Oligonychus* Berlese, 1886

This is the largest genus of spider mites; it currently includes 211 species [Migeon & Dorkeld, 2006–2022]. In Ukraine, nine species are listed, seven of which feed on conifers. Three species have been found in the Transcarpathian region: two are inhabitants of conifers and one is a monophagous species that feeds on oaks.

***Oligonychus karamatus* (Ehara, 1956)**

Specimens examined: 12♀♀, 6♂♂, *Larix* sp., Uzhhorod, 48°37'33" N, 22°17'11" E, 116 m, 07.10.2016, O. Zhovnerchuk; 8♀♀, *Larix* sp., Kvasy, Chornohora Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°11'28" N, 24°18'01" E, 588 m, 12.07.2017, O. Zhovnerchuk.

A common pest of *Larix* in all regions of Ukraine [Vojtenko 1969; Mitrofanov *et al.* 1987; Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014b; Zhovnerchuk *et al.* 2021].

***Oligonychus mitis* Begjarov et Mitrofanov, 1973**

Specimens examined: 4♀♀, 4♂♂, *Quercus robur*, Velyka Kopania, Khust Raion, 27.07.2009, A. Putrashyk; 5♀♀, 1♂, 1PN, *Quercus robur*, Strypa, Uzhhorod Raion, 18.06.2010, A. Putrashyk; 8♀♀, 1♂, *Quercus robur*, Kholmets, Uzhhorod Raion, 05.06.2011, A. Putrashyk; 6♀♀, 2♂♂, *Quercus robur*, Uzhhorod, 22.10.2011, A. Putrashyk.

The species is also found on oaks in the forest steppe zone of Ukraine [Akimov & Zhovnerchuk 2010; Zhovnerchuk 2013, 2014b].

***Oligonychus ununguis* (Jacobi, 1905)**

Specimens examined: 8♀, 4♂, *Cupressus sempervirens*, Bozdosh Park, Uzhhorod, 31.08.2008, A. Putrashyk; 18♀, 2♂, *Cupressus sempervirens*, Bereznyky, Khust Raion, 18.06.2010, A. Putrashyk; 2♀, 1♂, *Cupressus sempervirens*, Bozdosh Park, Uzhhorod, 03.09.2011, A. Putrashyk; 2♀, 1♂, 2PN, 5DN, *Picea abies*, Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 17♀, 4♂, 2PN, 2DN, *Abies alba*, Synevyrska Poliana, Khust Raion, 27.06.2011, A. Putrashyk; 9♀, 5♂, 6PN, 5DN, *Abies alba*, Yasinia, Rakhiv Raion, 26.07.2011, A. Putrashyk; 3♀, 1♂, 6PN, 1DN, *Pinus sylvestris*, Turia Pasika, Uzhhorod Raion, 24.06.2012, A. Putrashyk; 18♀, 3♂, 1N, *Picea* sp., Biostation of Uzhhorod University, Kolochava, Khust Raion, 48°24'51" N, 23°40'53" E, 567 m, 01.07.2016, O. Zhovnerchuk; 1♂, *Picea* sp., Kolochava, Khust Raion, 48°24'43" N, 23°40'58" E, 552m, 03.07.2016, O. Zhovnerchuk; 2♀, *Picea* sp., Biostation of Uzhhorod University, Kolochava, Khust Raion, 48°24'51" N, 23°40'53" E, 567m, 04.07.2016, O. Zhovnerchuk; 13♀, 1♂, *Picea* sp., road to Nevytske Castle, Uzhhorod Raion, 48°40'50" N, 22°24'48" E, 248m, 07.08.2016, O. Zhovnerchuk.

The species is found on various coniferous plants in Ukraine [Vojtenko 1969; Mitrofanov *et al.* 1987; Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014b; Zhovnerchuk *et al.* 2021].

Genus *Panonychus* Yokoyama, 1929

Only one of the 14 species of this genus known in the world fauna has been recorded in Ukraine [Migeon & Dorkeld 2006–2022].

***Panonychus ulmi* (Koch, 1836)**

Specimens examined: 3♀, *Prunus* sp., Poroshkovo, Uzhhorod Raion, 02.09.1976, I. Akimov; 1♀, *Prunus spinosa*, Huklyvyi, Mukachevo Raion, 03.09.1976, I. Akimov; 6♀, *Malus* sp., Huklyvyi, Mukachevo Raion, 03.09.1976, I. Akimov; 2♀, *Alnus incana*, Verkhni Vorota, Mukachevo Raion, 03.09.1976, I. Akimov; 13♀, 5♂, *Malus* sp., Volovets, Mukachevo Raion, 03.09.1976, I. Akimov; 2♀, 3♂, 1L, 2PN, *Alnus* sp., Keretsky, Khust Raion, 05.09.1976, I. Akimov; 1♀, *Prunus* sp., Mokra, Uzhhorod Raion, 07.09.1976, I. Akimov; 7♀, 3♂, 1L, 2PN, 2DN, *Sorbus aucuparia*, Uzhhorod, 21.09.2008, A. Putrashyk; 2♂, 2L, 3PN, 3DN, *Malus* sp., Vuchkove, Khust Raion, 06.06.2009, A. Putrashyk; 1♀, 3L, 1DN, *Prunus* sp., Synevyrska Poliana, Khust Raion, 11.07.2009, A. Putrashyk; 1♀, *Malus* sp., garden near house, Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 15♀, 11♂, 2DN, *Malus* sp., Huklyvyi, Mukachevo Raion, 27.06.2011, A. Putrashyk; 6♀, 1♂, 13L, 8PN, 2DN *Malus* sp., Liuta, Uzhhorod Raion, 29.06.2011, A. Putrashyk; 2♀, *Prunus* sp., Liuta, Uzhhorod Raion, 29.06.2011, A. Putrashyk; 2♀, 8L, 4PN, 2DN, *Carpinus betulus*, Liuta, Uzhhorod Raion, 29.06.2011, A. Putrashyk; 21♀, 1♂, 3PN, 7DN, *Malus* sp., Khust, 27.07.2011, A. Putrashyk; 11♀, 2♂, 1L, *Malus* sp., Khust, 27.07.2011, A. Putrashyk; 1♀, 3L, 1PN, 2DN, *Prunus* sp., Khust, 27.07.2011, A. Putrashyk; 1♀, 8L, 3PN, 2DN, *Prunus cerasus*, Petrivka, Uzhhorod Raion, 27.07.2011, A. Putrashyk; 3♀, 3♂, 7DN, *Prunus* sp., Volosianka, Uzhhorod Raion, 20.09.2011, A. Putrashyk; 2PN, *Pyrus communis*, Volosianka, Uzhhorod Raion, 20.09.2011, A. Putrashyk; 1♀, 1♂, *Rubus caesius*, Volosianka, Uzhhorod Raion, 20.09.2011, A. Putrashyk; 2♀, *Carpinus* sp., Kolochava, Khust Raion, 48°24'38" N, 23°40'53" E, 547 m, 03.07.2016, O. Zhovnerchuk; 4♀, 1♂, *Alnus incana*, Kolochava, Khust Raion, 48°24'38" N, 23°40'53" E, 547 m, 03.07.2016, O. Zhovnerchuk; 12♀, 2♂, *Carpinus* sp., Kolochava, Khust Raion, 48°24'38" N, 23°40'53" E, 547 m, 03.07.2016, O. Zhovnerchuk; 1♀, *Fagus sylvatica*, Kolochava, Khust Raion, 48°24'41" N, 23°40'57" E, 550 m, 03.07.2016, O. Zhovnerchuk; 3♀, 1N, *Alnus incana*, Kolochava, Khust Raion, 48°24'41" N, 23°40'57" E, 550 m, 03.07.2016, O. Zhovnerchuk; 2♀, *Ulmus* sp., road to Nevytskyi Castle, Nevytske, Uzhhorod Raion, 48°40'50" N, 22°24'59" E, 263 m, 07.08.2016, O. Zhovnerchuk; 3♀, *Alnus* sp., Svydovets Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°11'35" N, 24°17'52" E, 607 m, 13.07.2017, O. Zhovnerchuk; 2♀, 1♂, *Eupatorium cannabinum*, Kvasy, Chornohora Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°11'24" N, 24°18'00" E, 594 m, 13.07.2017, O. Zhovnerchuk; 4♀, *Alnus* sp., Kvasy, Chornohora Massif, Carpathian Biosphere Reserve, Rakhiv Raion, 48°11'19" N, 24°18'10" E, 620 m, 13.07.2017, O. Zhovnerchuk; 3♀, *Carpinus* sp., Zabrid', Uzhhorod Raion, 48°55'50" N, 22°26'54" E, 220 m, 25.09.2021, O. Zhovnerchuk; 1♂, *Alnus* sp., Zabrid', Uzhhorod Raion, 48°55'48" N, 22°26'51" E, 231 m, 25.09.2021, O. Zhovnerchuk; 4♀, 1♂, *Ulmus* sp., near Nevytske Castle, Nevytske, Uzhhorod Raion, 48°40'50" N, 22°24'32" E, 226 m, 26.09.2021, O. Zhovnerchuk.

A widespread polyphagous species found in various natural zones of Ukraine [Vojtenko 1969; Mitrofanov *et al.* 1987; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016; Zhovnerchuk & Auger 2019].

Genus *Schizotetranychus* Trägårdh, 1915

The genus includes 117 species, only six of them are represented in Ukraine [Migeon & Dorkeld, 2006–2022]. In the Transcarpathian region, three species of the genus are found, one of those has not been previously listed in the world electronic database of spider mites for Ukraine, although its findings had been recorded earlier. Another species is noted for the fauna of Ukraine for the first time.

***Schizotetranychus schizopus* (Zacher, 1913)**

Specimens examined: 2♀, 1♂, *Salix babylonica*, Mokra, Uzhhorod Raion, 08.09.1976, I. Akimov; 4♀, 2♂, 3DN, 19PN, 7L, *Salix alba*, Dovge, Khust Raion, 18.06.2010, A. Putrashyk; 1♀, 1♂, 8PN, 3L, *Salix fragilis*, Onokivtsi, Uzhhorod Raion, 12.07.2010, A. Putrashyk; 2♀, 2♂, 2DN, 4PN, 2L, *Salix fragilis*, near Khust Castle, Khust Raion, 18.08.2010,

A. Putrashyk; 10♀, 2♂, *Salix glauca*, Turia Pasika, Uzhhorod Raion, 24.06.2012, A. Putrashyk; 3F, 1♂, *Salix* sp., Turii Remety, Uzhhorod Raion, 48°43'13" N, 22°33'18" E, 201 m, 07.08.2016, O. Zhovnerchuk; 9♀, 3♂ *Salix* sp., Velykyi Bereznyi, Uzhhorod Raion, 48°54'36" N, 22°27'30" E, 220 m, 07.08.2016, O. Zhovnerchuk.

The species is found in all geographical zones of Ukraine on *Salix* [Akimov 1965; Vojtenko 1969; Mitrofanov *et al.* 1987; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016]. *Salix glauca* is a new recorded host plant for this mite.

***Schizotetranychus beckeri* Wainstein, 1958**

Specimens examined: 3♀, 2♂, Poaceae, Botanical Garden of UzhNU, Uzhhorod, 48°37'11" N, 22°18'17" E, 116 m, 07.07.2016, O. Zhovnerchuk.

The species was described by Wainstein from western Russia [Migeon & Dorkeld 2006–2022]. The find is new for Ukraine.

***Schizotetranychus spireaefolia* Garman, 1940**

Specimens examined: 7♀, 1♂, *Spiraea* sp., Botanical Garden of UzhNU, Uzhhorod, 48°37'11" N, 22°18'17" E, 116 m, 27.09.2021, O. Zhovnerchuk.

The species was previously noted in the steppe zone (Kirovohrad Oblast) and in A. V. Fomin Botanical Garden of Kyiv [Zhovnerchuk & Chumak 2018], but has not been previously presented in the Tetranychidae database [Migeon & Dorkeld 2006–2022].

Genus *Tetranychus* Dufour, 1832

This genus is represented by 153 species in the world fauna, only seven of them are recorded in the fauna of Ukraine [Migeon & Dorkeld 2006–2022]. In the Transcarpathian region, we noted three species that are widely distributed in the world as well as a rare species that is not listed in the cited database for the territory of Ukraine.

***Tetranychus frater* Wainstein, 1960**

Specimens examined: 8♀, 2♂, *Convolvulus* sp., Keretsky, Khust Raion, 05.09.1976, I. Akimov; 4♀, 1♂, *Euphorbia* sp., Turia Polyana, Uzhhorod Raion, 09.09.1976, I. Akimov.

Probably a rare species, previously found only in the steppe zone of Ukraine [Akimov 1968]. Its findings are also noted in Greece, Iran, Kazakhstan, and Zambia [Migeon & Dorkeld 2006–2022]. The findings of the species in Ukraine have not been previously presented in the Tetranychidae database [Migeon & Dorkeld 2006–2022].

***Tetranychus przhevalskii* Reck, 1956**

Specimens examined: 10♀, 3♂, *Elytrigia* sp., Uzhhorod, 48°37'33" N, 22°17'11" E, 116 m, 07.09.2016, O. Zhovnerchuk; 4♀, 1♂, *Elytrigia repens*, Bozdosh Park, Uzhhorod, 48°37'16" N, 22°15'56" E, 125 m, 07.10.2016, O. Zhovnerchuk.

The species is quite common in the steppe zone of Ukraine [Akimov 1965; Akimov & Zhovnerchuk 2016; Zhovnerchuk & Auger 2019]; it is also found in the forest steppe [Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014b] and Crimea [Mitrofanov *et al.* 1987].

***Tetranychus turkestanii* Ugarov & Nikolskii, 1937**

Specimens examined: 10♀, 5♂, *Lamium album*, Strychava, Uzhhorod Raion, 10.07.2008, A. Putrashyk; 10♀, 4♂, 3DN, *Phaseolus vulgaris*, Bozdosh Park, Uzhhorod, 19.08.2008, A. Putrashyk; 14♀, 6♂, *Phaseolus vulgaris*, Petrivka, Uzhhorod Raion, 29.06.2010, A. Putrashyk; 10♀, 9♂, *Phaseolus vulgaris*, Mynai, Uzhhorod Raion, 07.07.2010, A. Putrashyk; 2♀, 1♂, *Humulus lupulus*, Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 8♀, 2♂, *Beta vulgaris*, Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 5♀, 3♂, *Phaseolus vulgaris*, Liuta, Uzhhorod Raion, 29.06.2011, A. Putrashyk; 14♀, 12♂, *Phaseolus vulgaris*, Batiovo, Berehove Raion, 03.09.2011, A. Putrashyk; 16♀, 9♂, 1DN, 3PN, *Cucumis sativus*, Batiovo, Berehove Raion, 03.09.2011, A. Putrashyk; 11♀, 3♂, *Rubus idaeus*, Chervone, Uzhhorod Raion, 20.09.2011, A. Putrashyk; 6♀, 1♂, *Phaseolus vulgaris*, Volosianka, Uzhhorod Raion, 20.09.2011, A. Putrashyk; 10♀, 3♂, *Humulus lupulus*, Volosianka, Uzhhorod Raion, 20.09.2011, A. Putrashyk; 1♀, 1♂, *Fragaria ananassa*, Petrivka, Uzhhorod Raion, 23.10.2011, A. Putrashyk; 8♀, 1♂, 1DN, *Fragaria viridis*, Petrivka, Uzhhorod Raion, 23.10.2011, A. Putrashyk; 10♀, 9♂, *Lamium album*, Turia Pasika, Uzhhorod Raion, 24.06.2012, A. Putrashyk; 14♀, 6♂, *Solanum melongena*, Petrivka, Uzhhorod Raion, 15.07.2012, A. Putrashyk; 15♀, 15♂, *Phaseolus vulgaris*, Petrivka, Uzhhorod Raion, 15.07.2012, A. Putrashyk; 10♀, 9♂, 1PN, *Humulus lupulus*, Simer, Uzhhorod Raion, 08.08.2012, A. Putrashyk; 5♀, 2♂, *Agrimonia eupatoria*, Mali Heivtsi, Uzhhorod Raion, 48°29'57" N, 22°18'13" E, 104 m, 07.09.2016, O. Zhovnerchuk.

A widespread polyphagous species found in various natural zones of Ukraine [Akimov 1965; Vojtenko 1969; Mitrofanov *et al.* 1987; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016].

Tetranychus urticae Koch, 1836

Specimens examined: 3♀♀, 3♂♂, 9DN, *Rosa canina*, Mokra, Uzhhorod Raion, 07.09.1976, I. Akimov; 16♀♀, 2♂♂, *Urtica dioica*, Bilovartsi, Tiachiv Raion, 03.08.2008, A. Putrashyk; 12♀♀, 4♂♂, *Lamium album*, Bozdosh Park, Uzhhorod, 31.08.2008, A. Putrashyk; 5♀♀, 2♂♂, 2DN, 5PN, 3L, *Ribes spicatum*, Petrivka, Uzhhorod Raion, 16.06.2009, A. Putrashyk; 4♀♀, 1♂, 1N, *Ribes nigrum*, Mynai, Uzhhorod Raion, 07.07.2010, A. Putrashyk; 1♂, 1DN, 2PN, *Crataegus sanguinea*, Liuta, Uzhhorod Raion, 20.09.2010, A. Putrashyk; 8♀♀, 5♂♂, 2DN, *Pyrus communis*, Petrivka, Uzhhorod Raion, 14.06.2011, A. Putrashyk; 5♀♀, 3♂♂, 7PN, 6L, *Ribes spicatum*, Synevyrska Poliana, Khust Raion, 27.06.2011, A. Putrashyk; 2♀♀, 2♂♂, 1L, *Rubus idaeus*, Petrivka, Uzhhorod Raion, 23.10.2011, A. Putrashyk; 3♀♀, 5♂♂, 6DN, 4PN, *Ribes spicatum*, Petrivka, Uzhhorod Raion, 23.10.2011, A. Putrashyk; 6♀♀, 4♂♂, 1DN, 1PN, 4L, *Ribes rubrum*, Velyki Luchky, Mukachevo Raion, 25.09.2012, A. Putrashyk; 17♀♀, 12♂♂, 1PN, 1L, *Lamium album*, Bozdosh Park, Uzhhorod, 26.05.2012, A. Putrashyk; 16♀♀, 9♂♂, *Urtica dioica*, Bozdosh Park, Uzhhorod, 26.05.2012, A. Putrashyk; 3♀♀, 1♂, *Galeopsis speciosa*, Biostation of Uzhhorod University, Kolochava, Khust Raion, 48°24'51" N, 23°40'53" E, 567 m, 03.07.2016, O. Zhovnerchuk; 2♀♀, 1♂, *Rubus idaeus*, Uzhhorod, 48°37'40" N, 22°17'51" E, 139 m, 28.7.2021, A. Dudynska.

A widespread polyphagous species found in various natural zones of Ukraine [Akimov 1965; Vojtenko 1969; Mitrofanov *et al.* 1987; Zhovnerchuk 2014b; Akimov & Zhovnerchuk 2016].

Discussion

The checklist of tetranychid mites of the Transcarpathian region of Ukraine currently includes 28 species of 10 genera. Two species — *Eotetranychus quercicola* and *Schizotetranychus beckeri* — have been recorded for the first time for the fauna of Ukraine. For the first time, 20 species of spider mites have been listed for the territory of Transcarpathia. Of the 28 species of spider mites, 25 species were found on deciduous trees, bushes, and grasses, and only three species on conifers. The genus *Eotetranychus*, represented by eight species, is the most diverse in the studied collection. Four genera (*Amphitetranynchus*, *Neotetranychus*, *Panonychus*, and *Tetranychopsis*) are represented by only one species each. In addition to the two species of tetranychids new for the fauna of Ukraine, another five species (*B. praetiosa*, *B. lagodechiana*, *E. furcisetus*, *S. spireaefolia*, and *T. frater*) that have been previously recorded in other regions of Ukraine (steppe zone [Akimov 1965; Akimov & Zhovnerchuk 2016], forest zone [Vojtenko 1969], forest steppe zone [Akimov & Zhovnerchuk 2010; Zhovnerchuk 2014a–b; Zhovnerchuk & Chumak 2018; Zhovnerchuk *et al.* 2021], and Crimea [Mitrofanov *et al.* 1987]), can be added to the electronic database Spider Mites Web (Migeon & Dorkeld 2006–2022) as present in Ukraine.

Moreover, eight new host plant species were also recorded as new hosts for six spider mite species (*Eupatorium cannabinum* for *B. praetiosa*, *Armoracia rusticana*, *Betonica officinalis*, and *Melilotus officinalis* for *B. lagodechiana*, *Picea abies* for *E. furcisetus*, *Ribes nigrum* for *A. viennensis*, *Quercus robur* for *E. quercicola*, and *Salix glauca* for *S. shizopus*).

According to the Spider Mites Web database, there are 65 species of tetranychid mites known to occur in Ukraine [Migeon & Dorkeld 2006–2022]. Even taking into account the fact that another seven species indicated in this publication have not been previously included in that list of species for Ukraine, the species richness of spider mites found in Transcarpathia (28 species) is about 40% of the group's richness in the whole of Ukraine. If we analyse the species composition of tetranychids in different natural zones of Ukraine, the highest richness (40 species) is found in the steppe zone [Akimov & Zhovnerchuk 2016], followed by the forest-steppe zone with 37 species [Zhovnerchuk 2014b], whereas the lowest species richness (20) is noted for the zone of mixed forests [Vojtenko 1969]. In Hungary, neighbouring Transcarpathia, 46 species of tetranychid mites are currently known, while in Romania and Slovakia eight and seven species, respectively [Migeon & Dorkeld 2006–2022]. Obviously, it can be explained by the degree of exploration of these territories. At the same time, a number of species indicated for the Hungarian fauna may as well be found in the territory of the Transcarpathian region of Ukraine upon further thorough research.

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