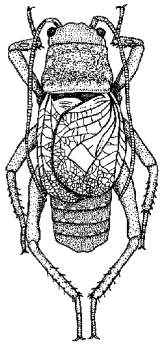

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TWO NEW SPECIES OF THE GENUS *MACROSIPHONIELLA* DEL GUERCIO, 1911 (HEMIPTERA, APHIDOMORPHA: APHIDIDAE) INHABITS YARROW IN KAZAKHSTAN

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Summary. Two new aphid species of the nominotypical subgenus of the genus *Macrosiphoniella* (Aphidinae) are described from Kazakhstan. Both species inhabits yarrow (*Achillea millefolium* L.). *Macrosiphoniella kazakhstanica* **sp. n.** most similar to *M. silvestrii* Roberti, 1954 but differs latter in the number of secondary rhinaria in apterous and alate viviparous females (5–10 and 24–26 *vs* 14–25 and 48–68), proportion of the processus terminalis to the base of the VI antennal segment (3.7–4.9 *vs* 2.8–3.6), proportion of antennal segment III to processus terminalis (0.82–0.98 *vs* 1.11–1.36), as well as the absence of dorsal sclerites at base of setae and color of all tibiae (brown in *M. silvestrii* and pale in the middle in new species). *Macrosiphoniella sarmatica* **sp. n.** is similar to *M. terraealbae* Kadyrbekov, 2000 but differs from latter in the ratios of the length of the processus terminalis to the length of the base of the 7th antennal segment (3.15–3.75 *vs* 2.7–3.1), length of the frontal setae to diameter of third antennal segment (1.6–1.7 *vs* 2.2–2.6), the number of accessory setae on the ultimate rostral segment (6 *vs* 7–8) and the number of setae on the cauda (10–13 *vs* 12–19).

Key words: aphids, Aphidinae, taxonomy, host plant, Palaearctic region.

Р. Х. Кадырбеков, А. М. Тлеппаева С. В. Колов Два новых вида рода *Macrosiphoniella* Del Guercio, 1911 (Hemiptera, Aphidomorpha: Aphididae) населяющие тысячелистник в Казахстане // Дальневосточный энтомолог. 2022. N 466. С. 1-8.

Резюме. Из Казахстана описаны два новых вида тлей из номинативного подрода рода *Macrosiphoniella*, живущие на тысячелистнике (*Achillea millefolium* L.). *Macrosiphoniella kazakhstanica* **sp. n.** близок к *M. silvestrii* Roberti, 1954, но отличается от него числом вторичных ринарий у бескрылых и крылатых живородящих самок (5–10 и 24–26 против 14–25 и 48–68), соотношением шпица к основанию шестого членика усиков (3.7–4.9 против 2.8–3.6) и длины третьего членика усиков к шпицу (0.82–0.98 и 1.11–1.36), а также отсутствием дорсальных склеритов в основании щетинок и цветом всех голеней (бурых у *M. silvestrii* и светлых посередине у нового вида). *Macrosiphoniella sarmatica* **sp. n.** сходен с *M. terraealbae* Kadyrbekov, 2000, но отличается от последнего соотношением длины шпица к длине основания шестого членика усиков (3.15–3.75 против 2.7–3.1) и длины лобных щетинок к диаметру третьего членика усиков в основании (1.6–1.7 против 2.2–2.6), а также количеством акцессорных щетинок на последнем членике хоботка (6 против 7–8) и количеством щетинок на хвостике (10–13 против 12–19).

INTRODUCTION

Macrosiphoniella Del Guercio, 1911 is a large Holarctic genus of aphids with 150 species and subspecies in the world, most of which are known from Palaearctic region (Favret, 2021). These species are trophically associated with plants of the Asteraceae (Compositae) from the subtribe Antemideae, Artemiseae, some species inhabit plants of the subtribe Cynareae, and others (Polyakov, 1967). They are oligophagous, narrow oligophagous or monophagous and live on aboveground parts of plants. Present paper is based on material collected by authors in different regions of Kazakhstan. Two new species are found and described below. All measurements are in millimeters. Holotypes and paratypes of new taxa are stored in the collection of the Institute of Zoology of the Committee of Science of the Ministry of Education and Science of the Republic of Kazakhstan (Almaty).

DESCRIPTION OF NEW SPECIES

***Macrosiphoniella* (s. str.) *kazakhstanica* Kadyrbekov, Tleppaeva et Kolov, sp. n.**

https://zoobank.org/NomenclaturalActs/06025C6C-95C9-49DA-AB28-E3C1BF9C9A2D

Figs 1, 2

TYPE MATERIAL. Holotype – apterous viviparous female (prep. No 4705), **South Kazakhstan**: Turkestan region, West Tien-Shan, Ugam Ridge, Sayramsu River, 20 km to north from Kaskasu Station, h=2000 m, on *Achillea millefolium*, 05.VII 2013, A.M. Tleppaeva leg. Paratypes: 2 apterous viviperous female together

with holotype; 1 apterous viviparous female (prep. No 4780), same label as holotype but 11.VII 2013, R.Kh. Kadyrbekov leg.; 1 apterous viviparous female (prep. No 5065), Turkestan region, West Tien-Shan, Karzhantau Rigde, Kyrykkyz pass, h=1861 m, on *Achillea millefolium*, 11.VIII 2014, A.M. Tleppaeva leg.; **South-East Kazakhstan**: 1 alate viviparous female (prep. No 3447), Almaty region, Tentek River, 4 km to West Ushtobe City, on *Achillea millefolium*, 29.V 2005, R.Kh. Kadyrbekov leg.; 1 alate viviparous female, 2 apterous viviparous females (prep. No 2689), Almaty region, North Tien-Shan, Zailijskiy Alatau Rigde, Kaskelen, on *Handelia trichophylla*, 04.VI 1999, R.Kh. Kadyrbekov leg.; **Central Kazakhstan**: 2 apterous viviparous females (prep. No. 5548), Karaganda region, 5 km to South-West Mirnyi Station., on *Achillea millefolium*, 06.VII 2016, R.Kh. Kadyrbekov leg.

DESCRIPTION **Apterous viviparous female** (8 specimens). Body obovate, 2.06–2.52. Frontal groove wide, its depth 0.22–0.30 times the distance between apices of antennal tubercles (Fig. 1). Setae of frontal groove long, pointed at end, 1.8–2.4 times as long as diameter of third antennal segment at base.

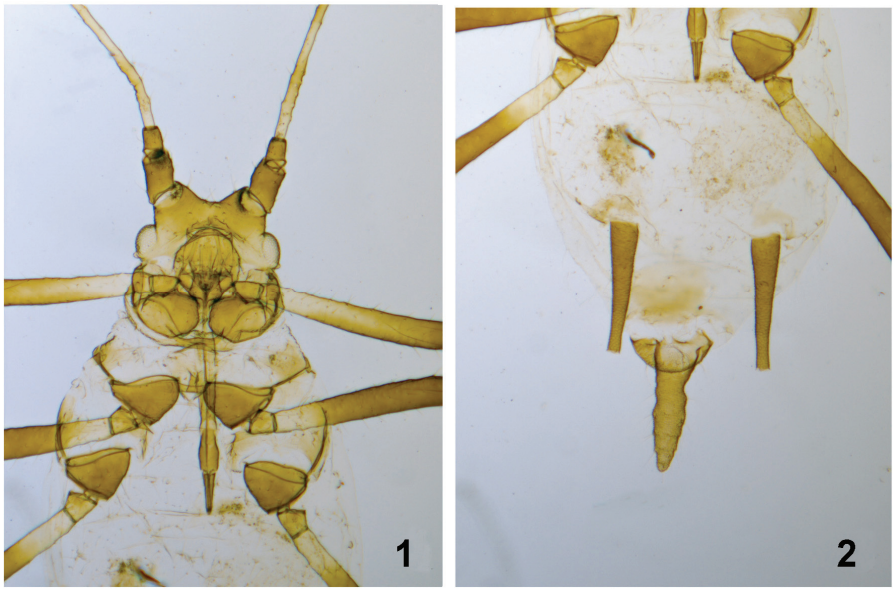
Antennae six-segmented, 1.23–1.28 times as long as body. Length of segment III 1.12–1.34 times as long as segment IV, 1.40–1.69 times as long as head between eyes, 1.40–1.77 times as long as siphunculi, 0.67–0.78 times as long as antennal segment VI, 0.82–0.98 times as long as processus terminalis. It has 5–10 secondary rhinaria located in the distal half. Setae on segment III pointed at apex, 1.1–1.3 times as long as diameter of segment III at base. Processus terminalis 3.7–4.9 times as long as base of antennal segment VI, 1.57–1.80 times as long as head between eyes, 1.51–1.89 times as long as siphunculi.

The rostrum is long, reaching the hind coxae. Ultimate rostral segment is slender, gradually narrowing towards apex (Fig. 1), 0.80–0.93 times as long as second segment of hind tarsus, 0.66–0.82 times as long as base of antennal segment VI, with 4–6 accessory setae. Setae on abdominal tergite III 2.1–2.4, on tergite VIII 2.1–2.5 times as long as basal diameter of antennal segment III. Abdominal tergite III has 8–12 , between siphunculi 3–5, VIII 4–6 long setae. Antesiphuncular sclerites narrow, crescent-shaped (Fig. 2). Anterior margin of subgenital plate with 2–4, posterior margin with 7–10 long setae. The siphunculi are subcylindrical, with clear rims, with a reticular structure of the upper part, occupying 0.32–0.38 of their length (Fig. 2). The siphunculi are 0.17–0.21 times as long as the body, 0.82–1.07 times as wide as the head between the eyes, and 1.0–1.3 times as long as the cauda. Cauda finger-shaped or digitiform, slightly compressed in basal half, with 9–14 long, thickened setae (Fig. 2). Legs long, their hind femora 0.38–0.43 body length, 0.52–0.57 hind tibia length, 1.75–2.16 head width between eyes. Length of hind tibia 3.1–3.9 times head width, 0.66–0.78 body length. The second segment of the hind tarsus is 0.84–1.00 times as long as the base of the VI antennal segment. First tarsal segment with 3, 3, 3 setae.

MEASUREMENTS (holotype). Body 2.35, antennae 2.83–2.93, antennal segments: III 0.65–0.68, IV 0.54, V 0.50–0.51, VI (0.18–0.20+0.73–0.78); width of head between eyes 0.46; siphunculi 0.43/0.45; cauda 0.41; ultimate rostral segment 0.14; second segment of hind tarsus 0.16.

INTRAVITAL COLOR. Light pink or cream with a gray coating, a longitudinal oval brown spot along the back; head, antennae, femora, tarsi, siphunculi, and cauda are black. The rest of the legs, the third segment of the antennae, except for the apex, are pale.

PREPARATION COLOR. Head, I, II, apex of III, proximal two-thirds of IV, V, VI segments of antennae, rostrum, coxae, femora (except base), base and apex of tibiae, tarsi, siphunculi, cauda, prothorax, large marginal sclerites on middle and metathorax, antesiphuncular sclerites, transverse band on abdominal tergite VIII, subgenital and anal plates are dark brown. The remaining parts of the antennae and legs are light. Dorsal setae not located on dark sclerites.



Figs 1, 2. *Macrosiphoniella* (*Macrosiphoniella*) *kazakhstanica* Kadyrbekov, Tleppaeva et Kolov, sp. n. 1 – head with rostrum; 2 – abdomen with siphunculi and cauda.

Alate viviparous female (2 specimens). Body obovate, 2.34–2.45. Frontal groove less wide, its depth 0.33–0.35 times the distance between apices of antennal tubercles. Setae of frontal groove long, pointed at end, 1.6–2.1 times as long as diameter of third antennal segment at base.

Antennae six-segmented, 1.25–1.27 times as long as body. Length of segment III 1.22–1.31 times as long as segment IV, 1.63–1.83 times as long as head between eyes, 1.67–1.82 times as long as siphunculi, 0.69–0.70 times as long as antennal segment VI, 0.83–0.85 times as long as processus terminalis. It has 24–26 secondary rhinaria located along the entire length of the segment. Setae on segment III pointed at apex, 1.0–1.1 times as long as diameter of segment III at base. Processus terminalis 4.7–5.0 times as long as base of antennal segment VI, 1.57–1.80 times as long as head between eyes, 1.95–1.97 times as long as siphunculi.

Rostrum is long, reaching the hind coxae. Ultimate rostral segment is slender, gradually narrowing towards apex, 0.85–0.86 times as long as second tarsus segment, 0.69–0.83 times as long as base of antennal segment VI, with 4–6 accessory setae. Setae on abdominal tergite III 2.0–2.3, on tergite VIII 2.1–2.4 times as long as basal diameter of antennal segment III. Abdominal tergite III has 8–12, between siphunculi 3–5, on VIII 4–6 long setae. Antesiphuncular sclerites narrow, crescent-shaped. Along anterior margin of subgenital plate are 2, along posterior margin are 6–8 long setae. Siphunculi are subcylindrical, with clear rims, with a reticular structure of the upper part, occupying 0.37–0.39 of their length. Siphunculi are 0.16–0.22 times as long as the body, 0.95–1.07 times as wide as the head between the eyes, and 1.06–1.10 times as long as the cauda. Cauda finger-shaped or digitiform, slightly compressed in basal half, with 11–12 long, thickened setae. The legs are long, their hind femora are 0.37–0.42 times as long as the body, 0.52–0.54 times as long as the hind tibia, and 2.07–2.13 times as wide as the head between the eyes. Length of hind tibia 3.9–4.1 times head width, 0.70–0.78 body length. The second segment of the hind tarsus is 0.82–0.85 times as long as the base of the VI antennal segment. First tarsal segment with 3, 3, 3 setae.

MEASUREMENTS (alate viviparous female). Body 2.45, antennae 3.05–3.10, antennal segments: III 0.71–0.74, IV 0.56–0.59, V 0.52, VI (0.17–0.18+0.86); head width between eyes 0.44; siphunculi 0.40/0.42; cauda 0.38; ultimate rostral segment 0.13; second segment of hind tarsus 0.15.

INTRAVITAL COLOR. Light pink or cream with a gray coating, a longitudinal oval brown spot along the back; head, thorax, antennae, femora, tarsi, siphunculi, cauda are black. Rests of the legs, third segment of the antennae, except for the apex, are pale.

PREPARATION COLOR. Head, I, II, apex of III, IV, V, VI segments of antennae, rostrum, coxae, femora (except bases), bases and apices of tibiae, tarsi, siphunculi, cauda, thorax, antesiphuncular sclerites, transverse stripe on abdominal tergite VIII, subgenital and anal plates are dark brown. The remaining parts of the antennae and legs are light. Dorsal setae not located on dark sclerites.

DIAGNOSIS. Among aphid species living on *Achillea millefolium* (Blackman & Eastop, 2021), the new species is most similar to European *M. silvestrii* Roberti, 1954 (Roberti, 1954; Barbagallo, 1969). *Macrosiphoniella kazakhstanica* sp. n. differs from latter species in the number of secondary rhinaria in apterous and alate viviparous females (5–10 and 24–26 *vs* 14–25 and 48–68), the ratios of processus terminalis to the base of antennal segment VI (3.7–4.9 *vs* 2.8–3.6), length of antennal segment III to processus terminalis (0.82–0.98 *vs* 1.11–1.36), absence of dorsal sclerites at base of setae, and color of all tibiae (brown in *M. silvestrii* and pale in the middle in *M. kazakhstanica* sp. n.).

HABITAT. Aphids live on the underside of the ground leaves of *Achillea millefolium* L., *Handelia trichophylla* (Schrenk) Heimerl (Asteraceae) the in scattered colonies. Only alate and apterous viviparous females have been found.

DISTRIBUTION. Central, South, and South-East Kazakhstan.

ETYMOLOGY. The species is named after the country where it was collected.

***Macrosiphoniella* (s. str.) *sarmatica* Kadyrbekov, Tleppaeva et Kolov, sp. n.**

https://zoobank.org/NomenclaturalActs/4D2B98A7-4927-4671-B543-94EB8C1BE763

Figs 3–6

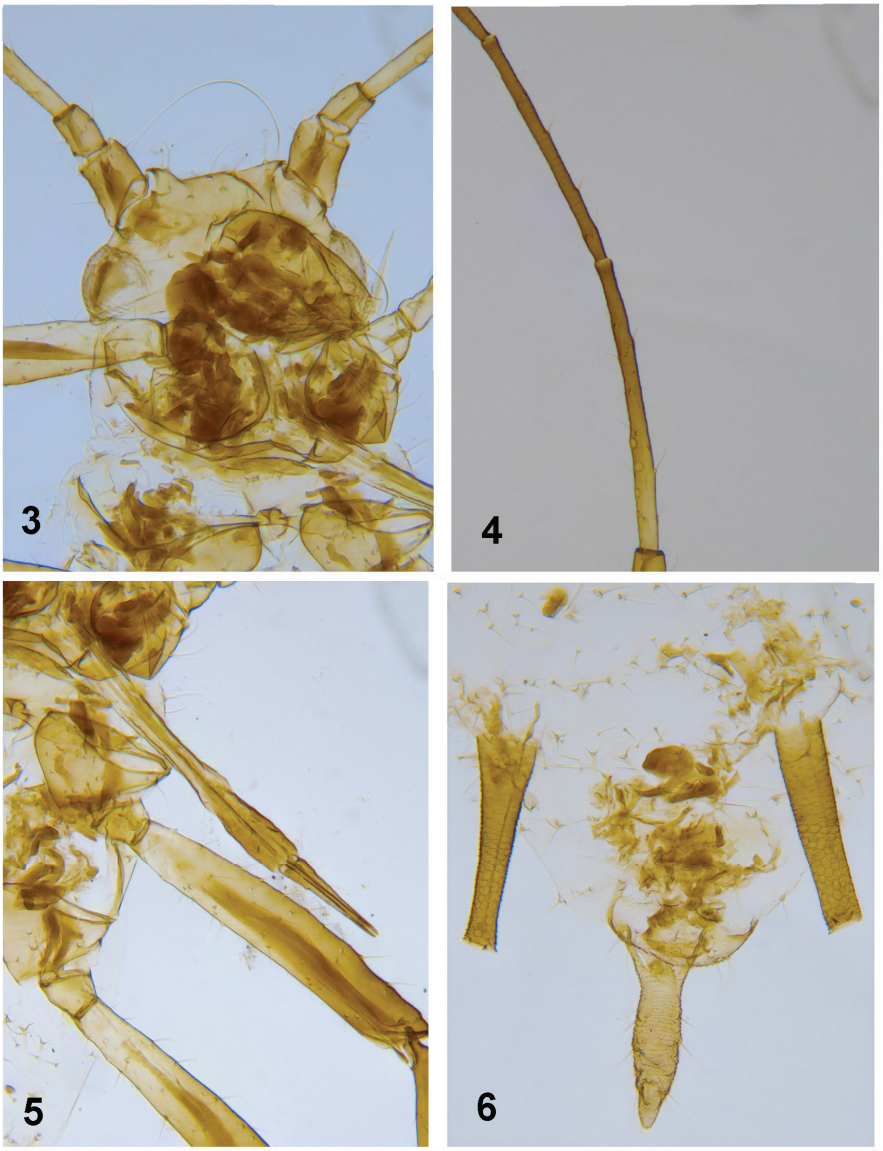
TYPE MATERIAL. Holotype – apterous viviparous female (prep. No 1933), **Kazakhstan**: West Kazakhstan region, env. of Aksay City, on *Achillea millefolium*, 21.VI 1990, R.Kh. Kadyrbekov leg. Paratypes: 5 apterous viviparous females together with holotype.

DESCRIPTION. **Apterous viviparous female** (6 specimens). Body obovate, 1.61–2.00. Frontal groove wide, its depth 0.13–0.18 times the distance between apices of antennal tubercles (Fig. 3). Setae of frontal groove long, pointed at end, 1.6–1.7 times as long as diameter of third antennal segment at base. Antennae six-segmented, 1.01–1.21 times as long as body. Length of segment III 1.07-1.30 times as long as segment IV, 1.24–1.45 times as long as head between eyes, 1.36–1.71 times as long as siphunculi, 0.53–0.74 times as long as antennal segment VI, 0.70–0.96 times as long as processus terminalis. It has 2–9 secondary rhinaria located in the distal half (fig. 4). Setae on segment III pointed at end, 0.9–1.1 times as long as diameter of segment III at base. Processus terminalis 3.14–3.75 times as long as base of antennal segment VI, 1.24–1.45 times as long as head between eyes, 1.36–1.71 times as long as siphunculi. The rostrum is long, reaching the hind coxae. Ultimate segment is slender, stylet-like (Fig. 5), 1.09–1.18 times as long as second segment of hind tarsus, 0.93–1.16 times as long as base of antennal segment VI, with 6 accessory setae. Setae on abdominal tergite III 1.6–1.7, on tergite VIII 1.6–1.8 times as long as basal diameter of antennal segment III. Abdominal tergite III has 10–16, between siphunculi 4–8, on VIII 4–6 long setae. Along anterior margin of subgenital plate are 2, along posterior margin are 6–8 long setae. The siphunculi are subcylindrical, with clear rims, with a reticular structure of the upper part, occupying 0.48–0.59 of their length (Fig. 6). Siphunculi are 0.18–0.20 times as long as the body, 0.80–0.94 times as wide as the head between the eyes, and 1.04–1.21 times as long as the cauda. Cauda finger-shaped with marked compression in the basal half, with 10–13 long, thickened setae (Fig. 6). Legs long, their hind femora 0.38–0.43 body length, 0.52–0.57 hind tibia length, 1.75–2.16 head width between eyes. Length of hind tibia 3.1–3.9 times head width, 0.66–0.78 body length. The second segment of the hind tarsus is 0.84–1.00 times as long as the base of the VI antennal segment. First tarsal segment with 3, 3, 3 setae.

MEASUREMENTS (holotype). Body 2.35, antennae 2.83–2.93, antennal segments: III 0.65–0.68, IV 0.54, V 0.50–0.51, VI (0.18–0.20+0.73–0.78); width of head between eyes 0.46; siphunculi 0.43/0.45; cauda 0.41; ultimate rostral segment 0.14; second segment of hind tarsus 0.16.

INTRAVITAL COLOR. Light green in white pollination. Head, antennae (except base of III segment), legs (except distal half of femora and trochanters), siphunculi, cauda are brown.

PREPARATION COLOR. Head, antennae (except base of segment III), clypeus, ultimate and penultimate rostral segments, coxae, proximal parts of femora, tibiae, tarsi, siphunculi, cauda, subgenital and anal plates are brown. The rest of the body is light.



Figs 3–6. *Macrosiphoniella* (*Macrosiphoniella*) *sarmatica* Kadyrbekov, Tleppaeva et Kolov, sp. n. 1 – frons; 2 – third and forth antennal segments; 3 – ultimate rostral segment; 4 – abdomen with siphunculi and cauda.

DIAGNOSIS. The new species stands apart among the species of the genus *Macrosiphoniella* Del Guercio, 1911 living on *Achillea* (Blackman & Eastop, 2021). Among other species of the nominative subgenus without antesiphuncular sclerites according to the key of Kadyrbekov (2019), it is close to *Macrosiphoniella terraealbae* Kadyrbekov, 2000. *Macrosiphoniella sarmatica* sp. n. differs from this species in the ratios of the length of the processus terminalis to the length of the base of the 6th antennal segment (3.15–3.75 *vs* 2.7–3.1), length of the frontal setae to diameter of segment III at base. (1.6–1.7 *vs* 2.2–2.6), and the number of accessory setae on the ultimate segment of the rostrum (6 *vs* 7–8) and by the number of setae on the cauda (10–13 *vs* 12–19).

HABITAT. Aphids live on the stems and in the inflorescences of *Achillea millefolium* L. in scattered colonies. Only apterous viviparous females have been found.

DISTRIBUTION. Kazakhstan: West Kazakhstan region.

ETYMOLOGY. Species is named after the Sarmatians, a large confederation of ancent nomadic peoples who dominated the West Kazakhstan steppe.

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