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A NEW SPECIES OF *XEROBION* NEVSKY, 1928 (HEMIPTERA: APHIDOIDEA, APHIDIDAE) FROM KAZAKHSTAN, WITH A KEY TO APTEROUS VIVIPAROUS FEMALES OF THE GENUS

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Summary. A new species *Xerobion ulytavicum* Kadyrbekov **sp. n.** from host plant *Galatella biflora* is described from Karaganda region (Kazakhstan). New species differs from the most similar *X. caspicae* Bozhko, 1963 by the shape of the ultimate rostral segment, the ratio of the length of the siphunculi and the cauda (0.4–0.75 vs 0.7–1.0, respectively), the proportion of frontal setae to the diameter of the third antennal segment at the base (1.0–1.2 vs 0.7–1.0) and a hair on the trochanter of hind legs to the diameter of the trochanter-femoral suture (0.5–0.6 vs 0.25), as well as a host plant belonging to another genus. A key to apterous viviparous females of all known species of the genus *Xerobion* is given.

Key words: aphids, Aphididae, *Xerobion*, taxonomy, new species, key, Palaearctic region.

Р. Х. Кадырбеков Новый вид рода *Xerobion* Nevsky, 1928 (Hemiptera: Aphidoidea, Aphididae) из Казахстана с определительной таблицей видов рода по бескрылым живородящим самкам // Дальневосточный энтомолог. 2021. N 431. С. 10-16.

Резюме. Из Карагандинской области Казахстана описан новый для науки вид *Xerobion ulytavicum* Kadyrbekov, **sp. n.** (кормовое растение – *Galatella biflora*). Новый вид отличается от близкого *X. caspicae* Bozhko, 1963 формой последнего членика хоботка, соотношением длины трубочек и хвостика (0.4–0.75 и 0.7–1.0, соответственно), пропорцией лобных волосков к диаметру третьего членика усиков в основании (1.0–1.2 vs 0.7–1.0) и волоска на вертлуге к диаметру вертлужно-бедерного шва (0.5–0.6 vs 0.25), а также кормовым растением, относящемся к другому роду. Составлена определительная таблица видов рода *Xerobion* по бескрылым живородящим самкам.

INTRODUCTION

The aphids genus *Xerobion* consists of 21 species distributed in the South Palaearctic region (Blackman & Eastop, 2006; Favret, 2019). All currently known species are monoecious, narrow oligophagous or monophagous on plants from the families Asteraceae, Chenopodiaceae and Limoniaceae. They live openly on above-ground parts of plants. A new species of this genus is described below.

MATERIAL AND METHODS

The types of *Xerobion cinae* (Nevsky, 1928) from the collection of the Zoological Institute RAS (St. Petersburg, Russia) and paratypes of *X. caspicae* (Bozhko, 1963) and *X. inthybi* Bozhko, 1963 from the collection of Bozhko (Kharkov, Ukraine) are examined. Type series of *X. alakuli* (Juchnevitsh, 1974), *X. juchnevitchae* Smajlova, 1974 are stored in the collection of the Institute of Zoology of Republic of Kazakhstan (Almaty). Paratypes of *X. album* (Remaudière et Davatchi, 1959), *X. georgii* (Mier et Nieto, 1991), *X. judenkoi* (Szelegiewicz, 1959), *X. hortobagyi* (Szelegiewicz, 1978), *X. pannonica* (Szelegiewicz, 1978) were kindly sent by the Remaudière (Museum national d'Histoire naturelle, Paris, France). Besides, a lot of specimens of *X. alakuli* (Juchnevitsh, 1974), *X. cinae* (Nevsky, 1928), *X. camphorosmae* (Taschev, 1961), *X. eriosomatinum* Nevsky, 1928, *X. caspicae* (Bozhko, 1963), *X. lambersi* (Taschev, 1961), *X. judenkoi* (Szelegiewicz, 1959), *X. pannonica* (Szelegiewicz, 1978) from the collection of Institute of Zoology of Republic of Kazakhstan (Almaty) have been studied. Original descriptions of all known species (Barbagallo, 1996; Barjadze, Gratiashvili, 2020; Bozhko, 1963; Ivanovskaja, 1960; Mier Durante, Nieto Nafria, 1991; Nevsky, 1929, 1937; Juchnevitsh, 1974; Prieto, Sanchis, 1998; Remaudière, Davatchi, 1959; Smajlova, 1974; Szelegiewicz, 1959, 1978; Taschev, 1961) have been also used for compilation of a key.

All measurements are given in millimeters. Holotype and paratypes of new species are deposited in the collection of Institute of Zoology (Almaty, Kazakhstan).

TAXONOMY

***Xerobion ulytavicum* Kadyrbekov, sp. n.**

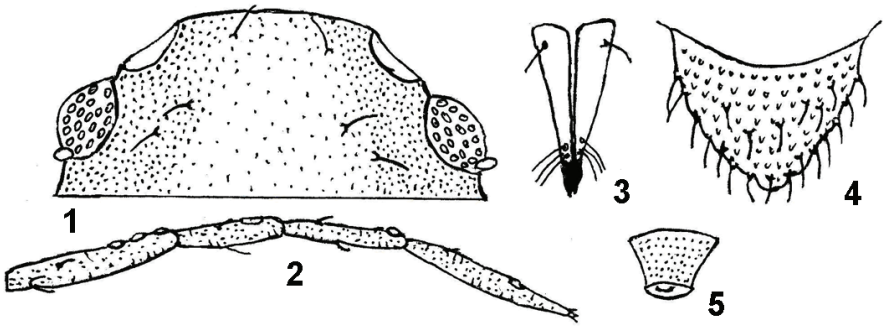
http://zoobank.org/NomenclaturalActs/9AECB84E-A135-4731-ABBA-92DE681CE5EE

Figs 1–5

TYPE MATERIAL. Holotype – apterous viviparous female, preparation No. 5248, **Kazakhstan**: Karaganda Region, Ulytau Mountains, 5 km south-west of Ulytau small town, *Galatella biflora*, h~600 m, 10.VII 2015, leg. R.H. Kadyrbekov. Paratypes: 9 apterous viviparous females were collected together with the holotype.

DESCRIPTION. **Apterous viviparous female** (by 10 specimens). The body is widely oval, 1.0–1.5. The cuticle is cellular. The frons is slowly concave (Fig. 1). Frontal setae (0.01–0.02) are equal to or slightly larger than the diameter of the third segment of the antennae at the base (1.0–1.25). Antennae five- or six-segmented (Fig. 2), 0.43–0.53 to body length. The following number of setae on the antennae: 1st 2–3, 2nd 2–3, 3rd 3–5, 4th 1–3, 5th 1–3, 6th 4–6. The third segment of the antennae is 0.1–0.15 to body length, 1.25–1.5 times longer than the fourth, 1.65–2.5 is longer than the processus terminalis, 0.65–0.95 to the sixth segment, or 1.06–1.14 to the fifth segment with five-segment antennae, also in 1.7–3.4 exceeds the length of the tubes. The fourth antennal segment is 0.41–0.8 to the length of the 3rd segment. The fifth segment is 0.7–1.2 to the length of the base of the 6th antennal segment. The base of the last antennal segment is 0.53–1.0 to the length of the 3rd antennal segment. The processus terminalis is 0.55–0.65 to the base of the last antennal segment, 0.3–0.6 to the 3rd antennal segment and equal to 0.11–0.15 of the width of the head between the eyes. The fourth segment of the antennae is 0.75–1.1 to the length of the fifth segment. Half of the specimens have a secondary rhinaria on the third (0–3), fourth (0–4), and occasionally, on the fifth (0–1) antennal segments. The setae of the 3rd antennal segment (0.01) are 0.5–0.6 of its diameter at the base. Clypeus normal, not enlarged, rostrum reaches medium coxae.

The ultimate rostral segment (Fig. 3) is stocky, not styletous, 1.15–1.3 times longer than the second segment of the hind tarsum, 2.3–2.8 times of its own width at the base, 1.0–1.4 to the length of the base of the last antennal segment, 0.25–0.37 to the width of head between eyes, 1.8–3 times as long as siphunculi, with 2 additional setae. The siphunculi are short, volcano-shaped, with clear flanges (Fig. 4), are 0.04–0.06 to the body length, 0.11–0.13 to the head width between the eyes, 0.40–0.66 to the base of the last antennal segment, 0.4–0.75 to the cauda, 0.5–0.75 to their maximum width, 0.4–0.65 to the length of 2nd segment of hind tarsum. The cauda is shortly triangular (Fig. 5); it is 0.5–0.75 to its own width at the base, 0.07–0.09 to the body length, 0.87–1.0 to the length of the 2nd segment of the hind tarsum, with 15–20 setae. The marginal tubercles, almost flat, are present on the prothorax, on the 1st and 7th abdominal tergites. The diameter of the marginal tubercle on the 7th tergite of the abdomen (0.02) is 0.7–0.8 times the diameter of the marginal tubercle on the 1st tergite, 1.2–1.4 times the diameter of the 3rd antennal segment at the base. The setae on the 3–6th abdominal tergites (0.02–0.03) are 1.25–1.50 times longer than the diameter of the 3rd antennal segment at the base. On the 8th tergite of the abdomen, 4 setae (0.02–0.04) 1.5–2 times the diameter of the 3rd antennal segment at the base. The subgenital plate is oval, with 2 setae on the disk and 4–7 setae on the posterior margin. Legs are normally developed. The posterior femur is 0.14–0.2 to body length and is equal to 0.68–0.76 the width of the head between the eyes. The hind tibia is 0.25–0.34 to body length, 1.20–1.39 times the width of the head between the eyes. The second segment of the hind tarsum is 0.75–1.0 to the base length of the last antennal segment. The lower hair of the hind trochanter (0.03–0.04) is 0.5–0.6 to the diameter of the trochanter-femur suture, the longest hair on the outer side of the posterior femur (0.02) is 0.35–0.4 to the diameter of the trochanter-femur suture. First segment of tarsum with 3: 3: 2 setae.



Figs 1–5. *Xerobion ulytavicum* Kadyrbekov sp. n. 1 – head; 2 – 3rd-6th antennal segments; 3 – ultimate rostral segment; 4 – cauda; 5 – siphunculus.

DIMENSION (holotype and paratypes). Body 1.0–1.5, antennae 0.45–0.7: 3rd segment 0.1–0.17, 4th segment 0.07–0.12, 5th segment 0.07–0.13, 6th segment 0.16–0.19 (0.09–0.13 + 0.05–0.08), base of 3rd antennal segment 0.015–0.016, weight of head 0.44–0.53, siphunculi length 0.04–0.06, siphunculi width 0.05–0.09, cauda length 0.02–0.1, cauda width 0.07–0.17, ultimate rostral segment 0.11–0.14, second segment of the hind tarsum 0.08–0.11, length of hind femur 0.26–0.33, length of hind tibia 0.45–0.63.

INTRAVITAL COLOR. The body is dark green with weak gray bloom, head, upper half of the 3rd, 4–6th antennal segments, clypeus, coxae, trochanter, femur except the base, base and top of the legs, tarsi, subgenital plate – are light brown, siphunculi are black, the cauda is green.

PREPARATION COLOR**.** Head, 1st, 2nd, upper half of 3rd, 4th–6th antennal segments, clypeus, coxae, trochanters, femora except the base, base and tops of the tibiae, tarsi, subgenital plate, are light brown or brown; cauda is light.

DIAGNOSIS. The new species is similar to *Xeroboin caspicae*. It differs by the ultimate rostral segment, the ratio of the length of siphunculi and cauda (0.4–0.75 compared to 0.7–1.0), the proportion of frontal setae to the diameter of the 3rd antennal segment at the base (1.0–1.2 versus 0.7–1.0) and the lower hair on the trochanter of the hind legs to the diameter of the trochanter-femoral suture (0.5–0.6 versus 0.25), as well as a host plant belonging to another genus.

BIONOMY. Aphids live on the stems and peduncles of the saltflower *Galatella biflora* (L.) Nees. (Asteraceae) visited by ants.

DISTRIBUTION. Kazakhstan: Kazakh low mountains, Ulytau Mountains.

ETYMOLOGY. The name of the species is derived from the name of the Ulytau Mountains, where it was collected.

A key to the apterous viviparous females of the genus *Xerobion*

1(10) Aphids have thick wax pollination. The ultimate rostral segment is elongated, more than 1.5 times longer than the 2nd segment of the hind tarsum.

2(3) The marginal tubercles are only on the 1st and 7th abdominal tergites. Secondary rhinariae are found on the 3–4th, and usually also on the 5th segments of the antennae. On immortelle (*Helichrysum armoenium*). Turkey, Iran ……..……
…….....… ***X. album*** (Remaudière et Davatchi, 1959)

3(2) There are marginal tubercles on the 1–4th and 7th tergites of the abdomen. Secondary rhinariae absent.

4(5) The ultimate rostral segment is 1.9–2.3 times as long as the 2nd segment of the hind tarsum. The processus terminalis is 0.8–1.0 in length to the base of the 6th antennal segment. Tergite 8th with 4 setae. On *Kochia prostrata*, *K. scoparia*. Spain, Italy, Ukraine, Russia (North Caucasus, Lower Volga region), Azerbaijan, Pakistan, Uzbekistan, Kazakhstan, China (Xinjiang) ……..…. ***X. eriosomatinum*** Nevsky, 1928

5(4) The ultimate rostral segment no more than 1.75 times longer than the 2nd segment of the hind tarsum. Tergite 8th with 2–3 setae.

6(9) The third antennal segment is 0.76–0.92 to the 6th length and 1.6–2.0 longer than the processus terminalis. The siphunculi are 0.45–0.65 to cauda lengths. Cauda with 12–18 setae.

7(8) The siphunculi are 0.45–0.55 to cauda length. The cauda is 0.8–1.0 to the length of the 2nd segment of the hind tarsum. The processus terminalis is 0.9–1.2 to the base of the 6th antennal segment. At *Camphorosma* spp. Bulgaria, Kazakhstan, China (Xinjiang) ..…
……..……..... ***X. camphorosmae*** (Taschev, 1961)

8(7) The siphunculi are equal to 0.6–0.65 cauda length. The cauda is 1.0–1.1 to the length of the 2nd segment of the hind tarsum. The processus terminalis is 0.75–1.0 to the length of the base of the 6th antennal segment. On *Helichrysum arenarium*. Kazakhstan .....
……..……. ***X. barsukense*** Kadyrbekov, 2014

9(6) The third antennal segment is 0.95–1.0 to the 6th length and 2.2–2.6 longer than the processus terminalis. The siphunculi are 0.9–1.0 to the cauda length. Cauda with 8–10 setae. On *Cichorium intybus*. Ukraine ...……..… …. ***X. inthybi*** Bozhko, 1963

10(1) Aphids with light or without pollinated wax. The ultimate rostral segment is elongated, robust or styletous, no more than 1.45 times longer than the 2nd segment of the hind tarsum.

11(12) The ultimate rostral segment is robust, 0.75–0.9 to the length of the 2nd segment of the hind tarsum. *Atriplex cana*. Kazakhstan ……..... ***X. juchnevitchae*** Smajlova, 1974

12(11). The ultimate rostral segment is elongated, robust or styletous, equal to or longer than the 2nd segment of the hind tarsum. On plants of the Asteraceae and Limoniaceae families.

13(32). The margin tubercles only on the 1st and 7th abdominal tergites.

14(17) The setae on the frons are no more than 1.2 times to the diameter of the 3rd antennal segment at the base.

15(16) The setae on the frons are 0.7–1.0 to the diameter of the 3rd antennal segment at the base. Ultimate rostral segment is stiletoid. The length of the siphunculi are 0.7–1.0 to the cauda length. The lower hair on the hind trochanters is 0.25 to the diameter of the trochanter-femoral suture. On *Artemisia (Oligosporus) campestris*, *A. (O.) variabilis*, *A. caspica*. Spain, Italy, Ukraine, Kazakhstan ..……..... ***X. caspicae*** (Bozhko, 1963)

16(15) The setae on the frons are 1.0–1.2 times to the diameter of the 3rd antennal segment at the base. The ultimate rostral segment robust, pointed at the end. Length of the siphunculi 0.4–0.75 to cauda length. The lower hair on the hind trochanters is 0.5–0.6 to the diameter of the trochanter-femoral suture. On *Galatella biflora*. Kazakhstan ..... ***X. ulytavicum*** **sp. n.**

17(14) The setae on the frons are not less than 1.5 times the diameter of the 3rd antennal segment at the base.

18(27) Ultimate rostral segment is elongated, robust or styletous, equal to 1.0–1.18 of the length of the 2nd segment of the hind tarsum.

19(24) Setae on the frons are 1.5–2.0 times larger than the diameter of the 3rd antennal segment at the base.

20(21) Processus terminalis is 0.95–1.1 to the length of the base of the 6th antennal segment. On *Hyalea pulchella*. Turkmenistan, Kazakhstan ..... ***X. zoijae*** (Nevsky, 1937)

21(20) Processus terminalis is 0.56–0.8 to the length of the base of the 6th antennal segment. On *Artemisia* and *Acantholimon.*

22(23) Siphunculi without subapical constriction and flange, 0.014–0.035 to body length. On *Acantholimon erinaceum*, *A. festucaceum*, *A.* sp. Iran ……..…… ……..……..... ***X. eteriae*** Barjadze et Gratiashvili, 2020

23(22) Siphunculi with subapical constriction and flange, 0.033–0.048 to body length. On *Artemisia* (*Oligosporus*) *dracunculus, A.* (*O.*) *marschalliana, A.* (*O.*) *scoparia, A.* (*O.*) *tomentella*. Bulgaria, Moldova, Ukraine, Turkey, Iran, Pakistan, Afghanistan, Kazakhstan ..... ***X. lambersi*** (Taschev, 1961)

24(19) Setae on the frons 2.0–3.5 times to the diameter of the 3rd antennal segment at the base.

25(26) Third antennal segment is 0.8–0.9 times to the base of the 6th segment and is 2.2 times longer than the processus terminalis. Ultimate rostral segment robust, pointed at the end. Siphunculi are 0.05–0.06 to the body length. Secondary rhinariae are absent. Cauda with 11–16 setae. On *Artemisia desertorum*. Russia (Far East) ….…… ……..…….. ***X. amurensis*** (Pashtshenko, 1992)

26(25) Third antennal segment is 1.0–1.4 times to the base of the 6th segment and is 2.9–3.9 times longer than the processus terminalis. Ultimate rostral segment stiletoid. Siphunculi are 0.04–0.05 to body length. Secondary rhinariae are on the 3–4th antennal segments. Cauda with 19–22 setae. On *Cousinia perovskiensis, Cirsium arvense*. Kazakhstan ……. ....…….. ***X. compositae*** Kadyrbekov, 2014

27(18) Ultimate rostral segment is stilettoid, 1.2–1.4 times longer than the 2nd segment of the hind tarsum

28(31) Body is very small, 0.99–1.22 mm. Setae on the frons are 2.5–4.0 times larger than the diameter of the 3rd antennal segment at the base. Secondary rhinariae is not regularly present on the 3–4th segments of the antennae. Cauda with 8–14 (16) setae.

29(30) Cauda is triangular, its length is 0.55–0.6 of its own width at the base, equal to 0.06–0.07 of the body length. On *Artemisia (Seriphidium)* spp. Kazakhstan, China (Xinjiang) ……..……..…… ***X. alakuli*** (Juchnevitsh, 1974)

30(29) Cauda is obtuse triangular, its length is 0.45–0.55 to its own width at the base, equal to 0.04–0.05 to the body length. On *Helichrysum arenarium*. Kazakhstan ….....…… ……..……..…… ***X. desertorum*** Kadyrbekov, 2014

31(28) Body is larger, 1.25–1.82 mm. Setae on the frons are 1.5–2.5 times larger than the diameter of the 3rd antennal segment at the base. Secondary rhinariae are regularly present on the 3–4th and sometimes on 5th antennal segments. Cauda with 14–24 setae. On *Artemisia* (*Seriphidium*) spp. Turkey, Iran, India (Kashmir), Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan, Russia (Lower Volga Region, Western Siberia), China (Xinjiang) ….....……..…… ***X. cinae*** (Nevsky, 1928)

32(13) Margin tubercles are on the 1–4th and 7th tergites of the abdomen.

33(36) Setae on the frons are longer, not less than 1.5 times to the diameter of the 3rd antennal segment at the base.

34(35) Setae on the frons are 1.5–1.7 times larger than the diameter of the 3rd antennal segment at the base. On *Artemisia* (*Oligosporus campestris, A.* sp. Poland, Latvia, Lithuania, Kazakhstan (north) …..….....…….……. ***X. judenkoi*** (Szelegiewicz, 1959)

35(34) Setae on the frons are 2.5–4.5 times to the diameter of the 3rd antennal segment at the base. On *Artemisia* (*Seriphidium*) *herba-alba*. Spain ..... ……...…….. ***X. blascoi*** (Prieto et Segovia, 1998)

36(33) Setae on the frons are shorter, not more than 1.2 times to the diameter of the third antennal segment at the base.

37(38) Setae on the frons are 0.5–0.7 to the diameter of the 3rd antennal segment at the base. Third antennal segment 1.4–1.9 times as long as the processus terminalis. Processus terminalis is 0.7–0.8 to the length of the base of the 6th antennal segment. Ultimate rostral segment is 1.25–1.4 times longer than the 2nd segment of the hind tarsum. On *Artemisia* (s.str.) *absinthium*. Slovakia, Hungary, Romania, Kazakhstan. ….....…… ……..... ***X. pannonica*** (Szelegiewicz, 1978)

38(37). Setae on the frons are 1.0–1.2 times to the diameter of the 3rd antennal segment at the base. Third antennal segment 2.0–3.0 times longer than the processus terminalis. Processus terminalis is 0.45–0.55 to the length of the base of the 6th antennal segment. Ultimate rostral segment is 1.0–1.20 to the length of the 2nd segment of the hind tarsum. On *Artemisia* (*Seriphidium*) *maritima*. Slovakia, Hungary …….....…… ……..... ***X. hortobagyi*** (Szelegiewicz, 1978)

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