

Z Katedry Zoologii Systematycznej Wydziału Biologii i Nauk o Ziemi UMCS  
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**New Data on the Jumping Plant-Lice (*Homoptera, Psylloidea*)  
Occurring in Mongolia**

**Nowe wiadomości o występujących w Mongolii koliszkach  
(*Homoptera, Psylloidea*)**

**Новые данные о листоблошках (*Homoptera, Psylloidea*), обитающих  
на территории Монголии**

The knowledge of the fauna of the eastern part of Palaeoartic is an indispensable stage in studying the formation of the contemporary fauna of the whole Palaeoartic. With regard to the jumping plant-lice, the necessity of a closer acquaintance with the fauna of eastern and central Asia is particularly evident since a number of groups of these insects have appeared and developed in that area. This is especially true of the jumping plant-lice connected with herbaceous flora (numerous species of the *Aphalaridae* and *Triozidae* families) and of a number of plesiomorphic species attached to trees and shrubs.

The growing interest in the fauna of the eastern Palaeoartic is manifested by an increasing number of expeditions visiting these regions. The material obtained in this way was the object of several studies, which resulted in finding again numerous species which had been lost (e. g., *Bactericera rossica* Horv. and *Psylla sarmatica* Löw) or which were known from Europe only; in addition, a number of new species was described, among them some very interesting substitutes of the western Palaeoartic species. In many cases it was possible to correct the former erroneous conclusion of the character of distribution and the origin of numerous European *Psylloidea* species.

The present study is based on the material collected in the Mongolian People's Republic by the members of expeditions organized jointly by the Institute of Zoology, Polish Academy of Sciences, Warsaw, and by the Institute of Natural Sciences, Mongolian Academy of Sciences, Ulan Bator, in 1963 and 1964 (the present writer took part in the 1964 expedition).

Below will be discussed 19 species of jumping plant-lice, of which 5 have not yet been reported from Mongolia; one of them, *Trioza congregata* sp. n., has not been described so far.

#### APHALARIDAE

##### *Aphalara polygoni* Först.

Material studied: 2 ♂♂, Cecerleg, 10.IX.1964, larch-birch forest, swept from the undergrowth, leg. S. M. Klimaszewski.

This is a species fairly common in the whole Holarctic; it has numerous varieties, from which a number of new species have been distinguished recently (e.g., *A. borealis* Heisl-Harr. and *A. longicaudata* Schaefer.), differing slightly with regard to structure and host-plant. The species in question is attached to various species of the genus *Polygonum* L.

##### *Aphalara borealis* Heisl-Harr.

Material studied: 2 ♂♂, 1♀, 15 km. W Cecerleg, 11.IX.1964, on *Larix* sp., leg. S. M. Klimaszewski.

This species has already been reported (7) from Gun Gallunt (100 km. E Ulan Bator); in Europe *A. borealis* Heisl-Harr. lives on *Polygonum tomentosum* Schr., *P. amphibium* L., and *P. lapatifolium* L.

##### *Aphalara longicaudata* Schaefer.

Material studied: 15 km. W Cecerleg, 11.IX.1964, larch-birch forest in the bottom of a valley, numerous ♂♂ and ♀♀ swept from *Larix* sp., leg. S. M. Klimaszewski.

*A. longicaudata* Schaefer. was first reported from Mongolia by Loginova (3) under the name *A. longicaudata* Log. on the strength of specimens collected at Suiczukte near Ulan Bator in 1925. The species described by Loginova was then synonymized (6) with that described by Schaefer. *A. longicaudata* Schaefer. was again reported from the environs of Ulan Bator in 1963 (7), and in 1964 its occurrence in the environs of Darchan was confirmed.

*Craspedolepta lineolata* L o g.

Material studied: 1 ♂, Zunchara, 3.VIII.1963, leg. B. Burakowski et. H. Szelegiewicz.

This species is known from a number of places in the Asiatic part of the USSR (from Orenburg to Vladivostok) and from Mongolia (8). It lives on various wormwood species (*Artemisia vulgaris* L., *A. absinthium* L., and others).

*Craspedolepta pilosa* (O s h.)

Material studied: ♀, 30 km. N Mant, 28.VII.1963, leg. B. Burakowski et H. Szelegiewicz.

The species has already been reported from Mongolia (8). The general distribution of *C. pilosa* (O s h.) is not very well known because until recently it was mistaken for other, morphologically related species; it is probably widely distributed over central and eastern Asia and the European part of the USSR. It can be expected that *C. pilosa* (O s h.) will be found in the south of Europe as it lives on the wormwoods: *Artemisia maritima* and *A. nitrosa*, which occur there.

*Craspedolepta maculosa* (L ö w)

Material studied: 2 ♀♀, 30 km. N Mant, 28.VII.1964, leg. B. Burakowski et H. Szelegiewicz.

*C. maculosa* (L ö w) was described from Turkestan, without mentioning the locality where the material had been collected; later it was found in central Europe (at least part of the data concerning the species in question requires verification). In recent years *C. maculosa* (L ö w) was found in the mountains of Kazakhstan and the Kirghiz S.S.R., and in the present paper it is reported for the first time from Mongolia.

## PSYLLIDAE

*Psylla appendiculata* K l i m a s z.

Material studied: Zaisan ad Ulan Bator, 29.VIII.1964, numerous on *Caragana microphylla*, single specimens of near-by herbs and trees; Zaisan, 3.IX.1964, on *Salix* sp., but absent from the near-by *Caragana* plants; Turhurh, 1.IX.1964, on various herbs growing on the slopes and in the bottom of a valley, and on *Betula* sp.; Nalaih, 3.IX.1964, on various plants in the steppe (but no colonies on shrubs of *Caragana* sp.

or near them); 30 km. E Hišig ungor, 8.IX.1964, in larch forest; Cecerleg, 11.IX.1964, in a larch-birch forest growing on the northern slope and on the floor of a valley (altitude 2300—2000 m.), on various trees and underbrush plants (*Vaccinium* sp., *Salix* sp.); Šivert, 14.IX.1964, on *Salix* sp., everywhere numerous. The whole material was collected by the present writer.

Between 29.VIII and 3.IX, in the environs of Ulan Bator, a migration of *P. appendiculata* Klimasz. was observed, from the host-plants (various species of the genus *Caragana* L.) to other, mainly arboreal plants; as early as on 3.IX, only single specimens could be found on the host-plants peculiar to this species. There is no doubt that the species hibernates as adult insects on various plants (larch, willow, birch, and others).

The abundant material of *P. appendiculata* Klimasz. which has been gathered during the last years makes it possible to assess more precisely the variability of this species. The colouring of the body and wings is fairly variable, the wings are usually suffused with yellow and often have a greenish hue. There occur, however, specimens with almost colourless wings. A darkening of the wing membrane is always most distinct in its lower, para-apical part. The width of the head varies between 0.70 and 0.77 mm.; the vertex is 0.42—0.45 mm. wide and 0.23—0.26 mm. long; the conical processes are 0.15—0.16 mm. long. There are no significant differences between male and female as far as the head measurements are concerned. It results from the data given above that the width of the head is the most variable measurement (the greatest width was found to be by 10 per cent greater than the smallest one); in consequence, it has little diagnostic value in the case of *P. appendiculata* Klimasz. The length of the fore wing varies from 2.33 to 2.66, and its width from 1.00 to 1.13 mm., the variability range being similar in insects obtained from various regions of Mongolia. There is comparatively little change in the  $Cu_1$  index, which oscillates between 1.55 and 1.56.

The species in question belongs to the most common jumping plant-lice in Mongolia; it is also known from a number of places in Kazakhstan.

Within the group of species belonging to the genus *Psylla* Geoffr. *P. appendiculata* Klimasz. approaches *P. oshanini* Log., differing from it by a more pronounced widening of the apical part of the paramere and by the presence of a process on the upper-edge of the paramere (in *P. oshanini* Log. the apical part of the paramere is only slightly wider than the basal one, and the process is situated on the apex of the fore part of the paramere).

*Psylla fabra* L o g.

Material studied: ♀, Selbe-gol, 30.VIII.1964, leg. S. M. Klimaszewski; Zaamr, 6.IX.1964, numerous ♂♂ and ♀♀ on *Caragana* sp., leg. S. M. Klimaszewski, ♀, 100 km. E Hišig ungor, 5.IX.1964, leg. S. M. Klimaszewski.

*P. fabra* L o g. was reported from Mongolia for the first time under the name „*Psylla* sp. II” (7), because at that time the description of this species was being prepared for publication by L o g i n o v a (4).

By the structure of its wing, this species resembles *P. appendiculata* K l i m a s z., but differs strongly from the latter with regard to the colouring of the wings (the membrane of the fore wings is milky-white and is covered with irregular, dark-brown spots) and to the structure of the copulation apparatus (especially the shape of the parameres).

*Psylla betulae* (L.)

Material studied: 1♂, 8 ♀♀, Turhurh, 1.IX.1964, on *Betula* sp., leg. S. M. Klimaszewski.

*P. betulae* (L.) occurs locally in the whole Palaeoartic, but it can be inferred from the latest publications that it is more common in the eastern and northern part of that area. Specimens from Mongolia, both those mentioned above and collected earlier, show no significant morphological differences in comparison with specimens found in Europe, except a strong yellow colouration of the membrane of the fore wings. It is possible that the specimens from the eastern part of Palaeoartic constitute a separate subspecies, but, to answer this question, it is necessary to bring together an abundant European material of *P. betulae* (L.).

*Psylla sarmatica* L ö w

Material studied: 2 ♀♀, Cecerleg, 10.IX.1964, leg. S. M. Klimaszewski; 2 ♂♂, 2 ♀♀, 10 km. N Cecerleg, in the undergrowth of a larch-birch forest, leg. S. M. Klimaszewski.

This species is known from Sarepta (whence it has been described), Mongolia and Georgia (7). *P. sarmatica* L ö w lives on *Spirea* sp.

*Psylla zaisani* K l i m a s z.

Material studied: Selbe-gol, 30.VIII.1964, numerous ♂♂ and ♀♀ on *Spirea aquilegifolia* P a l l., leg. S. M. Klimaszewski.

*P. zaisani* Klimasz. is known so far from Mongolia only, where it lives on *Spirea hypericifolia* L. and, as it appears now, on *S. aquilegifolia* Pall. In structure, the species in question approaches *P. sarmatica* Löw, but differs from it by the shape of the parameres and colouring of the wings. With regard to the structure of the wings, both species resemble *P. kallima* Klimasz., which belongs to species group „*Psylla appendiculata*”. It is possible that the group „*Psylla sarmatica*” is related with the latter.

*Psylla elegantula* (Zett.)

Material studied: 1 ♂, 5 km. E Ih Tamir, 12.IX.1964, swept from willows growing in a river-swamped area, leg. S. M. Klimaszewski.

This species was reported earlier (7) from Bajan Daava (75 km. E Ulan Bator); at the same time it was the first non-European station of *P. elegantula* (Zett.), which hitherto had been considered as a species with boreal or Baltic (central-European) distribution. The finding of this species in Mongolia leads to the conclusion that it has a Eurosiberian distribution and is widespread in the Palaeoartic part of Asia.

*Psylla intacta* Log.

Material studied: ♂, Zaisan ad Ulan Bator, 1.IX.1964, on *Salix* sp., leg. S. M. Klimaszewski.

*P. intacta* Log. has been described (4) on the strength of the material found in Volgograd, numerous places of Kazakhstan, and in Korea. It lives on various willow species and is probably widely distributed in the central and eastern part of Palaeoartic. It is new for the fauna of Mongolia.

*Psylla vondraceki* Klimasz.

Material studied: Zaisan ad Ulan Bator, 29.VIII.1964, 1 ♀; 1.IX.1964, numerous ♂♂ and ♀♀ on *Salix* sp., Nucht ad Ulan Bator, 31.VIII.1964, 2 ♂♂ on *Salix* sp.; Terelž-gol, 3.IX.1964, numerous ♂♂ and ♀♀ on narrow-leaved arboreal willows on the river (the whole material was collected by the present writer).

The Mongolian stations of *P. vondraceki* Klimasz., which has been described from that country, are grouped in the basin of the Tola river; its distribution, however, is probably much wider. Recently, Loginova (4) found this species in eastern Kazakhstan. *P. vondraceki* Klimasz. is closely related to *P. palmeni* Löw and *P. intacta* Log.



Fig. 1. The copulation apparatus of the male; a — *Psylla vondraceki* Klimasz.; b — *Psylla apendiculata* Klimasz.; c — *Psylla elegantula* (Zett.)

#### *Psylla abdominalis* M. D.

Material studied: 3 ♂♂, Ulan Bator, 29.VIII.1964, on *Salix* sp., leg. S. M. Klimaszewski.

This very interesting species was known so far from Europe only, where its distribution has a rather local character. *P. abdominalis* Löw takes a central position in the willow-attached species group „*Psylla ambigua*” and links it with the group „*Psylla palmeni*”, which lives on the same group of host-plants. *P. abdominalis* Löw seems to be widely distributed in the Asiatic part of Palaeoarctic. It has not been reported from Mongolia before.

#### *Psylla cotoneasteris* Log.

Material studied: 2 ♂♂, 2 ♀♀, Selbe-gol, 30.VIII.1964, on *Dasifora fruticosa*; Cecerleg, 10.IX.1964, numerous ♂♂ and ♀♀ on *Cotoneaster mongolica* (material collected by the present author).

*P. cotoneasteris* Log. has been described from Kazakhstan and is known so far from that country and from Mongolia only. The specimens collected in Mongolia do not differ in their structure from the typical ones. The parameres, which are lobate, widened at the apex and slightly elongated anteriorly (Fig. 2), facilitate the correct determination of this species. The general structure of the copulation organ, head and wings of *P. cotoneasteris* Log. relate this species to the group „*Psylla pyrisuga*”, abundantly represented in the Asiatic part of Palaeoarctic and connected with *Pomoideae*. The species in question was reported from Mongolia under the name *Psylla* sp. I (7).

*Psylla steinbergi* L o g.

Material studied: 4 ♀♀, Nucht ad Ulan Bator, on *Ribes* sp., 31.VIII.1964, leg. S. M. Klimaszewski.

From the morphological point of view, *P. steinbergi* L o g. approaches (which that author stresses in her description) *P. crataegi* S ch r. and the species of the "pyrisuga" group. The fore-wings of the species under discussion are characterized by the lack of surface spines in all cells, and by a distinct, dark-brown spot at the end of the claval suture. Inside the cells, the fore-wing membrane has a yellowish colouring. The species is new for the fauna of Mongolia.

## TRIOZIDAE

*Bactericera rossica* H o r v. sensu Klimasz., 1963

Material studied: 40 km. W Cecer'eg, 13.IX.1964, swept in the steppe (with numerous species of the genus *Artemisia* L.), numerous ♂♂ and ♀♀, leg. S. M. Klimaszewski.

This species is known from the south of the European part of the USSR, and from Mongolia, where it is fairly common.

*Trioza congregatia* sp. n.

Body russet-yellow in colour, conical processes light brown, darker at the end; vertex pits slightly darkened, brownish. Abdomen yellow on underside, brown on the tergum. Proctigal and genital segment brown on tip. Fore-wings hyaline, colourless, with light-yellow veins.

Head 0.56 mm. wide, vertex 0.36 mm. wide and 0.21 mm. long. Vertex flat, deeply incised anteriorly (margins of incision slightly elevated), straight posteriorly. Conical processes widely diverging from the base, arching outward, 0.11 mm. long. Fore-wings 3.20 mm. long and 1.20 mm. wide, devoid of surface spines in all cells except at the base of  $Cu_2$  and of basal field. Marginal spines distributed typically, in cells  $M_1$ ,  $M_2$ , and  $C_1$ .  $M_1$  distinctly smaller than  $Cu_1$ , although vein  $m_{1+2}$  is slightly longer than the lower margin of  $Cu_1$  index 1.34. Vein is long, reaching beyond branching of vein  $m$ , wavy and bent upwards in its terminal part. Apex of wing pointed, lies below termination of vein  $m_{1+2}$ . Spines on distal ends of tibia of 3rd pair of legs are distributed according to the formula  $2+1$ , and sit on short, but distinctly visible spurs.

Abdominal termination in female. Proctigal segment short (0.33 mm.), upper outline broadly wedge-shaped, dark-pigmented at base and

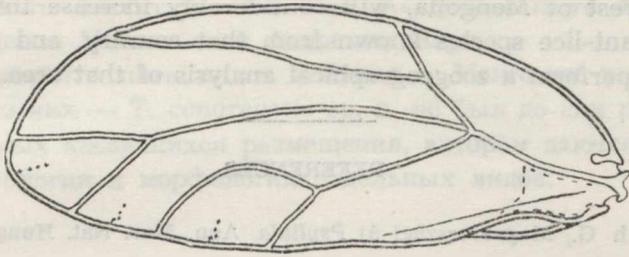


Fig. 2. The fore-wing of *Trioza congregatia* sp. n.

terminal part. Genital plate shorter than proctigal segment, triangular laterally. On both segments microrelief is seen, consisting of fairly large, button-like elevations. Outer valves of ovipositor pointed, with a distinct, single tooth on lower surface.

Host-plant: *Populus* sp.

Holotype: ♀, Terelž-gol, 3.IX.1964, in a river valley on *Populus* sp., leg. S. M. Klimaszewski.

Within the genus *Trioza* Först., the species under consideration belongs to a small, peculiar group „*T. populi*”, attached to the genus *Populus* L. The first species of this group was described by Horvath (1) from Hungary. Unfortunately, the description of *T. populi* Horv. is rather scanty, and the types of this species have been lost; it seems, however, that it will be possible to identify it after renewed finding. In 1958, Loginova (2) described from Kazakhstan another species attached to the genus *Populus* L. — *T. rufa* Long.; thus *T. congregatia* sp. n. would be the third species belonging to this group. The position of the group „*T. populi*” within the genus *Trioza* Först. has not been cleared so far. Morphological similarities between the group „*T. populi*” and the genus *Egeirotrioza* Berg. point rather to a primary attachment of this group to plants as old as poplars; the specific structure of the copulation apparatus of the male (described by M. M. Loginova) indicates a strongly distinct position of the group within the genus *Trioza* Först. (in the present sense, probably a polyphyletic, artificial genus).

Up to this moment, 41 species of jumping plant-lice, belonging to 8 genera, have been reported from Mongolia. It must be stressed, however, that so far the studies on the fauna of Mongolia were limited to short periods of time and concentrated in the central area of the country, which is approximately contained within the quadrangle: Sucha Bator—Ulan Bator — Sajn-Sand—Cecerleg, and whose flora is comparatively uniform. There is no doubt that further researches, especially in the

East and West of Mongolia, will considerably increase the number of jumping plant-lice species known from that country, and will make it possible to perform a zoogeographical analysis of that area.

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STRESZCZENIE

Praca zawiera omówienie 19 występujących w Mongolskiej Republice Ludowej gatunków koliszków, zebranych w ramach wspólnych badań terenowych Instytutu Zoologicznego PAN w Warszawie i Instytutu Przyrodoznawstwa MAN w Ulan Bator. Pięć z nich należy do wymienianych z Mongolii po raz pierwszy, a jeden — *T. congregatia* sp. n. — nie był dotąd opisany. Poza wiadomościami o rozmieszczeniu autor podaje ponadto szereg nowych danych o biologii i morfologii poszczególnych gatunków.

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РЕЗЮМЕ

В работе изложено описание 19-ти видов Homoptera найденных на территории Монгольской Народной Республики. Исследования проводились в рамках совместных научно-исследовательских работ

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Оказалось, что пять видов найдено в Монголии впервые, причем один из них — *T. congregatia* sp. n. не был до сих пор известен. Кроме данных касающихся размещения, автором даются новые сведения о биологии и морфологии отдельных видов.

