

Contribution to the systematic of the aphid genus *Protaphis* Börner, 1952 (Homoptera, Aphididae) in the former USSR fauna

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The genus *Protaphis* belonging to the subtribe Aphidina comprises the species characterized by the short *processus terminalis*, which is shorter, equal or 1.1-1.3 times longer than the base of apical antennal segment; short conic or subcylindrical siphunculi with irregular rims, triangular cauda, the type of dorsal sclerotization (fig.1-15); elongated, but not stiloid, apical rostral segment 1.2-1.7 times longer than the second segment of hind tarsus, with 2 accessory hairs. In the apterous viviparous females the secondary rhinaria are either absent or present on the third antennal segment, (in few species on fourth antennal segment). Alate viviparous females constantly have the secondary rhinaria on the third, (sometimes also, on the fourth) antennal segment. Eighth tergite with 2-4 hairs. First tarsal segment with 3:3:2 hairs.

All hitherto-known species usually live on the underground, sometimes on the aerial parts of Asteraceae, Fabaceae, Campanulaceae and Rutaceae.

Despite the habitus of the *Protaphis* species is very typical, the identification of still remains species difficult through the poor elaboration of species diagnostics and high variability of characters (Eastop, 1979). The preceding revision of the genus *Protaphis* in the USSR fauna undertaken by Ivanovskaja (1960) unfortunately was unsuccessful: author tried to use characters constant in all species of the genus, e.g. the number of hairs on the frons, on the apex of *processus terminalis*, on the apical segment of the rostrum. The form of cuticular reticles and the color of eyes are quite disputable characters in the taxonomy of *Protaphis*; more available are the following indices/proportions: apical rostral segment to the second segment of hind tarsus; siphunculi to the body length, to the cauda, to the apical rostral segment, to their maximal width; cauda to its proximal width, to the apical rostral segment, etc. Fine characters are the length of body hairs, and their number, the shape, number and size of marginal tubercles. The following traditional characters in the taxonomy of *Protaphis* are also used: presence/absence of secondary rhinaria, number of caudal hairs and caudal color.

The author expresses his great gratitude to Dr. G. Remaudiere (France) and Dr. A.O. Stekolshchikov (St-Peterburg, Russia) for the kindly granted opportunity to examine the materials deposited in the National Museum of Natural History (Paris) and Zoological Institute (St.-Peterburg). The recent world aphid catalogue (G. and M. Remaudiere, 1997) includes 13 *Protaphis* species for the former USSR fauna; however certain species apparently do not belong to this genus. Thus, *P. amurensis* (Paschsh., 1994), *P. artemisiae* (Narz., 1949), *P. terraealbae* Iv., 1959 should be transferred in the genus *Xerobion* Nevsky, 1928. *Protaphis deformans* (Nevs., 1929), *P. tausaghyz* Nevs. et Iv., 1960 are referred to the genus *Brachyunguis* B.Das, 1918. At the same time, *Brachyunguis ruta* (Nevs., 1928) should be returned to the genus *Protaphis*.

Finally only 9 *Protaphis* species were known in the former USSR fauna before us. The present paper comprises 20 species including 10 new ones, besides *P. carthami* (B.Das, 1918) found in South Kazakhstan is first registered in the fauna of former USSR. Descriptions of species are given below.

The following abbreviations are used in the text: S.- southern, C.- central, N.- northern, W.- western, E.- eastern, mt.- mounthing, r.- river, ran.- mountain range, s.l.- the height above the sea level, ap.v.f.- apterous viviparous female, al.v.f.- alate viviparous female, b.- body, ant.- antennae, siph.- siphunculi, c.- cauda, a.r.s.- apical rostral segment, 2s.h.t.-second segment of hind tarsus, env.-environs

All dimensions are given in millimetres.

P. alexandrae (Nevsky, 1928)

Apterous viviparous female (by 13 specimens). Body elliptical 1.27-1.73. Small marginal sclerites are present on the thorax, occasionally on the abdominal tergites. The small median sclerites on the 6th abdominal tergite, narrow strip on the 7-8th tergites, and also intersegmental sclerotized patches are also present. Cuticle reticulated. Frons slightly convex, without antennal tubercles, frontal hairs (0.017) are 1.0-1.2 of basal diameter of the 3rd antennal segment. Antennae six-segmented, 0.30-0.41 of body length; 3rd segment is 0.88-1.2 of the 6th length, 2.2-3.0 of 4th segment, 2.0-2.6 of the *processus terminalis*. *Processus terminalis* is 0.80-0.88 of base of 6th segment, with 4 apical hairs. Secondary rhinaria usually absent, but in 10% of specimens on 3rd segment have 1-2. Hairs on the 3rd segment (0.007-0.008) are 0.5 of its basal diameter. Clypeus is normal, rostrum reaches the middle coxae; apical rostral segment with 2 accessory hairs, 1.40-1.45 times longer than 2nd segment of hind tarsus. Siphunculi conic, with in distinct flanges, 0.046-0.057 of body length, 0.5-0.7 of apical rostral segment, 0.7-0.9 of cauda, 1.1-1.5 times of their maximal width. Cauda is pale, triangular, 0.77-0.90 of its basal width, 0.6-0.8 of apical rostral segment, with 11-14 hairs. Marginal tubercles developed on the prothorax, 1st and 7th tergites, rounded. Diameter of tubercle on 7th and 1st tergites (0.022-0.034) approximately equal. Diameter of

tubercle on 1st tergite is 1.3-1.6 of the basal diameter of 3rd antennal segment. Hairs on 3-5th tergites (0.014-0.017) are 1.0-1.2 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 3-5 hairs on disc and (9)10-14 ones along its posterior margin. 8th tergite with 2(3) hairs. Legs normal, trochanter hairs of middle legs and on external side of middle femora (0.017-0.020) 0.30-0.45 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

Colour on slides: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th rostral segments, coxae, trochanters, femora (apart basal part), apices of tibiae, tarsi, body sclerites, subgenital and anal plates, siphunculi dark-brown, cauda paler.

Alate viviparous female (by 6 specimens). Antennae are longer, 0.41-0.45 of body length. Third antennal segment is 2.5-3.0 of the 4th segment, 1.12-1.35 of 6th ones, 2.6-3.3 of *processus terminalis*, with 5-7 secondary rhinaria on its distal part. 4th segment with 0-1 rhinaria. Siphunculi are more slender, 1.5-1.7 of their basal width, 0.046-0.064 of the body length. Other characters as in the apterous female.

Colour on the slide: head, thorax, antennae (except the base of 3rd segment), clypeus, 3rd-4th rostral segments, coxae, trochanters, femora (except their base), apices of tibiae, tarsi, abdominal sclerites, subgenital and anal plates, siphunculi dark-brown, cauda paler.

Host plant. *Centaurea squarrosa* Willd., *C.sp.*

Bionomy. Aphids suck on the stems, visited by ants.

Distribution. Uzbekistan (Samarkand, Shahrisabs), S. Kazakstan (Talas, Aksu, Alakol). Records in West Europe (Hille Ris Lambers, 1931), Ukraine, Caucasus (Russia) (Ivanovskaja, 1960) refer to other species.

Material examined. Holotype: 1 ap.v.f., N3154, Uzbekistan, Samarkand, 10.06.1927, *Centaurea squarrosa*, Nevsky; paratype- 1 al.v.f., together with holotype; 5 ap.v.f., 2 al.v.f., N1523, SE Kazakhstan, Alakol depression, 30 km E. of Koktuma, Irgaity r., 10.08.1989, *Centaurea squarrosa*, Kadyrbekov; 2 ap.v.f., 3 al.v.f., N3013, SE Kazakhstan, Dzhungarskiy Alatau ran., Aksu r. valley, 8.07.1963, *Centaurea squarrosa*, Juchnevitch; 5 ap.v.f., N3264, S. Kazakhstan, Talas r. valley, env.s. Pokrovka, 11.07.1964, *Centaurea sp.*, Juchnevitch.

Taxonomic notes. *P. alexandrae* belongs to the species group with short frontal hairs 0.6-1.0 of basal diameter of the 3rd antennal segment. From the closely related *P. cousinia*, *P. turanica* it differs by presence of 2 hairs on 8th tergite. *P. alexandrae*, together with *P. cousinia* can be distinguished from *P. turanica* by the pale cauda which is 0.6-0.8 of apical rostral segment, and small marginal tubercles. From *P. cousinia* it differs by the less number of hairs on the cauda, more long trochanter hairs, differing indices of siphunculi to cauda and those of 3rd antennal segment to 4th, and also by the host plant.

***P. alhagii* Juchnevitch, 1974**

Apterous viviparous female (by 6 specimens). Body broad oval, 1.56-1.83. Dorsal sclerotization is shown in fig. 1a. Certain specimens have small separate sclerites on 4-6th tergites. Cuticle reticulated. Frons slightly convex without antennal tubercles. Frontal setae (0.014-0.017) are 0.8-1.0 of basal diameter of 3rd antennal segment. Antennae six-segmented, 0.36-0.41 of body length. Third segment is 2.0-2.5 times longer than 4th, 1.9-2.1 of the *processus terminalis*, 0.95-1.0 of 6th segment. *Processus terminalis* is 0.9-1.0 of 6th segment base, with 3-4 apical hairs. Secondary rhinaria are present in distal half of 3rd segment (0-2), in ca 50% of specimens. Hairs on the 3rd antennal segment (0.006-0.008) are 0.4-0.5 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig.1b) is 1.35-1.50 times longer than second segment of hind tarsus, with 2 accessory hairs. Siphunculi conic, with slight rims, 0.05-0.06 of body length, 0.77-0.87 of cauda length, 0.57-0.67 of apical rostral segment, 1.3-1.7 of their maximal width (fig.1c). Cauda triangular, 0.73-0.90 of basal width, 0.65-0.75 of apical rostral segment, with 17-20 hairs (fig.1d). Marginal tubercles convex, developed on the prothorax, 1st and 7th tergites. Diameter of tubercle on 7th tergite (0.045) exceeds that on 1st one (0.031). Diameter of tubercle on 1st tergite is 1.7-2.0 of basal diameter of 3rd antennal segment. Hairs on 3rd-5th tergites (0.011-0.017) are 0.8-1.0 of basal diameter of 3rd antennal segment. Subgenital plate oval, with 4-6 hairs on the disc and 8-10 hairs along its posterior margin. 8th tergite with 4 hairs. Legs normally developed, trochanter hair of middle legs together with longest hair on external side of middle femora (0.017) is 0.3 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark-brown. Natural colouration: body dark-greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body, cauda brown; siphunculi black.

Alate viviparous female (by 2 specimens). Typical dorsal sclerotization with marginal abdominal sclerites on 1-5 tergites and median stripes on 6-8th tergites. Secondary rhinaria are developed on 3rd (7-8) and 4th (1-2) antennal segments. Siphunculi are subcylindrical, 1.7-2.0 of their basal width. Cauda is slender, conic, 1.0-1.1 of its basal width. Other characters as in apterous female.

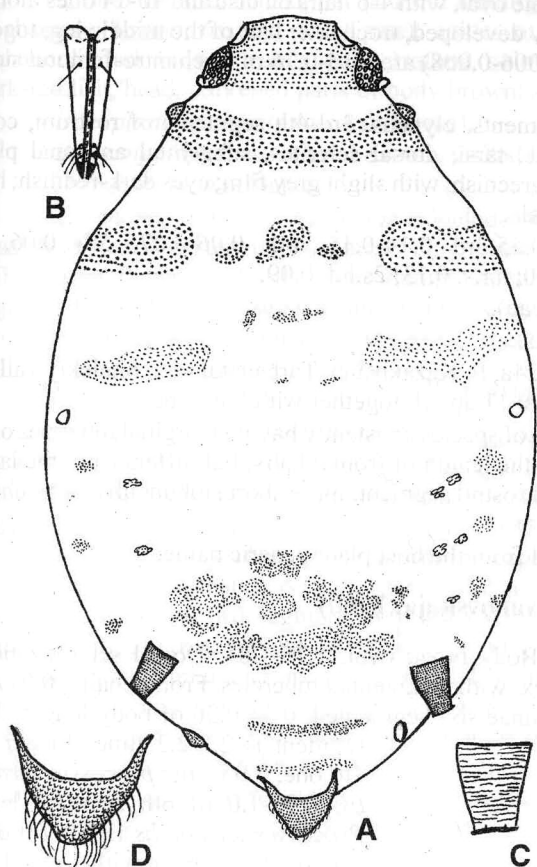


Fig. 1. Apterous viviparous female of *P. alhagii*:
a- habitus; b- apical rostral segment; c- siphunculi;
d- cauda.

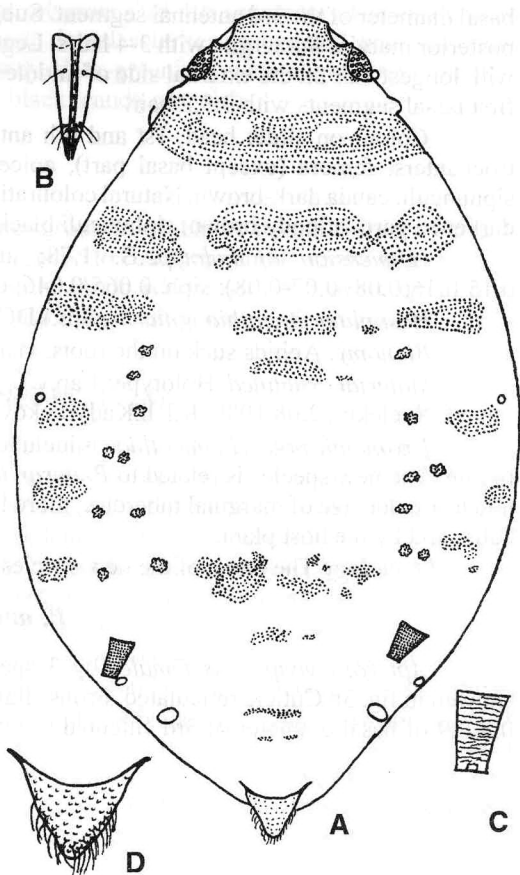


Fig. 2. Apterous viviparous female of *P. ancathiae*,
sp.n.: a- habitus; b- apical rostral segment;
c- siphunculi; d- cauda.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark-brown.

Host plant. *Alhagi pseudoalhagi* M.B. (Fabaceae)

Bionomy. Aphids suck at the stem base and on the roots, visited by ants.

Distribution. S. Kazakhstan (Andreevka, Zhanatas), in clay deserts.

Taxonomic notes. *P. alhagii* by the length of frontal hairs and the shape of siphunculi is closely related to *P. lactucicola*, sp.n., *P. turanica*, sp.n., *P. cousiniae*, sp.n. From *P. cousiniae*, *P. alexandrae*, *P. turanica* it differs by the presence of 4 hairs on 8th tergite. It also differs from *P. antemiae* and *P. lactucicola* by the more slender siphunculi, more low index of cauda to apical rostral segment, colour of cauda, and also by the host plant from Fabaceae.

P. ancathiae Kadyrbekov, sp.n.

Apterous viviparous female (by 12 specimens). Body broad oval, 1.46-1.70. Dorsal sclerotization is shown in fig. 2a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal setae short (0.006-0.007) 0.3-0.5 of basal diameter of 3rd antennal segment. Antennae six-segmented, 0.30-0.37 of body length. Third segment is 2.2-2.6 of 4th, 1.6-2.1 of the *processus terminalis*, 0.9-1.0 of 6th segment length. *Processus terminalis* is 0.9-1.1 of the base of 6th segment, with 3-4 apical setae. Secondary rhinaria are absent. Hairs on 3rd segment (0.004-0.005) are 0.2-0.3 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig.2b) is (1.35)1.45-1.55 of second segment of hind tarsus, with 2 accessory hairs. Siphunculi are conic, with little rims, 0.035-0.045 of body length, 0.63-0.73 of cauda length, 0.5 of apical rostral segment, 1.1-1.5 of its maximal width (fig. 2c). Cauda is triangular, 0.77-0.87 of its basal width, 0.7-0.8 of apical rostral segment, with 18-25 hairs (fig. 2d). Marginal tubercles on the prothorax, 1st, 6th and 7th tergites, convex. Diameter of tubercle on 7th tergite (0.056-0.062) exceeds that on the 1st one (0.034). Diameter of tubercle on the 1st tergite is 2.0 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.006-0.007) are 0.3-0.5 of

basal diameter of the 3rd antennal segment. Subgenital plate oval, with 4-6 hairs on disc and 10-14 ones along its posterior margin. 8th tergite with 3-4 hairs. Legs normally developed, trochanter hair of the middle leg, together with longest hair on the external side of middle femur (0.006-0.008) are 0,13-0.16 of trochantro-femoral suture; first tarsal segments with 3:3:2 hair.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark-brown. Natural colouration: body greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body brown; siphunculi black; cauda pale.

*Dimension of holotype.*B. 1.78; ant. 0.54-0.55:3rd 0.14-0.15, 4th 0.06-0.07, 5th 0.06, 6th 0.15-0.16(0.08+0.07-0.08); siph. 0.065/0.046; c. 0.09/0.10; a.r.s. 0.13; 2s.h.t. 0.09.

Host plant. *Ancathia igniaria* (Spr.) DC (Asteraceae).

Bionomy. Aphids suck on the roots, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N1424a, E. Kazakhstan, Tarbagatai ran., Shelekty valley, 6 km NE Shelekty, 2.08.1989, R.Kh.Kadyrbekov; paratypes: 11 ap.v.f. together with holotype.

Taxonomic notes. *P. ancathiae* is included in group of species constantly having marginal tubercles on 6th tergite. The new species is related to *P. miranda* sp.n. by the length of frontal hairs, but differs from the last by much smaller size of marginal tubercles, more long apical rostral segment, more short siphunculi and trochanter hairs, and by the host plant.

Etymology The name of the new species is derived from the host plant generic name.

P. anthemiae (Ivanovskaja, 1960)

Apterous viviparous female (by 3 specimens). Body broad oval, 1.75-1.81. Dorsal sclerotization is shown in fig. 3a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.017) are 0.8-0.9 of basal diameter of 3rd antennal segment. Antennae six-segmented, 0.34-0.36 of body length. Third

segment is 2.2-2.3 times longer than 4th one, 2.0 of the *processus terminalis*, 0.95-1.0 of 6th segment length. *Processus terminalis* is 0.8-1.0 of the base of 6th segment, with 3 apical hairs (fig.3b) Secondary rhinaria are present in the distal part of 3th segment (0-2), by 50% specimens. Hairs on the 3rd segment (0.008) are 0.4-0.5 of its basal diameter. Clypeus normal, rostrum exceeds the middle coxae; apical rostral segment (fig. 3c), is 1.4 time longer than the second segment of hind tarsus, with 2 accessory hairs. Siphunculi broad conic, with small rims, 0.048-0.051 of the body length, 0.66-0.70 of the cauda length, 0.60 of apical rostral segment, 1.2 times of their maximal width (fig.3d). Cauda is triangular, 1.1-1.2 of its basal width, 0.87-0.90 of apical rostral segment, with 15-16 hairs (fig. 3e). Marginal tubercles on the prothorax, 1st and 7th tergites are small conoid. Diameter of the 7th tergite tubercle is 2.6 of the 1st one. Diameter of the 1st tergite tubercle is 1.3-1.5 of basal diameter of the 3rd antennal segment. Hairs of 3-5 tergites (0.017) are 0.8-0.9 of basal diameter of the 3rd antennal segment. Subgenital plate oval, with 3 hairs on the disc and 12 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed (fig. 3a); hind tibiae are 0.35 of body length; first segments of tarsi with 3:3:2 hairs.

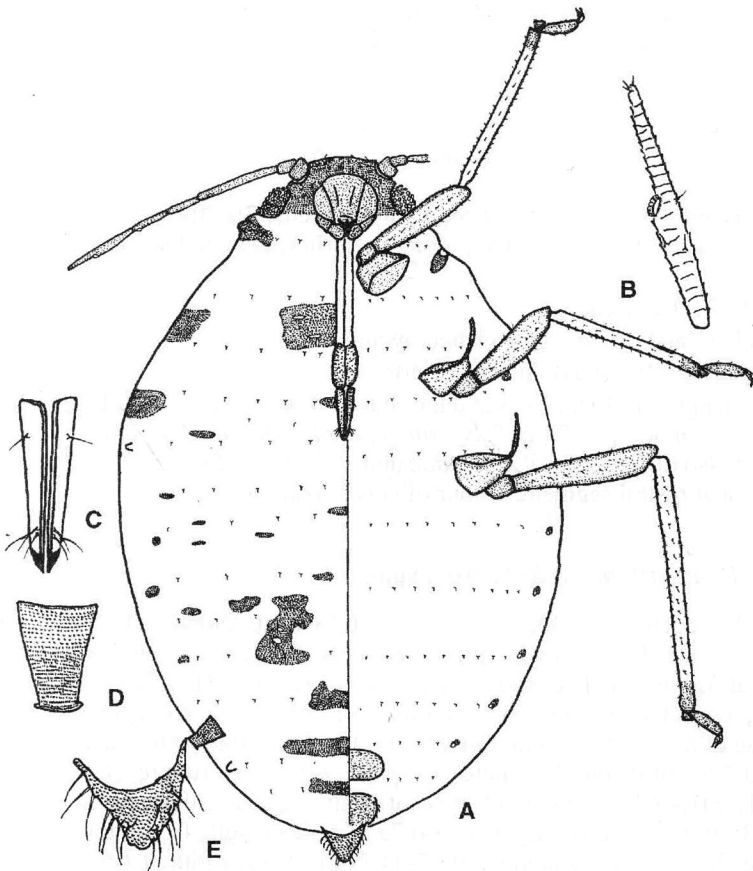


Fig. 3. Apterous viviparous female of *P. anthemiae*: a-habitus; b-6th antennal segment; c-apical rostral segment; d-siphunculi; e-cauda.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi dark-brown; cauda pale. Natural colouration: body dark-greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body brown; siphunculi black; cauda greenish.

Host plant. *Anthemis* sp. (Asteraceae).

Bionomy. Aphids suck on the roots, visited by ants.

Distribution. Azerbaijan.

Taxonomic notes. *P. anthemiae* is included in the species group in which the frontal hairs are 0.6-1.0 of basal diameter of 3rd antennal segment. This species is closely related to *P. alhagii* and *P. lactucicola*, sp.n. and differs from *P. alhagii* by the more dumpy siphunculi and light cauda which is 0.75-0.90 of apical rostral segment. From *P. lactucicola* it differs by the more long apical rostral segment, more slender cauda, less quantity of caudal hairs and less diameter of marginal tubercles.

P. anuraphoides (Nevsky, 1928)

Apterous viviparous female (by 20 specimens). Body broad oval, 1.5-2.1. Dorsal sclerotization is shown in fig. 4. Fig. 4a illustrates the norm (70% of all specimens), and fig. 4b- aberrant form (30%). Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.022-0.028) are 1.2-1.4 of the basal diameter of 3rd antennal segment. Antennae six-segmented, 0.35-0.48 of body length. Third segment is 2.0-2.3 of 4th, 1.8-2.4 of the *processus terminalis*, 0.9-1.1 of 6th segment length. *Processus terminalis* is 0.9-1.1 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are present in distal part of 3rd segment (0-10), in ca 90% of specimens. Hairs on 3rd segment (0.011-0.014) are 0.6-0.8 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig.4b), is 1.45-1.65 of second segment of hind tarsus, with 2 accessory hairs. Siphunculi are subcylindrical, with small rims, 0.062-0.074 of body length, 0.9-1.2 of cauda length, 0.7-0.9 of apical rostral segment, (1.7)1.8-2.5 of their maximal width(fig.4c). Cauda is triangular, 0.7-0.9 of its basal width, 0.60-0.85 of apical rostral segment, with 16-20 hairs (fig.4d). Marginal tubercles on the prothorax, 1st and 7th tergites convex. Diameter of tubercle on the 7th tergite (0.050-0.056) exceeds that on the 1st one (0.028-0.034). Diameter of tubercle on the 1st tergite is 1.3-2.0 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.020-0.022) are 1.2-1.3 of the basal diameter of 3rd antennal segment. Subgenital

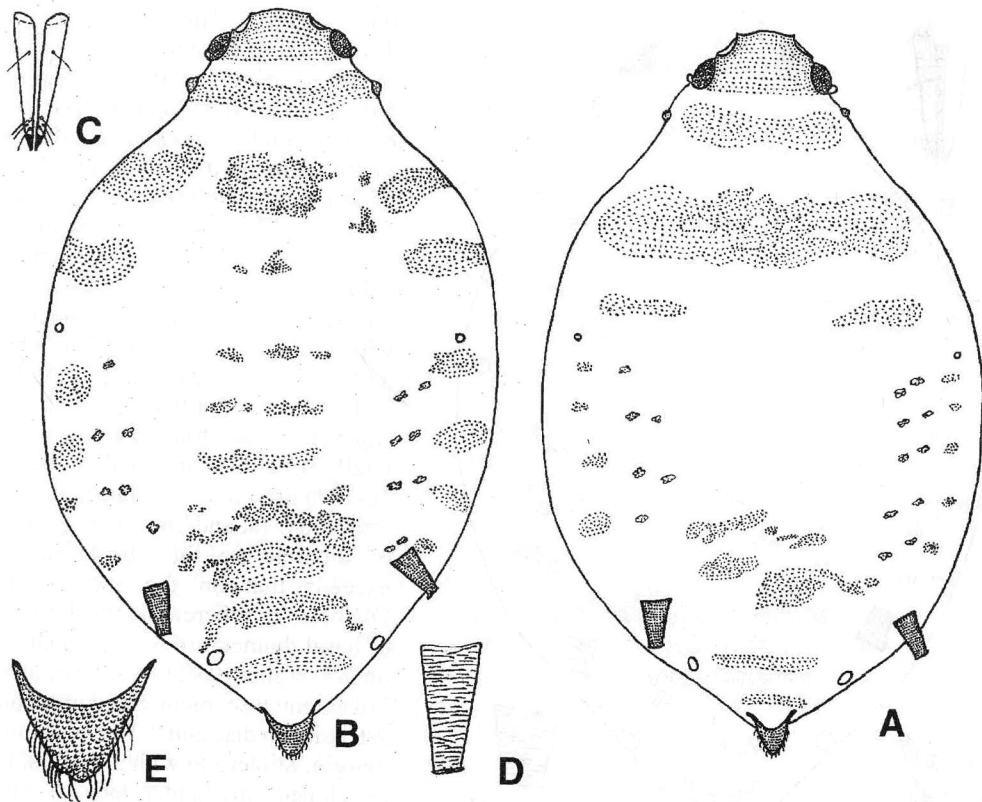


Fig. 4. Apterous viviparous females of *P. anuraphoides*: a-normal sclerotization; b- aberration; c-apical rostral segment; d-siphunculi; e-cauda.

plate oval, with 3-6 hairs on disc and 11-14 hairs along its posterior margin. 8th tergite with 4 hairs. Legs normally developed; trochanter hair of middle leg and more long hair on the external side of middle femur (0.020-0.028) are 0.45-0.55 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark-brown. Natural colouration: body dark-greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body, cauda brown; siphunculi black.

Alate viviparous female (by 8 specimens). Dorsal sclerotization is typical, i.e. marginal abdominal sclerites on 3-6 tergites and median stripes on 6-8th tergites. Third antennal segment is 1.0-1.4 of 6th segment length and 2.0-3.0 of the *processus terminalis*. Secondary rhinaria developed on 3rd (5-10) and 4th (0-2) antennal segments. Siphunculi are 0.050-0.065 of body length. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark-brown.

Host plant. Oligophagous recorded on *Carthamus tinctorius* L., *Cichorium intybus* L., *Carduus nutans* L., *Karelinia caspia* Less.(Pall.), *Cousinia* spp. (Ivanovskaja, 1960; Nevsky, 1929). We found this species on the *Acroptilon australe* Iljin too.

Bionomy. Aphids suck on the stems and flowers, visited by ants.

Distribution. E. Ukraine, S. Russia (lower Volga), Azerbaijan, W., S. Kazakhstan, Uzbekistan, Tajikistan.

Taxonomic notes. *P. anuraphoides* is related to *P. carthami* and *P. iliensis*, sp.n. by the length of frontal hairs and localization on the ground parts of the plants. It also differs from *P. carthami* by the more long and slender siphunculi and more dumpy cauda; from *P. iliensis* by the lesser diameter of marginal tubercles and correlation of antennal segments.

P. aralensis Kadyrbekov, sp.n.

Apterous viviparous female (by 8 specimens). Body broad oval, 1.72-1.95. Dorsal sclerotization is shown in fig. 5a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.006-0.008) are

0.3-0.5 of basal diameter of 3rd antennal segment. Antennae six-segmented, 0.36-0.41 of body length. Third segment is 2.1-2.5 of 4th, 1.8-2.0 of the *processus terminalis*, 0.95-1.0 of 6th segment length. *Processus terminalis* is 1.0-1.1 of the 6th segment base, with 3-4 apical hairs. Secondary rhinaria are present in distal part of 3rd segment (0-2), in ca 50% specimens. Hairs of 3rd segment (0.006) are 0.3 of the its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig.5b) is 1.40-1.45 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi short, conic, with small rims, 0.044-0.050 of body length, 0.65-0.77 of cauda length, 0.56-0.63 of apical rostral segment, 1.0-1.2 of their maximal width (fig.5c). Cauda triangular, 0.9-1.0 of its basal width, 0.73-0.90 of apical rostral segment, with 16-18 hairs (fig.5d). Marginal tubercles on the prothorax, 1st and 7th tergites, convex. Diameter of tubercle on the 7th tergite (0.056-0.062) exceeds that on the 1st one (0.034-0.040). Diameter of tubercle on the 1st tergite is 2.0-2.5 of basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.011) are 0.7 of basal diameter of 3rd antennal segment. Subgenital plate oval, with 2-6 hairs on disc and 8-10 ones along its posterior margin. 8th tergite with 3-4 hairs. Legs normally developed; trochanter hair of middle leg and more long hair on the external side of middle femora (0.011) are 0.2-0.3 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

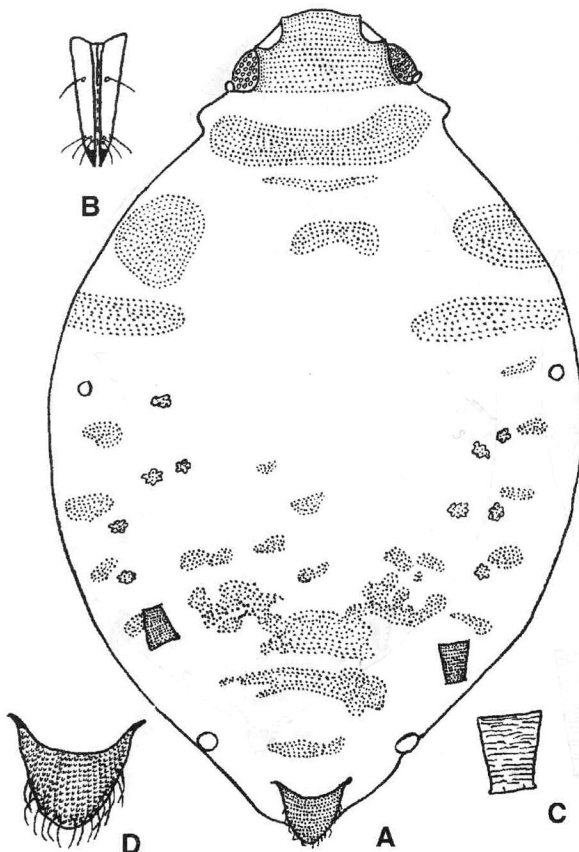


Fig. 5. Apterous viviparous female of *P. aralensis*, sp.n.: a-habitus; b-apical rostral segment; c-siphunculi; d-cauda.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark-brown. Natural colouration: body greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body, cauda brown; siphunculi black.

Dimension. B.1.94; ant.0.70-0.71: 3rd 0.20, 4th 0.08-0.09, 5th 0.09, 6th 0.21(0.105+0.105); siph.0.09/0.08; c.0.13/0.13; a.r.s.0.15; 2s.h.t.0.10.

Alate viviparous female (by 2 specimens). Dorsal sclerotization is typical, i.e. marginal abdominal sclerites on 3-6 tergites, and medial stripes on 6-8th tergites. Antennae 0.40-0.43 of body length. Secondary rhinaria developed on 3rd (7-9) and 4th (0-1) antennal segments. Siphunculi are more slender, 1.2-1.3 of their maximal width. Apical rostral segment is 1.35-1.40 of the second segment of hind tarsi. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark-brown.

Host plant. *Scorzonera parviflora* Jacq.(Asteraceae).

Bionomy. Aphids suck on the base of stems, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N1879a, S. Kazakhstan, N.coast of Aral Sea, saline land, 72 km SW. of Chelkar, 8.06.1990, R.Kh.Kadyrbekov; paratypes: 7 ap.v.f., 2 al.v.f., together with holotype.

Taxonomic notes. *P. aralensis* is included in the species group with short frontal hairs which are 0.3-0.5 of the basal diameter of 3rd antennal segment. The new species is related to *P. elatior* from which differs by the longer apical rostral segment, shorter and dumpy siphunculi.

Etymology. The name of the new species is derived from the type locality.

***P. betpakdalensis* Kadyrbekov, sp.n.**

Apterous viviparous female (by 10 specimens). Body broad oval, 1.9-2.2. Normal dorsal sclerotization is shown on fig. 6a. In some smaller specimens the sclerotization is less developed (fig. 6b). Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs are long (0.037-0.044), 1.7-2.0 of basal diameter of 3rd antennal segment. Antennae six-segmented, 0.38-0.47 of body length. Third segment is 1.8-2.3 of 4th, 1.8-2.0 of the *processus terminalis*, 0.9-1.1 of 6th segment length. *Processus terminalis* is 1.0-1.1 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are present in distal part of 3rd segment (1-5). Hairs on the 3rd segment (0.017-0.020) are 1.0-1.1 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig. 6c) is 1.45-1.60 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are conic, with small rims, 0.047-0.059 of body length, 0.75-0.87 of cauda length, 0.55-0.62 of apical rostral segment, 1.4-1.9 of their maximal width (fig. 6d). Cauda is triangular, 0.66-0.77 of basal width, 0.66-0.75 of apical rostral segment, with 16-20 hairs (fig. 6e). Marginal tubercles on the prothorax, 1st, 6th, 7th tergites and occasionally on the 8th tergite, convex. Diameter of tubercle on the 7th tergite (0.063-0.078) exceeds that on the 1st one (0.045-0.055). Diameter of tubercle on the 1st tergite is 2.5-3.5 of the basal diameter of 3rd antennal segment. Hairs on the 3-5 tergites (0.028-0.034) are 1.3-1.6 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 6-9 hairs on disc and 12-16 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed; trochanteric hair of middle legs (0.039-0.045) and more long hair on the external side of middle femora (0.028-0.039) are 0.65-0.85 and 0.65-0.75 of trochantro- femoral suture accordingly; first segments of tarsi with 3:3:2 hairs.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown. Natural colouration: body dark -greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body, cauda brown; siphunculi black.

Dimension of the holotype. B.2.08; ant.0.80-0.82: 3rd 0.21-0.22, 4th 0.12, 5th 0.12, 6th 0.22-0.23 (0.110-0.115+0.110-0.115); siph.0.10-0.11/0.06-0.08; c.0.13/0.18; a.r.s. 0.18; 2s.h.t.0.12.

Alate viviparous female (by 4 specimens). Dorsal sclerotization is typical, i.e. marginal abdominal sclerites on 3-6 tergites and medial stripes on 6-8th tergites, often small median sclerites on 1-4 tergites. Secondary rhinaria are developed on the 3rd (8-10) and 4th (0-3) antennal segments. Third antennal segment is 1.1-1.2 of 6th. Siphunculi are subcylindrical, 1.7-2.3 of their maximal width. Cauda is slender, conic, 0.9-1.0 of the basal width. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark- brown.

Host plant. *Taraxacum monochlamydeum* Hand.-Mazz.(Asteraceae).

Bionomy. Aphids suck on the roots, visited by ants.

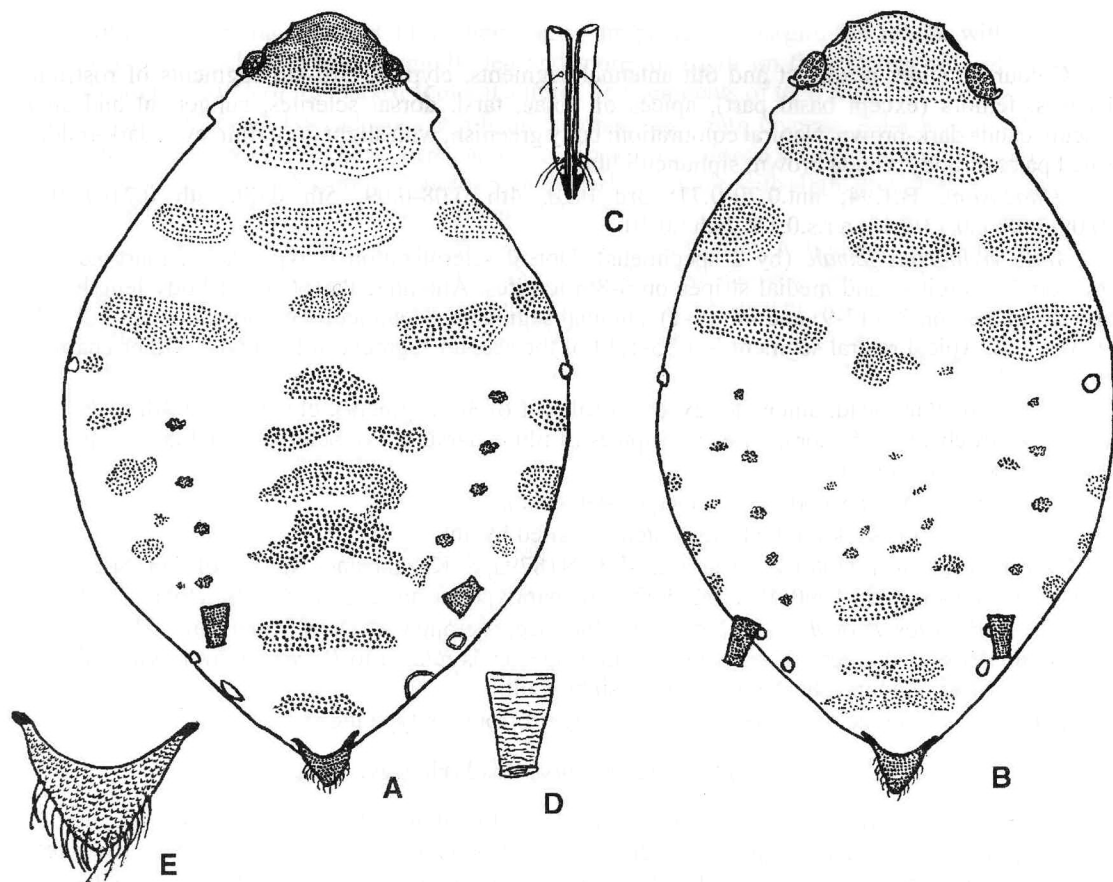


Fig. 6. Apterous viviparous females of *P. betpakdalensis*, sp.n.: a-normal sclerotization, b- aberration; c-apical rostral segment; d-siphunculi; e-cauda.

Material examined. Holotype: 1 ap.v.f., slide N1012a, C. Kazakhstan, Betpak-Dala Desert, Zhambul Mt., 58 km N. of Furmanovka, 9.06.1988, R.Kh.Kadyrbekov; paratypes: 7 ap.v.f., 3 al.v.f.; 2 ap.v.f., 1 al.v.f., slide N1013, together with holotype.

Taxonomic notes. *P. betpakdalensis* is included in the species group with constant presence of marginal tubercles on 6th tergite. The new species differs from other species of this group by the very long frontal and trochanteric hairs.

P. carthami (B. Das, 1918)

Apterous viviparous female (by 15 specimens). Body broad oval, 1.6-2.3. Dorsal sclerotization is shown in fig. 7a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.028-0.034) are 1.5-1.7 of the basal diameter of the 3rd antennal segment. Antennae are six-segmented, 0.33-0.37 of body length. Third segment is 1.9-2.3 of 4th, 2.2-2.4 of the *processus terminalis*, 1.0-1.2 of 6th segment length. *Processus terminalis* is 0.85-1.0 of the base of 6th segment, with 3-4 apical hairs (fig. 7b). Secondary rhinaria are developed in the distal part of 3rd (0-6) in ca 70%, and 4th (0-2) segments, in ca 10% specimens. Hairs on the 3rd segment (0.011-0.017) are 0.7-1.0 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig. 7c) is 1.35-1.50 of second segment of hind tarsus, with 2 accessory hairs. Siphunculi are broad conic, with small rims, 0.047-0.057 of body length, 0.65-0.85 of cauda length, 0.50-0.58 of apical rostral segment, 1.2-1.6 of their maximal width (fig. 7d). Cauda is triangular, 0.85-1.0 of its basal width, 0.7-0.8 of apical rostral segment, with 16-18 hairs (fig. 7e). Rounded marginal tubercles are developed on the prothorax, 1st and 7th tergites. Diameter of tubercle on the 7th tergite exceeds that on the 1st one. Diameter of tubercle on the 1st tergite is 1.5-2.0 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.022-0.034) are 1.3-1.7 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 2-4 hairs on disc and 10-14 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed (fig. 7a). Hind tibiae are 0.34-0.37 of body length. Trochanteric hair of middle legs and more long one on the external side of middle femora (0.028-0.034) are 0.45-0.55 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown. Natural colouration: body dark- greenish, with slight grey film; eyes dark- reddish; head, darkened parts of body, cauda brown; siphunculi black.

Host plant. Oligophagous, recorded on *Carthamus racines*, *Carduus nutans* L. and *Lactuca* sp. (Asteraceae).

Bionomy. Aphids suck on the stems and flowers, visited by ants.

Distribution. Iran, Pakistan, S. Kazakhstan.

Taxonomic notes. *P. carthami* is little- known species described from Pakistan (Lahore, B.Das, 1918). Description of this species is very concise. We did not examine specimens from Pakistan, but we studied 4 specimens from Iran (Hanabad, 8.08.1973, G.Re-maudiere), from *Carthamus racines*. Distinction among these specimens and the type of *P. anuraphoides* (Nevs.) from *Carthamus tinctorius* is apparent. *P. anuraphoides* has more long and slender siphunculi, more dumpy cauda and greater degree of the dorsal sclerotization.

We consider it most acceptable to refer Iranian specimens to *P. carthami*. Specimens with such characters are found in S. Kazakstan on *Carduus nutans* and *Lactuca* sp.

P. chondrilla (Mordvilko, Tarbinsky, Plaviltchikov, 1948)

Apterous viviparous female (by type series). Body broad oval, 1.8-1.9. Abdominal tergites with separate small marginal sclerites, large medial sclerites on 4-6th, and also stripes on 7-8th tergites. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs equal to the basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.38-0.40 of body length. Third segment is 2.2-2.3 of 4th, 2.5-2.6 of the *processus terminalis*, 1.0-1.1 of 6th segment length. *Processus terminalis* is 0.75-0.80 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are developed in distal part of 3rd segment (0-2), in ca 50% of specimens. Hairs on the 3rd segment are 0.5 of its basal diameter. Clypeus normal, rostrum exceeds the middle coxae; apical rostral segment is 1.5 of second segment of hind tarsus, with 2 accessory hairs. Siphunculi are subcylindrical, with small rims, 0.035-0.038 of body length, 0.5 of cauda length, 0.45-0.47 of apical rostral segment, 1.8-2.0 of their maximal width. Cauda is triangular, 1.0-1.2 of the basal width, 0.90-0.93 of apical rostral segment, with 17-20 hairs. Marginal tubercles on the prothorax, 1st and 7th tergites, convex. Hairs on the 3-5 tergites are 1.0-1.2 of basal diameter of 3rd antennal segment. First segments of tarsi with 3:3:2 hair.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi dark- brown; cauda paler. Natural colouration: body dark-greenish, with slight grey film; eyes dark- reddish; head, darkened parts of body brown; siphunculi black.

Host plant. *Chondrilla* sp. (Asteraceae).

Bionomy. Aphids suck on the roots, visited by ants.

Distribution. S. Kazakhstan (N.coast of Aral Sea and Muin-Kum Desert).

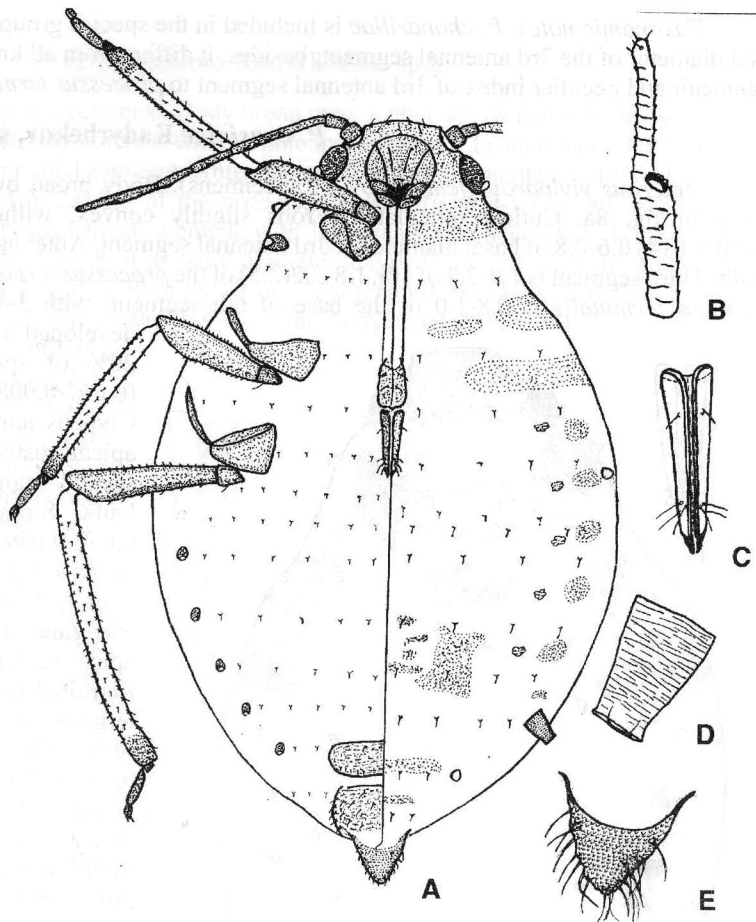


Fig. 7. Apterous viviparous female of *P. carthami*: a-habitus; b-6th antennal segment; c-apical rostral segment; d-siphunculi; e-cauda.

Taxonomic notes. *P. chondrillae* is included in the species group with frontal hairs which are 0.6-1.0 of basal diameter of the 3rd antennal segment; besides, it differs from all known species by very short and slender siphunculi and peculiar index of 3rd antennal segment to *processus terminalis*.

***P. cousiniae* Kadyrbekov, sp.n.**

Apterous viviparous female (by 11 specimens). Body broad oval, 1.65-2.33. Dorsal sclerotization is shown in fig. 8a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.010-0.014) 0.6-0.8 of basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.32-0.38 of body length. Third segment is 1.9-2.3 of 4th, 1.8-2.2(2.5) of the *processus terminalis*, 0.8-1.1 of the 6th segment length. *Processus terminalis* is 0.8-1.0 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are

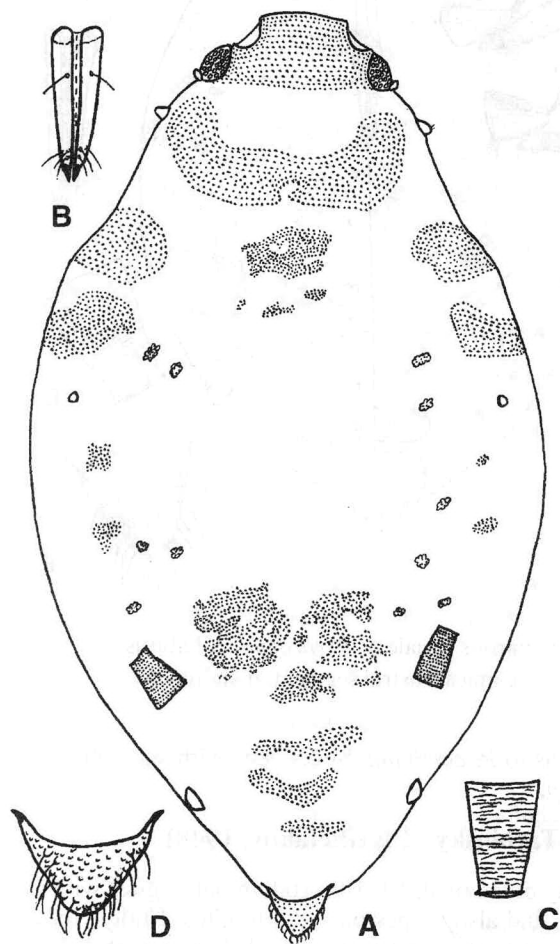


Fig. 8. Apterous viviparous female of *P. cousiniae*, sp.n.: a-habitus; b-apical rostral segment; c-siphunculi; d-cauda.

developed in distal part of 3rd segment (0-2), in ca 20% of specimens. Hairs on the 3rd segment (0.007-0.008) are 0.4-0.5 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig. 8b), is 1.40-1.55 of second segment of hind tarsus, with 2 accessory hairs. Siphunculi are conic, with small rims, 0.052-0.059 of the body length, 0.9-1.0(1.1) of cauda length, 0.60-0.75 of apical rostral segment, 1.30-1.75 of their maximal width (fig. 8c). Cauda is triangular, 0.66-0.74 of its basal width, 0.60-0.75 of apical rostral segment, with 17-19 hairs (fig. 8d). Marginal tubercles on the prothorax, 1st and 7th tergites. Diameter of tubercle on the 7th tergite (0.034-0.056) exceeds that on the 1st one (0.017-0.034). Diameter of tubercle on the 1st tergite is 1.3-1.7(2.0) of the basal diameter of 3rd antennal segment. Hairs on the 3-5 tergites (0.008-0.012) are 0.6-0.7 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 3-6 hairs on disc and 11-14 ones along its posterior margin. 8th tergite with 2 hairs. Legs normally developed; trochanteric hair of middle legs and more long hair on the external side of middle femora (0.011-0.017) are 0.22-0.27 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, siphunculi dark-brown; cauda, subgenital and anal plates pale. Natural colouration: body dark-greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body brown; siphunculi black; cauda greenish.

Dimension of holotypes. B.2.33; ant.0.74: 3rd 0.21, 4th 0.10, 5th 0.10, 6th 0.21(0.11+0.10); siph. 0.12-0.13/0.07-0.08; c. 0.13/?; a.r.s. 0.176; 2s.h.t. 0.12.

Host plant. *Cousinia alata* Schrenk, *C.sp.* (Asteraceae).

Bionomy. Aphids suck on the roots, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N201a, SE Kazakhstan, 45 km SW of Taldy-Kurgan, Moin-Kum Desert, 4.07.1986, R.Kh.Kadyrbekov; paratypes: 9 ap.v.f., together with holotype; 1 ap.v.f., slide N1017, C. Kazakhstan, Betpak-Dala Desert, 58 km N of Furmanovka, Zhambul Mt., 4.06.1988, R.Kh.Kadyrbekov.

Taxonomic notes. New species is included in the species group of 9 species with frontal hairs 0.6-1.0 of basal diameter of 3rd antennal segment. *P. cousiniae* together with *P. alexandrae* and *P. turanica* differs from all other species by the presence of 2 hairs on the 8th tergite. *P. cousiniae* and *P. alexandrae* differ from *P. turanica* by the colour of cauda, size of marginal tubercles and index of cauda to apical rostral segment. Besides, the new species differs from the closely related *P. alexandrae* by the length of trochanteric hairs, number of caudal hairs, indices of siphunculi to cauda and 3rd antennal segment to 4th one.

Etymology. The name of the new species is derived the host plant generic name.

P. echinopsicola Kadyrbekov, sp.n.

Apterous viviparous female (by 4 specimens). Body broad oval, 1.60-1.65. Dorsal sclerotization is shown in fig. 9a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.017-0.020) are 1.0-1.2 of the basal diameter of 3rd antennal segment. Antennae are five- six-segmented, 0.40-0.41 of the body length. Third segment is 2.3-2.6 of 4th, 2.0-2.6 of the *processus terminalis*, 0.9-1.1 of 6th segment length. *Processus terminalis* is 0.7-0.9 of the base of apical segment, with 3-4 apical hairs. Secondary rhinaria are absent. Hairs of 3rd segment (0.010-0.011) are 0.6-0.8 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig. 9b), is 1.55-1.70 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are broad conic, with small rims, 0.067-0.070 of the body length, 0.87-1.0 of the cauda length, 0.56-0.68 of apical rostral segment, 1.1-1.4(1.5) of its maximal width (fig. 9c). Cauda is triangular, 0.70-0.86 of its basal width, 0.65-0.75 of apical rostral segment, with 16-18 hairs (fig. 9d). Marginal tubercles convex, constantly developed on the prothorax, 1st, 6th and 7th tergites. Diameter of tubercle on the 7th tergite (0.050) approximately equal to that on the 1st one (0.045-0.050). Diameter of tubercle on the 1st tergite is 2.7-3.0 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.017) equal to basal diameter of the 3rd antennal segment. Subgenital plate oval, with 4 hairs on disc and 14 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed; trochanteric hair of middle legs and more long hair on the external side of middle femora (0.020-0.022) are 0.33-0.35 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, siphunculi dark -brown; subgenital and anal plates, cauda pale. Natural colouration: unknown.

Dimension of holotype. B.?: ant.0.61-0.62; 3rd 0.18, 4th 0.07-0.08, 5th 0.08, 6th 0.18(0.10+0.08); siph.0.09/0.07; c.0.10/?; a.r.s.0.16; 2s.h.t.0.10.

Host plant. *Echinops albicaulis* Kar et Kir.(Asteraceae).

Bionomy. Aphids suck on roots, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N3107a, SE Kazakhstan, 100 km NW of Ushtobe, Karatal r., 16.06.1964, Archangelskaja; paratypes: 3 ap.v.f., together with holotype.

Taxonomic notes. New species is included in the group of 4 species with constant marginal tubercle on 6th tergite. *P. echinopsicola* differs from the closely related *P. betpakdalensis* by the absence of secondary rhinaria, more high index of siphunculi to the body length, more shorter frontal and trochanteric hairs. It differs from *P. echinopsis* H.R.L. also living on *Echinops*, by the presence of marginal tubercle on the 6th tergite, more high index of siphunculi to the body length (0.067-0.070 versus 0.055-0.058) and to the cauda (0.56-0.68 against 0.48-0.50), more stumpy cauda and much long abdominal hairs.

Etymology. The name of the new species is derived from the host plant generic name.

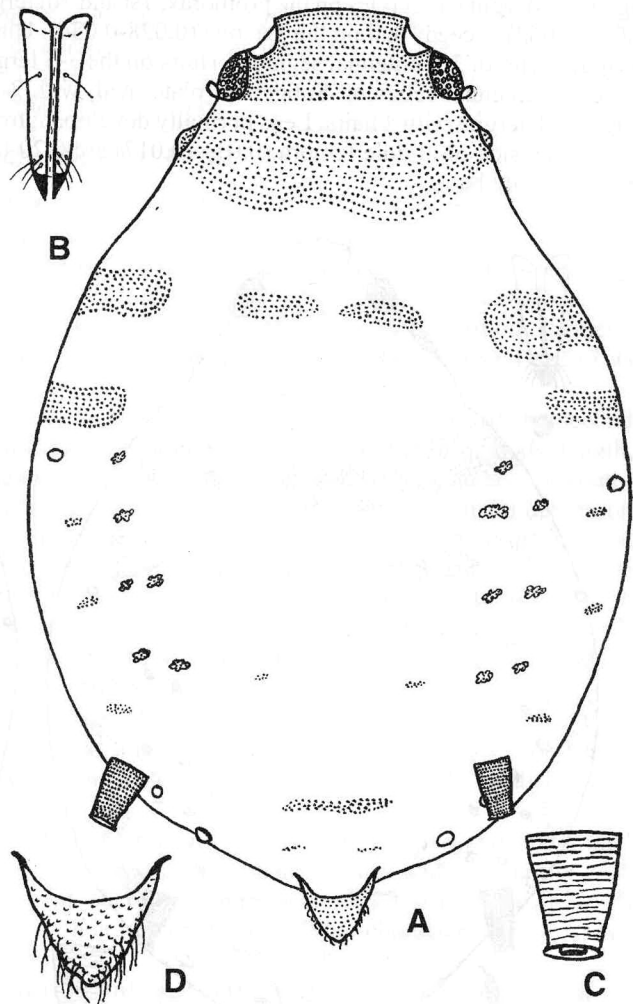


Fig. 9. Apterous viviparous female of *P. echinopsicola*, sp.n.: a-habitus; b-apical rostral segment; c-siphunculi; d-cauda.

P. elatior (Nevsky, 1928)

Apterous viviparous female (by 8 specimens). Body broad oval, 1.72-1.95. Dorsal sclerotization is shown in fig. 10 a,b. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.007-0.008) are 0.5 of the basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.36-0.42 of the body length. Third segment is 2.1-2.4 of 4th, 2.1-2.3 of the *processus terminalis*, 1.0-1.1 of 6th segment length. *Processus terminalis* is 0.8-0.9 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are developed in distal part of 3rd segment (0-4), in ca 90% of specimens. Hairs of 3rd segment (0.006-0.007) are 0.3-0.4 of its basal diameter.

Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig. 10c), is 1.25-1.35 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are conic, with rims, 0.065-0.070 of body length, 0.8-1.0 of cauda length, 0.75-1.0 of apical rostral segment, (1.5)1.6-2.0 of their maximal width (fig. 10d). Cauda is elongato-triangular, (0.92)1.0-1.1 of its basal width, 0.9-1.1 of apical rostral segment, with 16-20 hairs (fig. 10e). Marginal tubercles on the prothorax, 1st and 7th tergites, convex. Diameter of tubercle on the 7th tergite (0.050-0.062) exceeds that on the 1st one (0.028-0.034). Diameter of tubercle on the 1st tergite is 1.5-2.0 of the basal diameter of 3rd antennal segment. Hairs on the 3-5 tergites (0.008-0.011) are 0.5-0.6 of the basal diameter of the 3rd antennal segment. Subgenital plate oval, with 3-5 hairs on disc and 10-13 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed; trochanteric hair of middle legs and more long hair on the external side of middle femora (0.011- 0.017) are 0.20-0.28 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

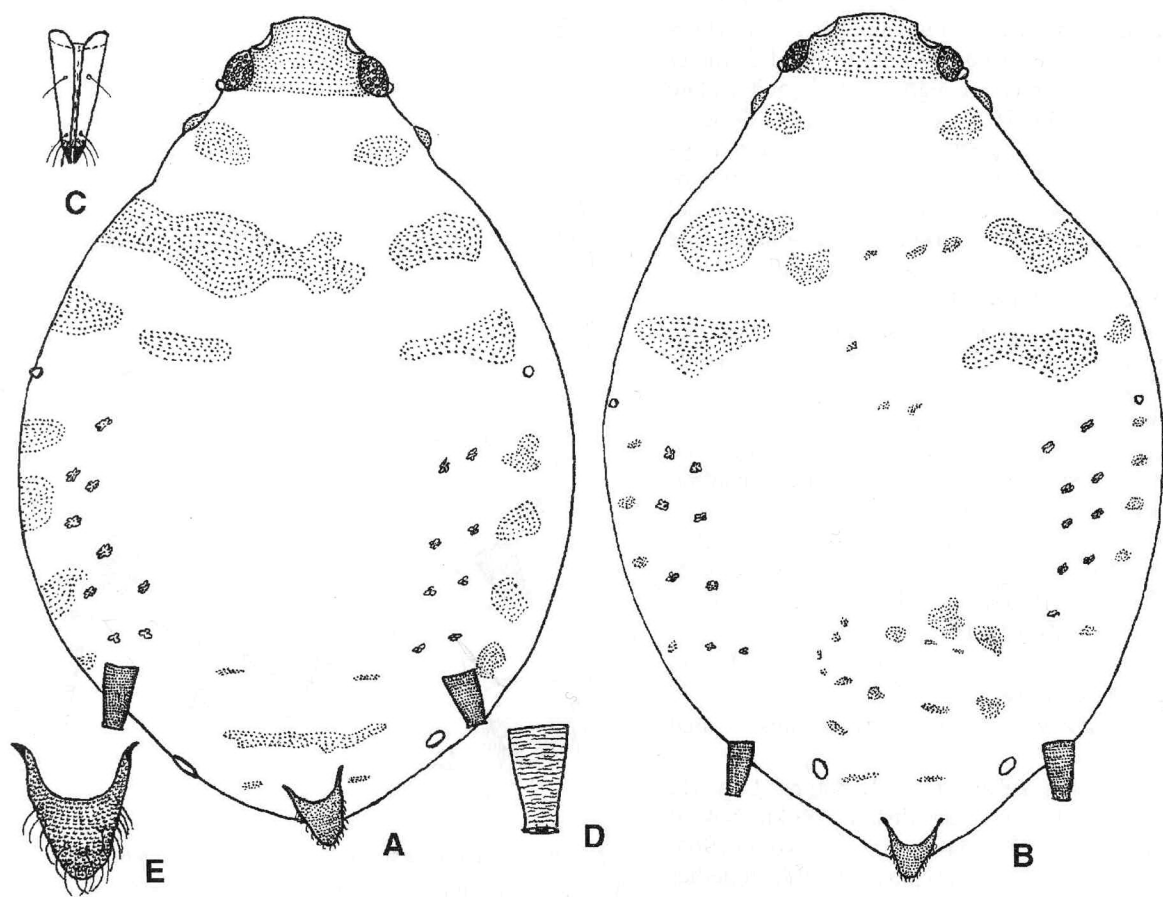


Fig. 10. Apterous viviparous females of *P. elatior*: a-normal sclerotization; b-aberration; c-apical rostral segment; d-siphunculi; e-cauda.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown. Natural colouration: body dark -greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body, cauda brown; siphunculi black.

Alate viviparous female (by 5 specimens). Dorsal sclerotization is typical, i.e. marginal abdominal sclerites on 3-6 tergites, separated median sclerites on 6-7th and median stripe on the 8th tergites. Antennae are 0.40-0.47 of the body length; 3rd segment is 2.44-2.77 of 4th, 2.30-2.77 of the *processus terminalis*, 1.10-1.25 of the 6th segment. Secondary rhinaria are developed on the 3rd (6-8) and 4th (0-1) antennal segments. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark- brown.

Host plant. *Artemisia annua* L., *A. marschalliana* Spreng., *A.sp.*

Bionomy. Aphids suck on roots, visited by ants.

Distribution. Azerbaijan, Turkmenistan, Uzbekistan, Tajikistan, S. Kazakhstan, W. Siberia (Russia; *P. elongata* according to Ivanovskaja, 1977).

Taxonomic notes. *P. elatior* is included in the species group with frontal hairs 0.3-0.5 of basal diameter of the 3rd antennal segment. This species well differs from *P. aralensis* by the more long and slender siphunculi and short apical rostral segment. From closely related *P. miranda sp.n.*, living on the *Artemisia spp.*, it differs by the absence of marginal tubercles on the 6th tergite, darkened cauda, more long trochanteric hairs, small size of the marginal tubercles, larger ratio of the 3rd antennal segment to the 6th one.

P. elongata (Nevsky, 1928)

Apterous viviparous female (by type series). Body broad oval, 1.53-1.72. Pro-, meso-, metothorax, 1-5 tergites with few sclerites, 7-8th tergites with thin medial stripes. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.034-0.039) are 1.6-2.0 of the basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.40-0.42 of the body length. Third segment is 2.2-2.4 of 4th, 2.0-2.4 of the *processus terminalis*, 1.0-1.2 of 6th segment length. *Processus terminalis* is 0.9-1.0 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are absent. Hairs on the 3rd segment (0.014-0.017) are 1.1-1.2 of its basal diameter.

Clypeus normal, rostrum reaches the hind coxae; apical rostral segment, is 1.30-1.45 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are elongato-conic, 0.052-0.053 of body length, 0.77-0.82 of cauda length, 0.67-0.70 of apical rostral segment, 1.8-2.0 of their maximal width. Cauda is elongato-triangular, 0.9-1.1 of its basal width, 0.85-0.87 of apical rostral segment, with 14-16 hairs. Marginal tubercles on the prothorax, 1st and 7th tergites, convex. Diameter of tubercle on the 7th tergite exceeds that on the 1st one. Diameter of tubercle on the 1st tergite is 1.8-2.0 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.037-0.040) are 1.8-2.3 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 5 hairs on disc and 12 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed; trochanteric hair of the middle legs and more long hair on the external side of middle femora (0.034-0.040) are 0.6-0.7 of trochantro-femoral suture; first segments of tarsi with 3:3:2hairs.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, distal part of femora, apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown. Natural colouration: body dark- greenish, with slight grey film; eyes dark- reddish; head, darkened parts of body, cauda brown; siphunculi black.

Alate viviparous female (by 1 specimens). Dorsal sclerotization is typical, i.e. marginal abdominal sclerites on 3-6 tergites, on 4-6th tergites are developed else separated median sclerites and 7th tergite with median stripe. Third antennal segment is 2.2 of 4th segment. Secondary rhinaria are developed on the 3rd (6-7) and 4th (1) antennal segments. Siphunculi are 1.70-1.73 of their maximal width. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark- brown.

Host plant. *Artemisia annua* L., *A. marschalliana* Spreng, *A.sp.*

Bionomy. Aphids suck on the roots, visited by ants.

Distribution. Uzbekistan, SE Kazakhstan (Ili valley). Information on the finding of this species in Denmark (Heie, 1986), Ukraine, N. Kazakhstan (Ivanovskaja, 1960), W. Siberia (Ivanovskaja, 1977) is referred to other species, i.e. *P. miranda, sp.n.*

Taxonomic notes. *P. elongata* is included to the species group with frontal hairs which are 1.2-2.0 of the basal diameter of 3rd antennal segment. It differs from the related species by the longer hairs on the frons, body, trochanters of middle legs; by the absence of secondary rhinaria in the apterous females, and also by the differing host plant.

P. hyaleae Kadyrbekov, sp.n.

Apterous viviparous female (by 10 specimens). Body broad oval, 2.34-2.44. Dorsal sclerotization is shown on fig.11a,b. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.011-0.014) are 0.6-0.8 of the basal diameter of 3rd antennal segment. Antennae are five-, six-segmented, 0.32-0.34 of the body length. Third segment is 2.1-3.0(3.6) of 4th, 2.0-2.3 of the *processus terminalis*, 1.0-1.2 of 6th segment length. *Processus terminalis* is 0.9-1.0 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are developed in distal part of 3rd (2-5) and 4th (0-1) segments. Hairs on the 3rd segment (0.009-0.011) are 0.5 of its basal diameter. Clypeus normal, rostrum reaches the middle coxae; apical rostral segment (fig. 11c) is 1.35-1.45 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are elongato-conic, with small rims, 0.051-0.057 of body length, 0.9-1.0 of cauda length, 0.75-0.86 of apical rostral segment, (1.7)1.9-2.2 of their maximal width (fig. 11d). Cauda is triangular, 0.7-0.9 of basal width, 0.77-0.88 of apical rostral segment, with 14-16 hairs (fig. 11e). Marginal tubercles on the prothorax, 1st and 7th tergites. Diameter of tubercle on the 7th tergite (0.062-0.067) exceeds that on the 1st one (0.034-0.040). Diameter of tubercle on the 1st tergite is 2.0-2.3 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.012-0.017) are 0.7-1.0 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 2-5 hairs on disc and 13-15 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed; trochanteric hair of middle legs (0.022-0.025) 0.40-0.45 and more long hair on the external side of middle femora (0.020-0.022) are 0.35-0.40 of trochantro-femoral suture; first segments of tarsi with 3:3:2hairs.

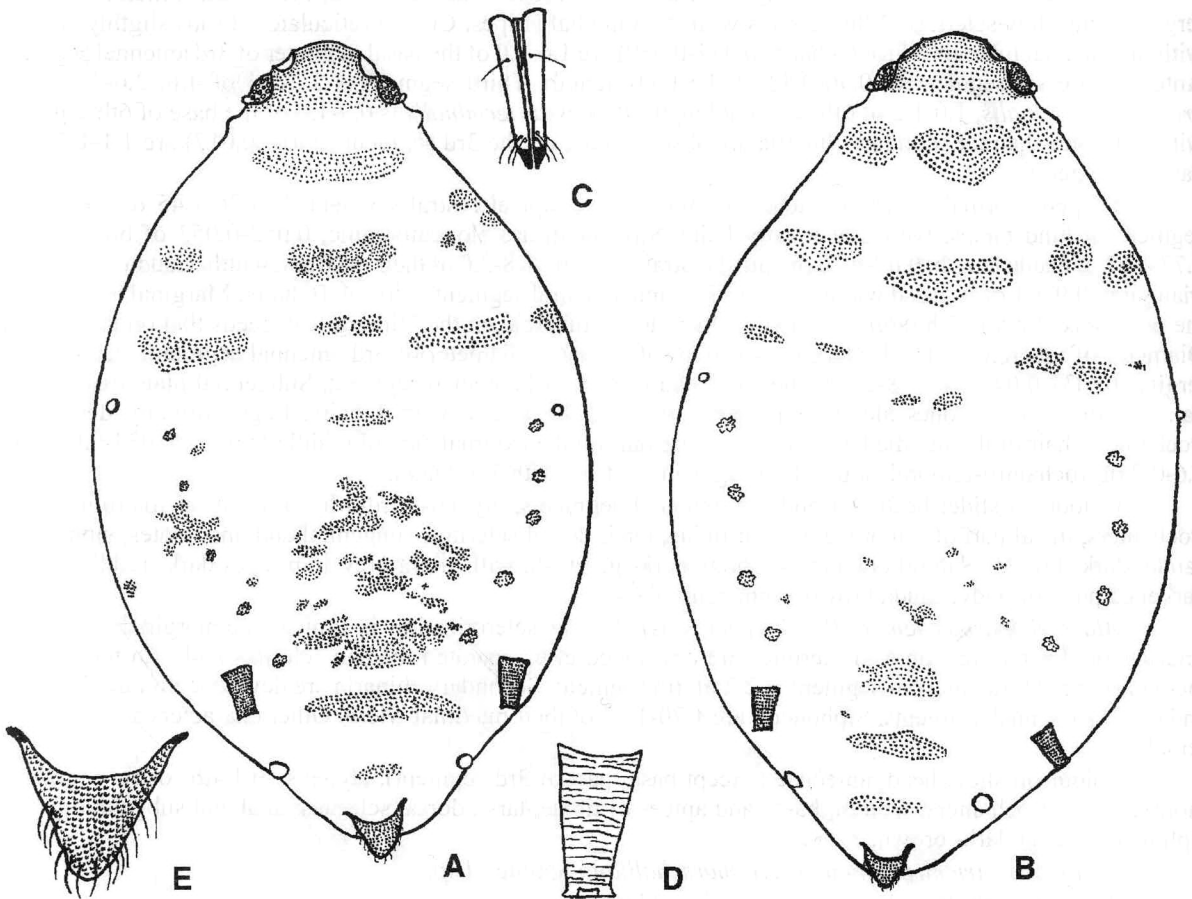


Fig. 11. Apterous viviparous female of *P. hyaleae*, sp.n.: a- normal sclerotization; b- aberration; c- apical rostral segment; d- siphunculi; e- cauda.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown. Natural colouration: body dark -greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body, cauda brown; siphunculi black.

Dimension of the holotype.B.2.34; ant.0.75-79: 3rd 0.22-0.23, 4th 0.08-0.10, 5th 0.10, 6th 0.22-0.23(0.11-0.12+0.11); siph.0.14/0.05; c.0.14/?; a.r.s. 0.16; 2s.h.t.0.12.

Alate viviparous female (by 4 specimens). Dorsal sclerotization is typical, i.e. 3-6th tergites with marginal sclerites, 6-8th ones with median stripes, separated median sclerites can be developed on the 4-5 tergites. Third antennal segment is 2.3-2.4 of the *processus terminalis*. Secondary rhinaria are developed on the 3rd (6-9) and the 4th (1-2) antennal segments. Siphunculi are 1.85-2.50 of their maximal width, 0.8-0.9 of apical rostral segment. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3th segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark- brown.

Host plant. *Hyalea pulchella* Ledeb.(Asteraceae).

Bionomy. Aphids suck on roots and basal part of the stems, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N999a, SE Kazakhstan, Chu r. valley, 4 km E. of Furmanovka, 8.06.1988, R.Kh. Kadyrbekov; paratypes: 9 ap.v.f., 4 al.v.f. together with holotype.

Taxonomic notes. *P. hyaleae* is included in the group of 10 species with frontal hairs which are 0.6-1.0 of basal diameter of 3rd antennal segment. It differs from the remainder species of this group by the more long trochanteric hairs, regular presence of secondary rhinaria on the 3rd antennal segment, sometimes on the 4th one in the apterous females.

Etymology. The name of the new species is derived from the host plant generic name.

P. iliensis Kadyrbekov, sp.n.

Apterous viviparous female (by 8 specimens).

Body broad oval, 1.65-1.85. Dorsal sclerotization is shown on fig. 12a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.020-0.022) are 1.2-1.4 of the basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.35-0.41 of body length. Third segment is 2.3-2.9 of 4th, 2.7-3.3(3.8) of the *processus terminalis*, 1.20-1.35 of the 6th segment. *Processus terminalis* is very short, 0.55-0.75 of base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are developed in distal part of 3rd segment (0-2), in ca 60% of specimens. Hairs on the 3rd segment (0.010-0.011) are 0.6-0.8 of its basal diameter. Clypeus normal, rostrum reaches the middle coxae; apical rostral segment (fig. 12b), is 1.3-1.4 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are conic, with small rims, 0.050-0.055 of the body length, (0.7)0.8-1.0 of cauda length, 0.6-0.7 of apical rostral segment, 1.2-1.4(1.7) of their maximal width (fig. 12c). Cauda is triangular, 0.70-0.84 of its basal width, 0.64-0.84 of apical rostral segment, with 20-22 hairs (fig. 12d). Marginal tubercles on the prothorax, 1st and 7th tergites. Diameter of tubercle on the 7th tergite (0.056-0.073) exceeds that on the 1st one (0.040-0.045). Diameter of tubercle on the 1st tergite 2.3-2.7 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.028-0.031) are 1.5-1.8 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 5-8 hairs on disc and 11-14 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed; trochanteric hair of middle legs and more long hair on the external side of middle femora (0.022-0.025) are 0.4-0.5 of trochantro-femoral suture; first segments of tarsi with 3:3:2hairs.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of

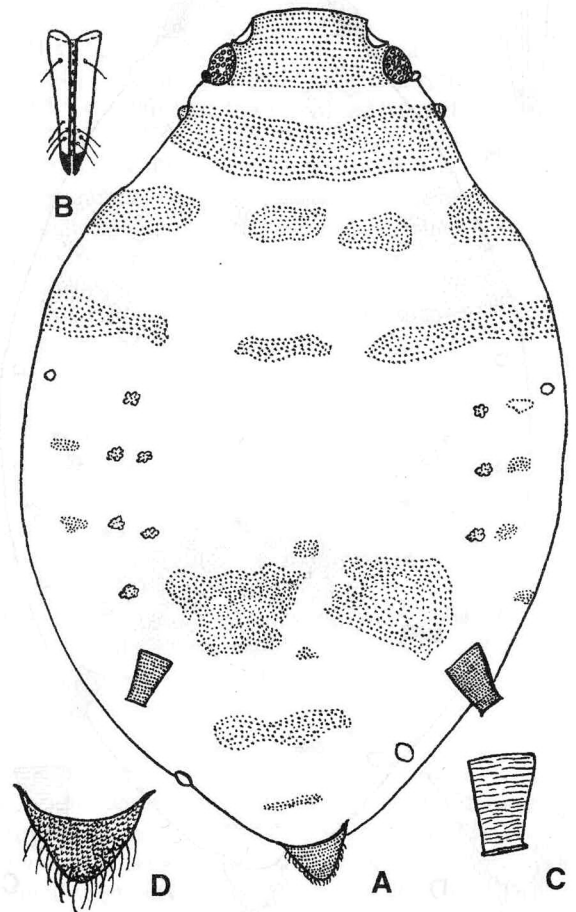


Fig. 12. Apterous viviparous female of *P. iliensis*, sp.n.: a-habitus; b-apical rostral segment; c-siphunculi; d-cauda.

rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown. Natural colouration: body dark -greenish, with slight grey film; eyes dark-reddish; head, darkened parts of body, cauda brown; siphunculi black.

Dimension of holotype. B.1.65; ant.0.58-0.61:3rd 0.20, 4th 0.05-0.07, 5th 0.07, 6th 0.15(0.09+0.06); siph.0.09/0.07-0.08; c.0.12/0.14; a.r.s.0.14; 2s.h.t.0.10.

Alate viviparous female (by 1 specimen). Dorsal sclerotization is typical, i.e.1-5 tergites with marginal sclerites, 6-8th ones with median stripes. Secondary rhinaria are developed on the 3rd (5-6) and 4th (1) antennal segments. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark- brown.

Host plant. *Acroptilon australe* Iljin (Asteraceae).

Bionomy. Aphids suck on the stems and flowers, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N2020a, SE Kazakhstan, Ili valley, 15 km NE Masak, 12.06.1991, R.Kh.Kadyrbekov; paratypes: 7 ap.v.f., 1 al.v.f., together with holotype.

Taxonomic notes. *P. iliensis* is included in the group of 3 species with frontal hairs which are 1.2-1.6 of the basal diameter of 3rd antennal segment, and with the presence of marginal tubercles on the 1st and 7th tergites only. It differs from *P. amuraphoides* and *P. carthami* by the specific correlation of the antennal segments and larger marginal tubercles.

Etymology. The name of the new species is derived from the type locality, the Ili river valley.

P. lactucicola Kadyrbekov, sp.n.

Apterous viviparous female (by 8 specimens).

Body broad oval, 1.65-1.91. Dorsal sclerotization is shown on fig. 13a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.012-0.017) are 0.8-1.0 of the basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.37-0.43 of the body length. Third segment is (2.3)2.4-2.6(2.8) of 4th, (1.9)2.0-2.1(2.4) of the *processus terminalis*, 0.95-1.10 of 6th segment length. *Processus terminalis* is 0.8-1.0 of base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are developed in distal part of 3rd segment (0-3), in ca 90% of specimens. Hairs on the 3rd segment (0.006-0.011) are 0.4-0.7 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig. 13b), is 1.20-1.35 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are conic, slightly curved outside, with small rims, 0.045-0.050 of body length, 0.65-0.75(0.80) of cauda length, 0.57-0.67 of apical rostral segment, 1.0-1.4(1.6) of their maximal width (fig. 13c). Cauda is triangular, 0.74-0.84 of its basal width, 0.75-0.90 of apical rostral segment, with 18-22 hairs (fig. 13d). Marginal tubercles on the prothorax, 1st and 7th tergites, convex. Diameter of tubercle on the 7th tergite (0.050-0.062) exceeds that on the 1st one (0.034-0.039). Diameter of tubercle on the 1st tergite is 2.3-2.7 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.011-0.017) are 0.8-1.0 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 4-6 hairs on disc and 9-12 ones along its posterior margin. 8th tergite with 4 hairs. Legs normally developed; trochanteric hair of middle legs and more long hair on the external side of middle femora (0.014-0.017) are 0.25-0.35 of trochantro-femoral suture; first segments of tarsi with 3:3:2hairs.

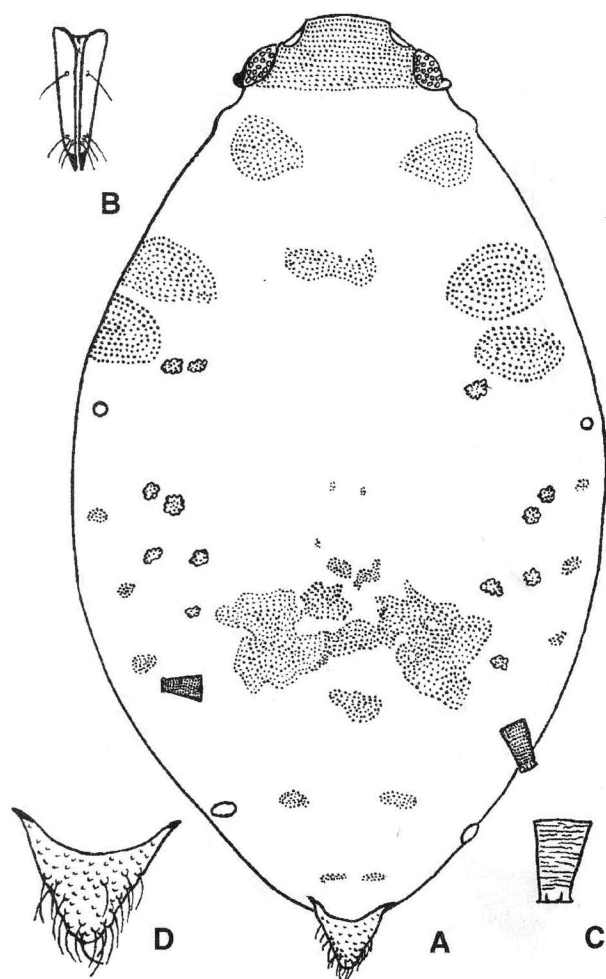


Fig. 13. Apterous viviparous female of *P. lactucicola*, sp.n.: a-habitus; b-apical rostral segment; c-siphunculi; d-cauda.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, siphunculi dark-brown; subgenital and anal plates, cauda paler. Natural colouration: body dark- greenish, with slight grey film; eyes dark- reddish; head, darkened parts of body brown; siphunculi dark- brown; cauda greenish.

Dimension of holotype. B.1.69; ant.0.70: 3rd 0.20, 4th 0.08, 5th 0.09, 6th 0.21(0.105-0.105); siph.0.08/0.06; c.0.12/0.14; a.r.s.0.14; 2s.h.t.0.11.

Alate viviparous female (by 1 specimen). Dorsal sclerotization is typical, i.e. 1-5 tergites with marginal sclerites, 6th one with few separated sclerites and 7th one with median stripe. Antennae are 0.48 of the body length. Secondary rhinaria are developed on the 3rd (7-8) and 4th (0-1) antennal segments. Siphunculi are 0.63 of cauda length. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora (except base), apices of tibiae, tarsi, dorsal sclerites, siphunculi dark- brown; anal and subgenital plates, cauda paler.

Host plant. *Lactuca serriola* Torner (Asteraceae).

Bionomy. Aphids suck on roots, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N1469a, SE Kazakhstan, N. spur of Dzhungarskiy Alatau, Kajkan ran., 30 km E. of Ucharal, 1400m a.s.l., 7.08.1989, R.Kh.Kadyrbekov; paratypes: 6 ap.v.f., 1 al.v.f. together with holotype; 1 ap.v.f., slide N175, SE Kazakhstan, 40 km SW Taldy-Kurgan, Kizil-Arik env., 1.07.1986, R.Kh.Kadyrbekov.

Taxonomic notes. *P. lactucicola* is included in the group of 10 species with the presence of marginal tubercles on the 1st and 7th abdominal tergites, and frontal hairs which are 0.6-1.0 of the basal diameter of 3rd antennal segment. It is closely related to *P. anthemiae* but differs from the last by the shorter apical rostral segment, more stumpy cauda, the shape and size of the marginal tubercles, and the number of hairs on the cauda.

Etymology. The name of the new species is derived from the host plant generic name.

***P. miranda* Kadyrbekov, sp.n.**

Apterous viviparous female (by 32 specimens). Body broad oval, 1.44-1.82. Dorsal sclerotization is shown on fig. 14a,b,c. Norm is represented on the fig. 14a (70% of specimens). Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.006-0.008) are 0.4-0.5 of the basal diameter of 3rd antennal segment. Antennae are five-, six-segmented, (0.26)0.32-0.40 of the body length. Third segment is (1.9)2.1-2.8 of 4th, 1.4-2.0 of the *processus terminalis*, 0.7-0.9(1.0) of 6th segment length. *Processus terminalis* is 0.8-1.0 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are absent in norm, in ca 10% of specimens are present 1 rhinaria in distal part of the 3rd segment. Hairs on the 3th segment (0.005-0.006) are 0.3-0.4 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig. 14d), is 1.20-1.35 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are conic, with small rims, 0.046-0.060 of body length, 0.60-0.85 of cauda length, 0.55-0.80 of apical rostral segment, 1.3-1.7 of their maximal width (fig. 14e). Cauda is triangular, 0.7-0.9 of its basal width, (0.8)0.9-1.0(1.1) of apical rostral segment, with 16-20 hairs (fig. 14f).

Marginal tubercles on the prothorax, 1st, 6th, 7th tergites, occasionally on 8th one, convex. Diameter of tubercle on the 7th tergite (0.060-0.084) exceeds that on the 1st one (0.034-0.053). Diameter of tubercle on the 1st tergite is 2.5-4.0 of the basal diameter of 3rd antennal segment. Hairs on 3-5 tergites (0.006-0.007) are 0.4-0.5 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 3-6 hairs on disc and 11-14 ones along its posterior margin. 8th tergite with 3-4 hairs. Legs normally developed; trochanteric hair of middle legs (0.008-0.011) is 0.18-0.20 and more long hair on the external side of middle femora (0.011) are 0.20-0.25 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, siphunculi dark- brown; subgenital and anal plates, cauda pale. Natural colouration: body dark- greenish, with slight grey film; eyes dark- reddish; head, darkened parts of body brown; siphunculi black; cauda greenish.

Dimension of holotype. B.1.69; ant.0.59-0.60: 3rd 0.16, 4th 0.08, 5th 0.08, 6th 0.17-0.18 (0.09+0.08-0.09); siph.0.08/0.05; c.0.12/0.14; a.r.s.0.13; 2s.h.t.0.10.

Alate viviparous female (by 8 specimens). Dorsal sclerotization is typical, i.e. 1-5 tergites with marginal sclerites, 6-8th ones with median separated sclerites. Antennae are 0.37-0.48 of body length. Third antennal segment is 0.8-1.1 of the 6th segment length. *Processus terminalis* is 0.9-1.2 of the 6th segment base. Secondary rhinaria are developed on the 3rd (6-8) and 4th (0-1) antennal segments. Siphunculi are 0.040-0.053 of the body length, 1.5-2.0 of their maximal width. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, siphunculi dark- brown; anal and subgenital plates, cauda pale.

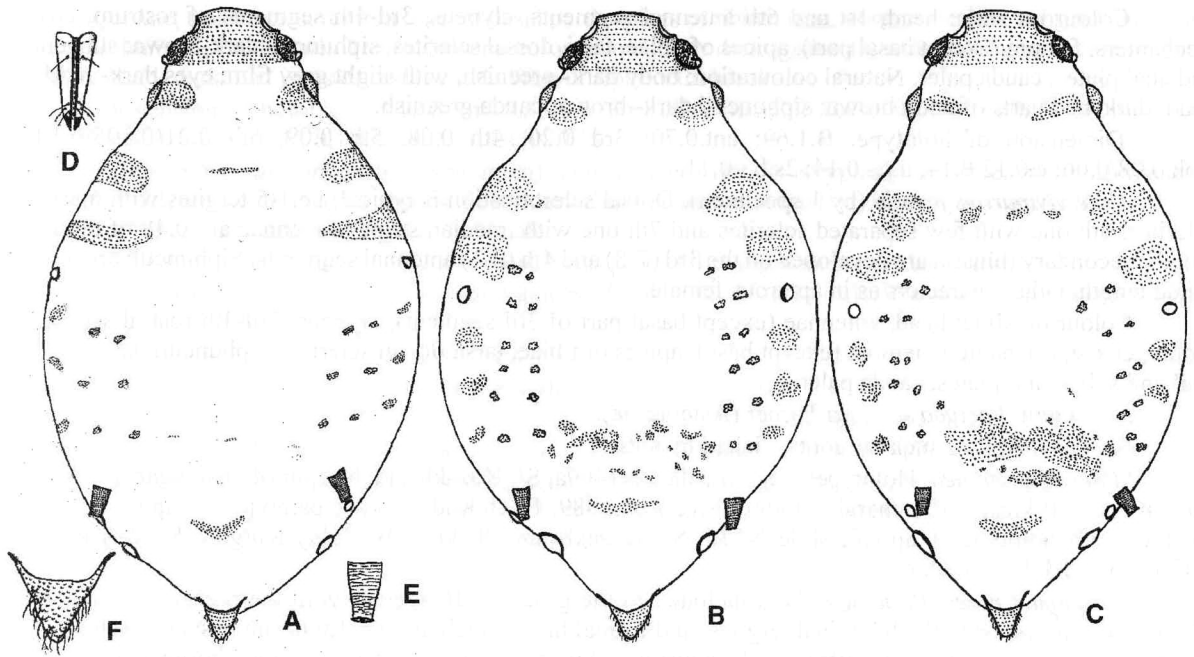


Fig. 14. Apterous viviparous females of *P. miranda*, sp.n.: a- normal sclerotization; b- aberration; c- aberration; d- apical rostral segment; e- siphunculi; f- cauda.

Oviparous female (by 2 specimens). Thoracic tergites with marginal sclerites, abdominal ones with intersegmental spot only. Third antennal segment is 1.9-2.1 of 4th segment, 1.40-1.45 of the *processus terminalis*, 0.70-0.77 of the 6th segment length. Secondary rhinaria are absent. Subgenital plate with 17 hairs on the disc and with 19-24 ones along its posterior margin. Cauda with 21-23 hairs. Hind tibiae are enlarge in base, with 42-78 pseudosensoria. Other characters as in apterous female.

Colour on slide: head, antennae (except base of 3rd segment), clypeus, 3rd-4th rostral segments, coxae, trochanters, femora (except of the base), bases and apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown.

Host plant. *Artemisia absinthium* L., *A. karatavica* Krasch. et Abol., *A. santolinifolia* Turcz., *A. schrenkiana* Ledeb., *A. tomentella* Trautv., *A. spp.*

Bionomy. Aphids suck on roots, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N1461a, SE Kazakhstan, N. spur of Dzhungarskiy Alatau, Kajkan ran., 30 km E. of Ucharal, 1400m a.s.l., 6.08.1989, R.Kh.Kadyrbekov; paratypes: 8 ap.v.f. together with holotype; 7 ap.v.f., 1 al.v.f., N1529, SE Kazakhstan, N. spur of Dzhungarskiy Alatau, 10 km E. Glinovka, Kiziltal r., 1200m a.s.l., 11.08.1989, R.Kh.Kadyrbekov; 6 ap.v.f., N1533, in same place, in also data; 1 ap.v.f., N1519, SE Kazakhstan, Alakol Valley, 40 km E. of Koptuma, 10.08.1989, R. Kh. Kadyrbekov; 4 ap.v.f., 2 al.v.f., N1243 (old series), W. Kazakhstan, flood-lands of Ural r., Burlin env., 20.06.1957, L.A.Juchnevitch; 5 ap.v.f., 2 al.v.f., N902, S. Kazakhstan, Mujun-Kum Desert, Sargobi env., 14.05.1988, R. Kh. Kadyrbekov; 5 ap.v.f., 1 al.v.f., N954: S. Kazakhstan, W. Tien-Shan, Karatau ran., Zhanatas env., 27.05.1988, R. Kh. Kadyrbekov; 8 ap.v.f. 3 al.v.f., N994, SE Kazakhstan, Chu r., 4 km E. of Furmanovka, 6.06.1988, R. Kh. Kadyrbekov; 6 ap.v.f., 2 ov.f., N2519, SE Kazakhstan, N. Tien-Shan, Almaty natural reserve, Zailiyskiy Alatau ran., Sredniy Talgar ravine, 1800m a.s.l., 14.09.1996, R. Kh. Kadyrbekov.

Distribution. The new species is widespread in the steppe and desert zones of Kazakhstan. It occurs on plains and in the mountains up to 1800 m a.s.l. Records from W. Siberia (*P. alexandrae*: Ivanovskaja, 1977) and Denmark (*P. elongata*: Heie, 1986) should be most probably referred to this species.

Taxonomic notes. *P. miranda* is included in the group of 4 species with constant marginal tubercles on the 1st and 6-7th tergites. It differs from the closely related *P. ancathiae* by the shorter apical segment, longer siphunculi, the ratio of cauda to apical rostral segment, larger marginal tubercles, and by the host plant. It differs from *P. elongata*, also living on *artemisiae*, by the shorter frontal hairs and by the presence of marginal tubercles on the 6th tergite. *P. elatior* living on the *Artemisia* differs from *P. miranda* by the dark cauda, absence of marginal tubercles on the 6th tergite, longer trochanteric hairs, presence of secondary rhinaria on the 3rd antennal segment in the apterous females, and the ratios of the 3rd antennal segment to the 6th one, siphunculi to the body and cauda length, and by the smaller marginal tubercles.

Etymology. The name of the new species is derived from Latin word "mirandus", i.e. astonishing.

***P. rutae* (Nevsky, 1928).**

Apterous viviparous female (by type series). Body oval, 1.70-1.74. Thoracic tergites with small marginal sclerites, 1-5 abdominal tergites also with small marginal sclerites, 6-8 ones with separated median sclerites. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs are 0.8-0.9 of the basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.48-0.50 of the body length. Third segment is 2.2-2.3 of 4th, 2.4-2.5 of the *processus terminalis*, 1.1-1.2 of the 6th segment. *Processus terminalis* is equal to the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are developed in distal part of 3rd segment (1-7). Hairs on the 3rd segment are 0.4-0.5 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment is 1.4 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are subcylindrical, with small rims, 0.075 of body length, 1.1-1.2 of cauda length, 0.70-0.72 of apical rostral segment, 1.8-2.0 of their maximal width. Cauda is triangular, 0.85-0.90 of its basal width, 0.60-0.61 of apical rostral segment, with 13-16 hairs. Marginal tubercles on the prothorax, 1st and 7th tergites. Diameter of tubercle on the 7th tergite is equal to the 1st one. Hairs on the 3-5 tergites are 0.9-1.0 of the basal diameter of 3rd antennal segment. First segments of tarsi with 3:3:2hairs.

Colour on slide: head, 1st and 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, siphunculi dark- brown; subgenital and anal plates, cauda pale. Natural colouration: body dark- greenish, with slight grey film; eyes dark- reddish; head, darkened parts of body brown; siphunculi black; cauda greenish.

Host plant. *Ruta sieversii* Fisch.(Rutaceae).

Distribution. Uzbekistan (Samarkand).

Taxonomic notes. *P. rutae* is included in the group of 10 species with frontal hairs which are 0.6-1.0 of the basal diameter of 3rd antennal segment. It is closely related to *P. scorzonerae* and *P. hyaleae*, but differs from those by the pale cauda, the ratio of the siphunculi to the body length, and also by the host plant.

***P. scorzonerae* (Mordvilko, 1937)**

Apterous viviparous female (by the type series). Body oval, 1.69-1.73. Thoracic tergites with large marginal and median sclerites, 1-5th abdominal tergites with marginal sclerites, 4-6th ones with 2 large median spots and 7-8th ones with median stripes. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.011-0.012) are 0.8 of the basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.39-0.40 of the body length. Third segment is 3.0-3.3 of 4th, 2.0 of the *processus terminalis*, equal to the 6th segment length. *Processus terminalis* is equal to the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are absent. Hairs on the 3rd segment (0.008) are 0.6 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment is 1.40-1.45 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are subcylindrical, with small rims, 0.057-0.059 of body length, equal to the cauda length, 0.67 of apical rostral segment, 2.0-2.4 of their maximal width. Cauda is triangular, 1.0-1.1 of its basal width, 0.67 of apical rostral segment, with 7-10 hairs. Marginal tubercles on the prothorax, 1st and 7th tergites, small, convex. Diameter of tubercle on the 7th tergite equal to the 1st one. Hairs on the 3-5 tergites (0.010-0.012) are 0.7-0.8 of the basal diameter of 3rd antennal segment. First segments of tarsi with 3:3:2hairs.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown. Natural colouration: body dark- greenish, with slight grey film; eyes dark- reddish; head, darkened parts of body, cauda brown; siphunculi black.

Alate viviparous female (by the type series). Dorsal sclerotization is typical: i.e. 1-5th tergites with marginal sclerites, 5-6th ones with small separated median sclerites, 7-8th tergites with median stripes. Antennae are 0.45 of the body length, third antennal segment is 2.5-2.6 of 4th segment. Secondary rhinaria are developed on the 3rd (6-8) and 4th (0-1) antennal segments. Siphunculi are more dumpy, 1.8-2.0 of their maximal width, 0.82 of the cauda length. Other characters as in apterous female.

Colour on slide: head, antennae (except basal part of 3rd segment), clypeus, 3rd-4th rostral segments, thorax, coxae, trochanters, femora, bases and apices of tibiae, tarsi, dorsal sclerites, anal and subgenital plates, siphunculi, cauda dark- brown.

Host plant. *Scorzonera tau saghyz* Lepsch.et Bosse, *Taraxacum kok-saghyz* Rodin.

Bionomy. Aphids suck on roots, visited by ants.

Distribution. Ukraine, S. Russia (Kursk, N. Caucasus), Kazakhstan.

Taxonomic notes. *P. scorzonerae* is closely related to *P. rutae* and *P. hyaleae* but differs from those by the absence of secondary rhinaria in the apterous females, the less number of caudal hairs, and the more slender cauda. It differs from *P. aralensis* also living on *Scorzonera*, by the longer frontal hairs, the ratio of the 3rd antennal segment to the 4th one, longer and more slender siphunculi, smaller marginal tubercles, less number of caudal hairs. *P. scorzonerae* differs from *P. betpakdalensis* living on *Taraxacum*, by the absence of marginal tubercles on the 6th and 8th tergites, shorter frontal hairs, the ratios of the 3rd antennal segment to the 4th one, the apical rostral segment to the second segment of hind tarsus, smaller marginal tubercles, lesser number of caudal hairs.

***P. turanica* Kadyrbekov, sp.n.**

Apterous viviparous female (by the 5 specimens). Body broad oval, 1.5-2.1. Dorsal sclerotization is shown on fig. 15a. Cuticle reticulated. Frons slightly convex, without antennal tubercles. Frontal hairs (0.011-0.014) are 0.6-0.7 of the basal diameter of 3rd antennal segment. Antennae are six-segmented, 0.36-0.42 of the body length. Third segment is 2.3-2.8(2.9) of 4th, 1.9-2.2(2.3) of *processus terminalis*, 0.95-1.10 of 6th segment length. *Processus terminalis* is 0.9-1.1 of the base of 6th segment, with 3-4 apical hairs. Secondary rhinaria are absent. Hairs on the 3rd segment (0.008-0.010) are 0.4-0.5 of its basal diameter. Clypeus normal, rostrum reaches the hind coxae; apical rostral segment (fig. 15b) is 1.5 of the second segment of hind tarsus, with 2 accessory hairs. Siphunculi are conic, with small rims, slightly curved outside, 0.046-0.058 of body length, 0.69-0.73(0.80) of cauda length, 0.58-0.61 of apical rostral segment, 1.2-1.5(1.7) of their maximal width (fig. 15c). Cauda is triangular, 0.77 of its basal width, 0.83 of apical rostral segment, with 18-20 hairs (fig. 15d). Marginal tubercles on the prothorax, 1st and 7th tergites. Diameter of tubercle on the 7th tergite (0.050-0.067) exceeds that on the 1st one (0.035-0.045). Diameter of tubercle on the 1st tergite is 2.0-2.7 of the basal diameter of 3rd antennal segment. Hairs on the 3-5 tergites (0.011) are 0.6 of the basal diameter of 3rd antennal segment. Subgenital plate oval, with 4-6 hairs on disc and 10-14 ones along its posterior margin. 8th tergite with 2 hairs. Legs normally developed; trochanteric hair of middle legs and more long hair on the external side of middle femora (0.011-0.017) are 0.20-0.25 of trochantro-femoral suture; first segments of tarsi with 3:3:2 hairs.

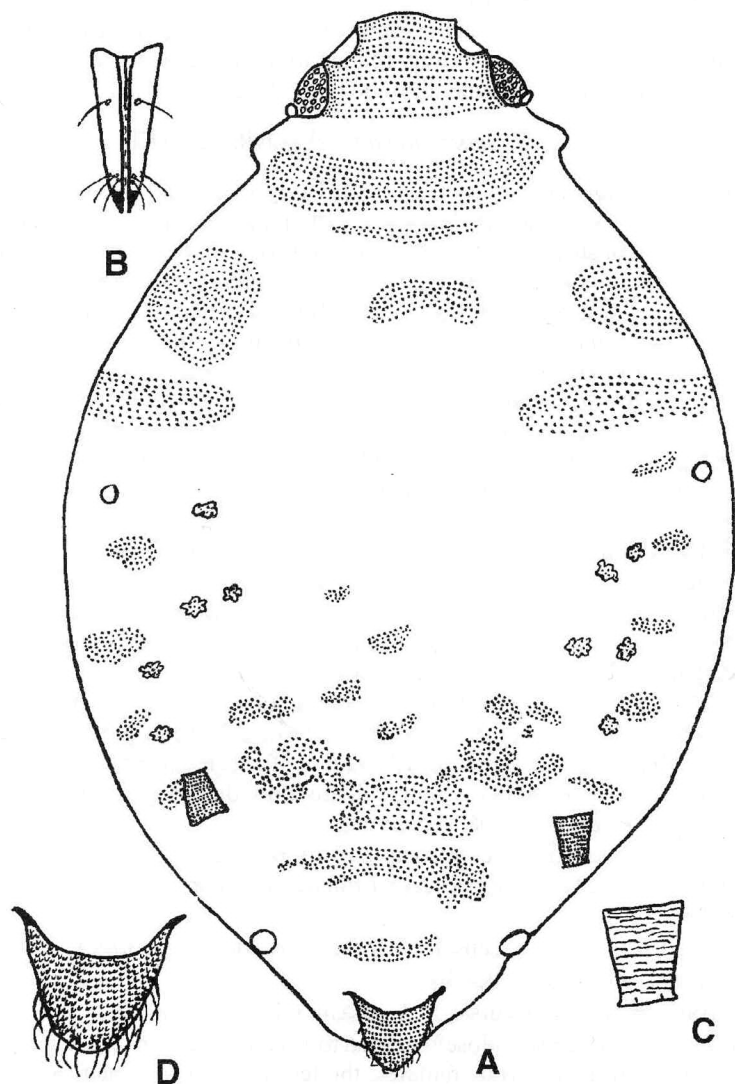


Fig. 15. Apterous viviparous female of *P. turanica*, sp.n.: a-habitus; b-apical rostral segment; c-siphunculi; d-cauda.

Colour on slide: head, 1st-2nd, apex of 5th, 6th antennal segments, clypeus, 3rd-4th segments of rostrum, coxae, trochanters, femora (except basal part), apices of tibiae, tarsi, dorsal sclerites, subgenital and anal plates, siphunculi, cauda dark- brown.

Dimension of holotype. B.1.85; ant.0.71:3rd0.21-0.22,4th0.08,5th 0.09- 0.10,6th0.20(0.11+0.09); siph.0.09/ 0.06;c.0.13/?;a.r.s.0.156; 2s.h.t.0.104.

Host plant. *Cirsium sieversii* (Fish. et Mey.) Petr. (Asteraceae).

Bionomy. Aphids suck on roots, visited by ants.

Material examined. Holotype: 1 ap.v.f., slide N3260a (old seriae), S. Kazakhstan, 25 km SE of Taraz (Dzhambul), Talas r. valley, 11.07.1964, Archangelskaja; paratypes: 4 ap.v.f. together with holotype.

Taxonomic notes. *P. turanica* is included in the group of 10 species with the frontal hairs which are 0.6-1.0 of the basal diameter of 3rd antennal segment, and with the absence of marginal tubercles on the 6th tergite. Together with *P. alexandrae* and *P. cousiniae*, it differs from all related species by the presence of 2 hairs on the 8th abdominal tergite. Unlike the two above-mentioned species, it has dark cauda, larger marginal tubercles, differing ratio of the cauda to the apical rostral segment and also host plant.

Etymology. The name of the new species is derived from the vast ancient desert territory situated in the Middle Asia and known as Turan.

Key for the definition of the apterous viviparous females of the genus *Protaphis* in the former USSR fauna

1(32) Marginal tubercles are developed on the prothorax, 1st and 7th tergites, a single tubercle is occasionally present on the one side of 6th tergite (few specimens of *P. anthemiae*, *P. lactucicola*).

2(25) Frontal hairs are shorter than or equal to the basal diameter of 3rd antennal segment.

3(6) Frontal hairs are no more than 0.3-0.5 of basal diameter of 3rd antennal segment.

4(5) Siphunculi are no more than 0.050 of body length, 1.0-1.4 of their maximal width; apical rostral segment is 1.35-1.45 of the second segment of hind tarsus. Aphids live on the lower parts of *Scorzonera parviflora* stems *P. aralensis*, sp.n.

5(4) Siphunculi are 0.065-0.070 of body length, 1.6-2.0 of their maximal width; apical rostral segment is 1.25-1.35 of the second segment of hind tarsus. Aphids live on the roots of *Artemisia spp.*..... *P. elatior* (Nevs.)

6(3) Frontal hairs are 0.6-1.0 of basal diameter of 3rd antennal segment.

7(12) 8th abdominal tergites with no more than 2 hairs.

8(11) Cauda is pale, 0.6-0.8 of apical rostral segment; marginal tubercle on the 1st tergite is (1.0)1.3-1.7(2.0) of the basal diameter of 3rd antennal segment.

9(10) Siphunculi are 0.7-0.9 of cauda length; 3rd antennal segment is 2.2-3.0 of the 4th one; trochanteric hair is 0.3-0.4 of trochantro-femoral suture; cauda with 11-14 hairs. Aphids live on the stems of *Centaurea squarrosa*..... *P. alexandrae* (Nevs.)

10(9) Siphunculi are 0.9-1.1 of cauda length; 3rd antennal segment is 1.9-2.3 of the 4th one; trochanteric hair is 0.22-0.27 of trochantro-femoral suture; cauda with 17-19 hairs. Aphids live on the roots of *Cousinia spp.*.....*P. cousiniae*, sp.n.

11(8) Cauda is dark, 0.80-0.85 of apical rostral segment; marginal tubercle on the 1st tergite is 2.0-2.7 of the basal diameter of 3rd antennal segment. Aphids live on the roots of *Cirsium sieversii*.....
.....*P. turanica*, sp.n.

12(7) 8th tergite with 3-4 hairs.

13(20) Siphunculi are 1.8-2.3 of their maximal width.

14(15) Siphunculi are 0.035-0.040 of the body length, 0.5 of cauda length. Aphids live on the roots of *Chondrilla sp.*.....*P. chondrillae* (Mordv., Tarb., Plav.)

15(14) Siphunculi are longer than 0.045 of the body length and longer than 0.65 of cauda length. Host plant differing.

16(19) Secondary rhinaria are developed on the 3rd antennal segment; cauda is 0.7-0.9 of its basal width, with 14-16 hairs.

17(18) Siphunculi are 0.075 of the body length; cauda is pale, 0.60-0.65 of apical rostral segment; diameters of marginal tubercles on the 1st and 7th tergites are equal. Aphids live on the roots of *Ruta sieversii* *P. rutae* (Nevs.)

18(17) Siphunculi are 0.050-0.055 of the body length; cauda is dark, 0.77-0.90 of apical rostral segment; diameter of marginal tubercle on the 7th tergite considerably exceeds that on the 1st one. Aphids live on the roots of *Hyalea pulchella*..... *P. hyaleae*, sp.n.

19(16) Secondary rhinaria are absent; cauda is equal to or exceeds its basal width, with 7-10 hairs. Aphids live on the roots of *Scorzonera tau saghyz*, *Taraxacum kok-saghyz*..... *P. scorzonerae* (Mordv.)

20(13) Siphunculi are no more than 1.75 of their maximal width.

21(24) Siphunculi are rather stumpy, 1.0-1.4 of their maximal width; cauda is pale, 0.75-0.90 of apical rostral segment. Aphids live on the roots of Asteraceae plants.

22(23) Apical rostral segment is 1.40-1.45 of the second segment of hind tarsus; cauda is 1.1-1.3 of its basal width, with 14-16 hairs; diameter of marginal tubercle on the 1st tergite is 1.3-1.5 of the basal diameter of 3rd antennal segment. Aphids live on the roots of *Anthemis* sp. **P. anthemiae** Iv.

23(22) Apical rostral segment is 1.20-1.35 of the second segment of hind tarsus; cauda is 0.74-0.84 of its basal width; diameter of marginal tubercle on the 1st tergite is 2.3-2.7 of the basal diameter of 3rd antennal segment. Aphids live on the roots of *Lactuca serriola*. **P. lactucicola**, sp.n.

24(21) Siphunculi are slender, 1.3-1.8 of their maximal width; cauda is dark, 0.65-0.75 of apical rostral segment. Aphids live on the roots of *Alhagi pseudoalhagii* (Fabaceae). **P. alhagii** Juch.

25(2) Frontal hairs are no less than 1.2 of the basal diameter of 3rd antennal segment.

26(31) Frontal hairs are 1.2-1.6 of the basal diameter of 3rd antennal segment; trochanteric hair is 0.45-0.55 of trochantro-femoral suture; secondary rhinaria are usually developed on the 3rd antennal segment. Host plant is other than *Artemisia*.

27(30) Third antennal segment is 2.0-2.5 of the *processus terminalis*; the last is 0.85-1.05 of the base of 6th segment; diameter of marginal tubercle on the 1st tergite is 1.3-2.0 of the basal diameter of 3rd antennal segment.

28(29) Siphunculi are 0.047-0.057 of the body length, 1.2-1.6 of their maximal width, 0.65-0.85 of cauda length; cauda is 0.9-1.0 of its basal width. Aphids live on the stems and flowers of *Carthamus* spp., *Carduus nutans*, *Lactuca* sp. **P. carthami** (B.Das)

29(28) Siphunculi are 0.062-0.075 of the body length, 1.8-2.5 of their maximal width, 0.9-1.25 of cauda length; cauda is 0.7-0.9 of its basal width. Aphids live on the stems and flowers of *Carthamus tinctorius*, *Acroptilon australe*, *Cichorium intybus*, *Cousinia* spp., *Carelinia caspia*. **P. anuraphoides** (Nevs.)

30(27) Third antennal segment is 2.7-3.3(3.8) of the *processus terminalis*; the last is 0.6-0.7 of the base of 6th segment; diameter of marginal tubercle on the 1st tergite is 2.3-2.7 of the basal diameter of 3rd antennal segment. Aphids live on the stems and flowers of *Acroptilon australe*. **P. iliensis**, sp.n.

31(26) Frontal hairs are 1.6-2.0 of the basal diameter of 3rd antennal segment; trochanteric hair is 0.6-0.7 of the trochantro-femoral suture; secondary rhinaria are absent. Aphids live on the roots of *Artemisia annua*, *A. marschalliana*. **P. elongata** (Nevs.)

32(1) Marginal tubercles are constantly developed on the 6th tergite, sometimes also on the 8th one, never on the 1st and 7th tergites.

33(36) Frontal hairs are no more than 0.6 of the basal diameter of 3rd antennal segment; trochanteric hair is no more than 0.2 of the trochantro-femoral suture.

34(35) Apical rostral segment is 1.40-1.55 of the second segment of hind tarsus; siphunculi are 0.035-0.045 of the body length; cauda is 0.7-0.8 of apical rostral segment; diameter of marginal tubercle on the 1st tergite is 2.0 of the basal diameter of 3rd antennal segment. Aphids live on the roots of *Ancathia igniaria*. **P. ancathiae**, sp.n.

35(34) Apical rostral segment is 1.20-1.35 of the second segment of hind tarsus; siphunculi are 0.047-0.060 of the body length; cauda is (0.8)0.9-1.0(1.1) of apical rostral segment; diameter of marginal tubercle on the 1st tergite is (2.5)3.0-4.0 of the basal diameter of 3rd antennal segment. Aphids live on the roots of *Artemisia* spp. **P. miranda**, sp.n.

36(33) Frontal hairs are equal to or exceed the basal diameter of 3rd antennal segment; trochanteric hair is no less than 0.3 of the trochantro-femoral suture.

37(38) Secondary rhinaria are absent; siphunculi are 0.067-0.070 of the body length; diameter of marginal tubercles on the 1st and 7th tergites are equal; frontal hairs are 1.0-1.2 of the basal diameter of 3rd antennal segment; trochanteric hair is 0.30-0.35 of the trochantro-femoral suture. Aphids live on the roots of *Echinops albicaulis*. **P. echinopsicola**, sp.n.

38(37) Secondary rhinaria are constantly developed on the 3rd antennal segment (1-5); siphunculi are 0.047-0.060 of the body length; diameter of marginal tubercle on the 7th tergite is 1.2-1.6 of that on the 1st one; frontal hairs are 1.5-2.0 of the basal diameter of 3rd antennal segment; trochanteric hair is 0.65-0.85 of the trochantro-femoral suture. Aphids live on the roots of *Taraxacum monochlamydeum*. **P. betpakdalensis**, sp.n.

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Резюме.

Кадырбеков Р.Х. Вклад в систематику тлей рода *Protaphis* Borner, 1952 (Homoptera, Aphididae) фауны бывшего СССР.

Проведена ревизия тлей рода *Protaphis* в масштабах бывшего СССР с учетом современных требований. Сделаны морфологические описания 20 видов, 10 из которых являются новыми для науки, *P. carthami* (B.Das) впервые указывается для территории бывшего СССР. Часть видов, указанных в последнем каталоге тлей мировой фауны в составе *Protaphis*, переведена в другие таксоны. Так *P. amurensis* (Pastsh.), *P. artemisiae* (Narz.), *P. terraealbae* Iv. переведены в род *Xerobion*, а *P. deformans* (Nevs.), *P. tausaghyz* Nevs. et Iv. - в род *Brachyunguis*.

P. ancathiae, sp.n. с *Ancathia igniaria* принадлежит к группе из 4-х видов с постоянным наличием краевых бугорков на 6-м брюшном тергите. По длине лобных волосков он ближе всего к *P. miranda*, от которого отличается гораздо меньшими по диаметру краевыми бугорками, более длинным последним члеником хоботка, более короткими по отношению к телу трубочками, более короткими волосками на вертлугах средних ног и кормовым растением.

P. aralensis, sp.n. со *Scorzonera parviflora* принадлежит к группе видов с очень короткими лобными волосками и наличием краевых бугорков, только на 1-м и 7-м тергитах. От наиболее близкого *P. elatior*, новый вид отличается более коренастыми и короткими по отношению к телу трубочками и более длинным последним члеником хоботка.

P. betpakdalensis, sp.n. с *Taraxacum monochlamydeum* принадлежит к видовой группе с постоянным наличием краевых бугорков на 6-м тергите и отличается от всех видов группы наличием очень длинных лобных и вертлужных волосков.

P. cousinia, sp.n. с *Cousinia alata*, C.sp. принадлежит к группе из 10 видов с длиной лобных волосков 0.6-1.0 диаметра третьего членика усиков в основании. *P. cousinia* вместе с *P. alexandrae*, *P. turanica* характеризуется наличием 2-х волосков на 8-м тергите. От *P. turanica* новый вид и *P. alexandrae* отличаются светлым хвостиком, который составляет не более 0.6-0.8 длины последнего членика хоботка и мелкими краевыми бугорками. *P. cousinia* отличается от *P. alexandrae* более низкими индексами трубочек к хвостику и 3-го членика усиков к 4-му, а также большим числом волосков на хвостике и более длинными волосками на вертлугах средних ног.

P. echinopsicola, sp.n. с *Echinops albicaulis* принадлежит к группе из 4-х видов с наличием краевых бугорков на 6-м тергите. От близкого *P. betpakdalensis* рассматриваемый вид отличается отсутствием вторичных ринарий на 3-м членике усиков бескрылых, более высоким индексом трубочек к телу, более короткими лобными и вертлужными волосками, равенством диаметров бугорков 1-го и 7-го тергитов и иным кормовым растением. Детально сравнить новый вид с *P. echinopsis* H.R.L. известного из Палестины с того же кормового растения мы не имели возможности. Судя по имеющемуся описанию (Hille Ris Lambers, 1948) *P. echinopsis* отличается от *P. echinopsicola* отсутствием краевых бугорков на 6-м тергите, более низким индексом трубочек к телу (0.055-0.058 против 0.067-0.070) и к хвостику (0.48-0.50 против 0.56-0.68), более стройным хвостиком и более длинными волосками на тергитах.

P. hyaleae, sp.n. с *Hyalea pulchella* принадлежит к группе из 10 видов с длиной лобных волосков 0.6-1.0 базального диаметра 3-го членика усиков. Новый вид отличается от остальных видов группы более длинными волосками на вертлугах средних ног и постоянным наличием вторичных ринарий на 3-м и, иногда, на 4-м члениках усиков бескрылых.

P. iliensis, sp.n. с *Acroptilon australe* принадлежит к группе видов с лобными волосками в 1.2-1.6 раза превосходящими базальный диаметр 3-го членика усиков и с наличием краевых бугорков на 1-м и 7-м тергитах. От наиболее близких *P. anuraphoides* и *P. carthami* новый вид отличается иным соотношением члеников усиков и более крупными краевыми бугорками.

P. lactucicola, sp.n. с *Lactuca serriola* принадлежит к группе из 10 видов с краевыми бугорками на 1-м и 7-м тергитах и лобными волосками в 0.6-1.0 базального диаметра 3-го членика усиков. Из этих видов *P. lactucicola* ближе всего к *P. anthemiae*, от которого отличается более коротким последним члеником хоботка, более коренастым хвостиком, иными по форме и более крупными краевыми бугорками, большим числом волосков на хвостике.

P. miranda, sp.n. с *Artemisia* spp. принадлежит к группе видов с наличием краевых бугорков на 6-м тергите, где новый вид наиболее близок к *P. ancathiae*, от которого отличается более коротким последним члеником хоботка, более длинными трубочками, более высоким индексом хвостика к последнему членику хоботка, более крупными краевыми бугорками и иным кормовым растением. От *P. elongata*, живущего на корнях полыней, *P. miranda* отличается наличием краевых бугорков на 6-м тергите и очень короткими волосками на лбу и тергитах. От другого полынного вида *P. elatior*, новый вид можно отличить, кроме наличия краевых бугорков на 6-м тергите, еще и по цвету хвостика, более коротким вертлужным волоскам, отсутствию вторичных ринарий на 3-м членике усиков бескрылых, иной пропорции: 3-го членика усиков к 6-му, трубочек к телу и к хвостик и по гораздо более крупным краевым бугоркам.

P. turanica, sp.n. с *Cirsium* sp. принадлежит к группе из 10 видов с лобными волосками в 0.6-1.0 базального диаметра 3-го членика усиков и отсутствием краевых бугорков на 6-м тергите. Новый вид вместе с *P. alexandrae* и *P. cousiniae* отличается от других видов группы наличием 2-х волосков на 8-м тергите. От двух указанных выше видов его можно отличить по цвету хвостика, гораздо более крупным краевым бугоркам и более высокому индексу хвостика к последнему членику хоботка.

Ключ для определения рассмотренных в работе видов

1(32) Краевые бугорки, в норме есть на переднеспинке, 1-м и 7-м брюшных тергитах, очень редко, одиночные бугорки бывают на одной из сторон 6-го тергита (некоторые экземпляры *P. anthemiae*, *P. lactucicola*).

2(25) Волоски лба короче или равны базальному диаметру 3-го членика усиков.

3(6) Волоски лба не более 0.5 базального диаметра 3-го членика усиков.

4(5) Длина трубочек не более 0.055 длины тела, 1.0-1.4 своей наибольшей ширины; последний членик хоботка в 1.35-1.45 раза длиннее 2-го членика задней лапки; на основании стеблей *Scorzonera parviflora*.....***P. aralensis*, sp.n.**

5(4) Длина трубочек 0.065-0.070 длины тела, в 1.6-2.0 раза превосходит свою наибольшую ширину; последний членик хоботка в 1.25-1.35 раза длиннее 2-го членика задней лапки; на корнях *Artemisia* spp..... ***P. elatior* (Nevs.)**

6(3) Волоски лба длиннее 0.6 базального диаметра 3-го членика усиков.

7(12) На 8-м тергите не более 2-х волосков.

8(11) Хвостик светлый, 0.6-0.8 длины последнего членика хоботка; диаметр краевого бугорка на 1-м тергите в (1.0)1.3-1.7 (2.0) раза превосходит базальный диаметр 3-го членика усиков.

9(10) Трубочки 0.7-0.9 длины хвостика; 3-й членик усиков в 2.2-3.0 раза длиннее 4-го; волосок на вертлуге средних ног 0.3-0.4 диаметра вертлужно-бедерного шва; хвостик с 11-14 волосками; на стеблях *Centaurea squarrosa*.....***P. alexandrae* (Nevs.)**

10(9) Трубочки 0.9-1.1 длины хвостика; 3-й членик усиков в 1.9-2.3 раза превосходит 4-й; волосок на вертлуге средних ног 0.22-0.27 диаметра вертлужно-бедерного шва; хвостик с 17-19 волосками; на корнях *Cousinia alata*, *C. spp.*.....***P. cousiniae*, sp.n.**

11(8) Хвостик темный, 0.80-0.85 длины последнего членика хоботка; диаметр краевого бугорка на 1-м тергите в 2-0-2.7 раза превосходит базальный диаметр 3-го членика усиков; на *Cirsium sieversii*.....***P. turanica*, sp.n.**

12(7) На 8-м тергите 3-4 волоска.

13(20) Трубочки в 1.8-2.3 раза превосходят собственную ширину в основании.

- 14(15) Трубочки 0.035-0.040 длины тела, 0.5 длины хвостика; на корнях *Chondrilla* sp.....
.....**P. chondrillae (Mordv., Tarb., Plav.)**
- 15(14) Трубочки более 0.045 длины тела, более 0.65 длины хвостика; на других растениях.
- 16(19) Вторичные ринарии есть на 3-м членике усиков бескрылых; хвостик 0.7-0.9 ширины в основании, с 14-16 волосками.
- 17(18) Трубочки 0.075 длины тела; хвостик светлый, 0.60- 0.65 длины последнего членика хоботка; диаметры краевых бугорков на 1-м и 7-м тергитах примерно равны; на корнях *Ruta sieversii*.....
.....**P. rutae (Nevs.)**
- 18(17) Трубочки 0.050-0.055 длины тела; хвостик темный, 0.77-0.90 длины последнего членика хоботка; диаметр краевого бугорка на 7-м тергите заметно превосходит диаметр краевого бугорка на 1-м; на корнях *Hyalea pulchella*.....
.....**P. hyaleae, sp.n.**
- 19(16) Вторичные ринарии отсутствуют на 3-м членике усиков бескрылых; хвостик равен или превосходит ширину в основании, с 7-10 волосками; на корнях *Scorzonera tau saghyz*, *Taraxacum koksaghyz*.....
.....**P. scorzonerae (Mordv.)**
- 20(13) Трубочки не более чем в 1.75 раза превосходят свою наибольшую ширину.
- 21(24) Трубочки более коренастые, 1.0-1.4 своей наибольшей ширины; хвостик светлый, 0.75-0.90 длины последнего членика хоботка; на корнях Asteraceae.
- 22(23) Последний членик хоботка в 1.40-1.45 раза длиннее 2-го членика задней лапки; хвостик в 1.1-1.3 раза превосходит ширину в основании, с 14-16 волосками; диаметр краевого бугорка на 1-м тергите в 1.3-1.5 раза превышает базальный диаметр 3-го членика усиков; на корнях *Anthemis* sp.
.....
.....**P. anthemiae Iv.**
- 23(22) Последний членик хоботка в 1.20-1.35 раза длиннее 2-го членика задней лапки; хвостик 0.74-0.84 ширины в основании, с 18-22 волосками; диаметр краевого бугорка на 1-м тергите в 2.3-2.7 раза превышает базальный диаметр 3-го членика усиков; на корнях *Lactuca serriola*
.....**P. lactucicola, sp.n.**
- 24(21) Трубочки стройнее, в 1.3-1.8 раза превосходят свою наибольшую ширину; хвостик темный, 0.65-0.75 длины последнего членика хоботка; на корнях *Alhagi pseudalhagii* (Fabaceae).....
.....**P. alhagii Juch.**
- 25(2) Волоски лба не менее чем в 1.2 раза превосходят базальный диаметр 3-го членика усиков.
- 26(31) Волоски лба в 1.2-1.6 раза превосходят базальный диаметр 3-го членика усиков; волосок на вертлугах средних ног 0.45-0.55 диаметра вертлужно-бедерного шва; вторичные ринарии в норме есть на 3-м членике усиков бескрылых; не на *Artemisia*.
- 27(30) Третий членик усиков в 2.0-2.5 раза длиннее шпика; шпик 0.85-1.05 длины основания 6-го членика; диаметр краевого бугорка на 1-м тергите в 1.3-2.0 раза превосходит базальный диаметр 3-го членика усиков.
- 28(29) Трубочки 0.047-0.057 длины тела, в 1.2-1.6 раза превосходят свою наибольшую ширину, 0.65-0.85 длины хвостика; хвостик 0.9-1.0 ширины в основании; на стеблях и соцветиях *Carthamus* spp., *Carduus nutans*, *Lactuca* sp.....
.....**P. carthami (B.Das)**
- 29(28) Трубочки 0.062-0.075 длины тела, в 1.8-2.5 раза превосходят свою наибольшую ширину, 0.9-1.25 длины хвостика; хвостик 0.7-0.9 ширины в основании; на стеблях и соцветиях *Carthamus tinctorius*, *Acroptilon australe*, *Cichorium intybus*, *Carelinia caspia*, *Cousinia* spp.....
.....**P. anuraphoides (Nevs.)**
- 30(27) Третий членик усиков в 2.7-3.3(3.8) раза длиннее шпика; шпик 0.6-0.7 длины основания 6-го членика; диаметр краевого бугорка на 1-м тергите в 2.3-2.7 раза превосходит базальный диаметр 3-го членика усиков; на стеблях и соцветиях *Acroptilon australe*.....
.....**P. iliensis, sp.n.**
- 31(26) Волоски лба в 1.6-2.0 раза превосходят базальный диаметр 3-го членика усиков; волосок вертлуга средних ног 0.6-0.7 диаметра вертлужно-бедерного шва; вторичные ринарии на 3-м членике усиков бескрылых отсутствуют; на корнях *Artemisia annua*, *A. marschalliana*, *A. sp.*.....
.....**P. elongata (Nevs.)**
- 32(1) Краевые бугорки регулярно присутствуют на 6-м и, иногда, на 8-м, кроме 1-го и 7-го тергитов.
- 33(36) Волоски на лбу не более 0.6 базального диаметра 3-го членика усиков; волосок вертлуга средних ног не более 0.2 диаметра вертлужно-бедерного шва.
- 34(35) Последний членик хоботка в 1.40-1.55 раза длиннее 2-го членика задней лапки; трубочки 0.035-0.045 длины тела; хвостик 0.7-0.8 длины последнего членика хоботка; диаметр краевого бугорка на 1-м тергите в 2.0 раза превосходит базальный диаметр 3-го членика усиков; на корнях *Ancathia igniaria*.....
.....**P. ancathiae, sp.n.**

35(34) Последний членик хоботка в 1.20-1.35 раза длиннее 2-го членика задней лапки; трубочки 0.047-0.060 длины тела; хвостик (0.8)0.9-1.0(1.1) длины последнего членика хоботка; диаметр краевого бугорка на 1-м тергите в (2.5)3.0-4.0 раза превосходит базальный диаметр 3-го членика усиков; на корнях *Artemisia spp.*..... ***P. miranda*, sp.n.**

36(33) Волоски лба равны или превосходят диаметр 3-го членика усиков; волосок на вертлуге средних ног не менее 0.3 диаметра вертлужно-бедерного шва.

37(38) Вторичные ринарии на 3-м членике усиков бескрылых отсутствуют; трубочки 0.067-0.070 длины тела; диаметры краевых бугорков на 1-м и 7-м тергитах примерно равны; волоски лба 1.0-1.2 базального диаметра 3-го членика усиков; волосок на вертлуге средних ног 0.30-0.35 диаметра вертлужно-бедерного шва; на корнях *Echinops albicaulis*..... ***P. echinopsicola*, sp.n.**

38(37) Вторичные ринарии регулярно есть на 3-м членике усиков; трубочки 0.047-0.060 длины тела; диаметр краевого бугорка на 7-м тергите в 1.2-1.6 раза превосходит диаметр краевого бугорка на 1-м; волоски лба в 1.5-2.0 раза превышают базальный диаметр 3-го членика усиков; волосок на вертлуге средних ног 0.65-0.85 диаметра вертлужно-бедерного шва; на корнях *Taraxacum monochlamydeum*..... ***P. betpakdalensis*, sp.n.**