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Materials on Systematics of the Genus *Aphidura* Hille Ris Lambers, 1956 (Homoptera, Aphididae)

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Abstract—Six new aphid species of the genus *Aphidura* from Kazakhstan are described: *A. togaica* Kadyrbekov, sp. n. on *Gypsophila* spp., *A. massagetica* Kadyrbekov, sp. n. on *Silene lithophila*, *A. nomadica* Kadyrbekov, sp. n. on *Silene suffrutescens*, *A. naimanica* Kadyrbekov, sp. n. on *Gypsophila* spp., *A. alatavica* Kadyrbekov, sp. n. on *Cerastium* spp., and *A. melandrii* Kadyrbekov, sp. n. on *Melandrium album.* A more detailed description of *A. ornatella* Narzik. et Winkl., 1960 is given based on materials from Kazakhstan and Tajikistan. The validity of the species *A. bharatia* David, Sekh. et Bindra, 1970 and *A. mingens* Pint., 1970 is restored. *A. prinsepiae* Pashtsh., 1988 is reduced to a synonym of *A. mordvilkoi* Shap., 1984. A key to the known species of the genus *Aphidura* is provided.

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Aphidura is southern Palaearctic genus of aphids, including 13 species in the world fauna (G. Remaudiere, M. Remaudiere, 1997). Its members live on shrubs in the family Rosaceae and herbaceous plants of the family Caryophyllaceae. Four species were known from the territory of Kazakhstan and Central Asia: *A. bozhkoae* (Narzikulov, 1957), *A. ornatella* Narzikulov et Winkler, 1960, *A. pannonica* Szelegiewicz, 1967, *A. picta* Hille Ris Lambers, 1956. Study of materials from the collection of the Institute of Zoology of the Ministry of Education and Science of the Republic of Kazakhstan has revealed several new species. In addition, samples of *Aphidura ornatella* from Kazakhstan were studied and a detailed description of this species was made with some attention to clinal variation. Descriptions of new taxa are listed below. All measurements are in millimeters.

Holotypes and some paratypes are deposited in the collection of Institute of Zoology of the Ministry of Education and Science of the Republic of Kazakhstan (Almaty), other paratypes are deposited in the collections of the Zoological Institute, Russian Academy of Sciences (St. Petersburg Russia) and the Institute of Zoology of Academy of Sciences of Moldova (Chisinau).

Aphidura togaica Kadyrbekov, sp. n. (Fig. 1)

Material. Holotype: apterous viviparous female: slide no. 3088 (old series), South-East Kazakhstan, Almaty Province, floodplain of the Karatal River, near the town of Ushtobe, 13.VI.1964, S.P. Arkhangel'skaya; paratypes: 7 apterous viviparous females and 2 alate viviparous females, same locality; 15 apterous viviparous females, 3 alate viviparous females, slides no. 1004 (new series), Southern Kazakhstan, Zhambyl Province, floodplain of the Chu River, near Moin-Kum Village (Furmanovka), 8.VI.1988, R.Kh. Kadyrbekov.

Description. Apterous viviparous female (14 specimens examined). Body broadly elliptical, 1.60–2.04. Dorsal sclerotization not expressed in about half of specimens collected and present in other specimens as separate maculae on abdominal tergites and postsiphuncular sclerites (Fig. 1*a*). Cuticle distinctly reticulate. Only tarsi and apices of siphunculi dark. Head pale, not sclerotized. Frons with small sinus. Median frontal tubercle as high as antennal tubercles; with 6 weakly capitate hairs (0.023–0.026) that slightly longer than basal articular diameter of 3rd antennal segment. Antennae 6-segmented, 0.7–0.8 times as long as body, yellow, only 5th segment apically and 6th segment usually dark. Secondary rhinaria absent.

3rd antennal segment (1.6) 1.7–1.9(2.0) times as long as 4th segment, that in turn 1.1–1.3 times as long as 5th segment. 6th antennal segment 1.1–1.3 times as long as 3rd segment. Processus terminalis 3.4–4.4 times as long as base of 6th segment, with 3–4 apical hairs. 1st and 2nd segments with 5–7 and 3–4 hairs, respectively. Hairs on 3rd antennal

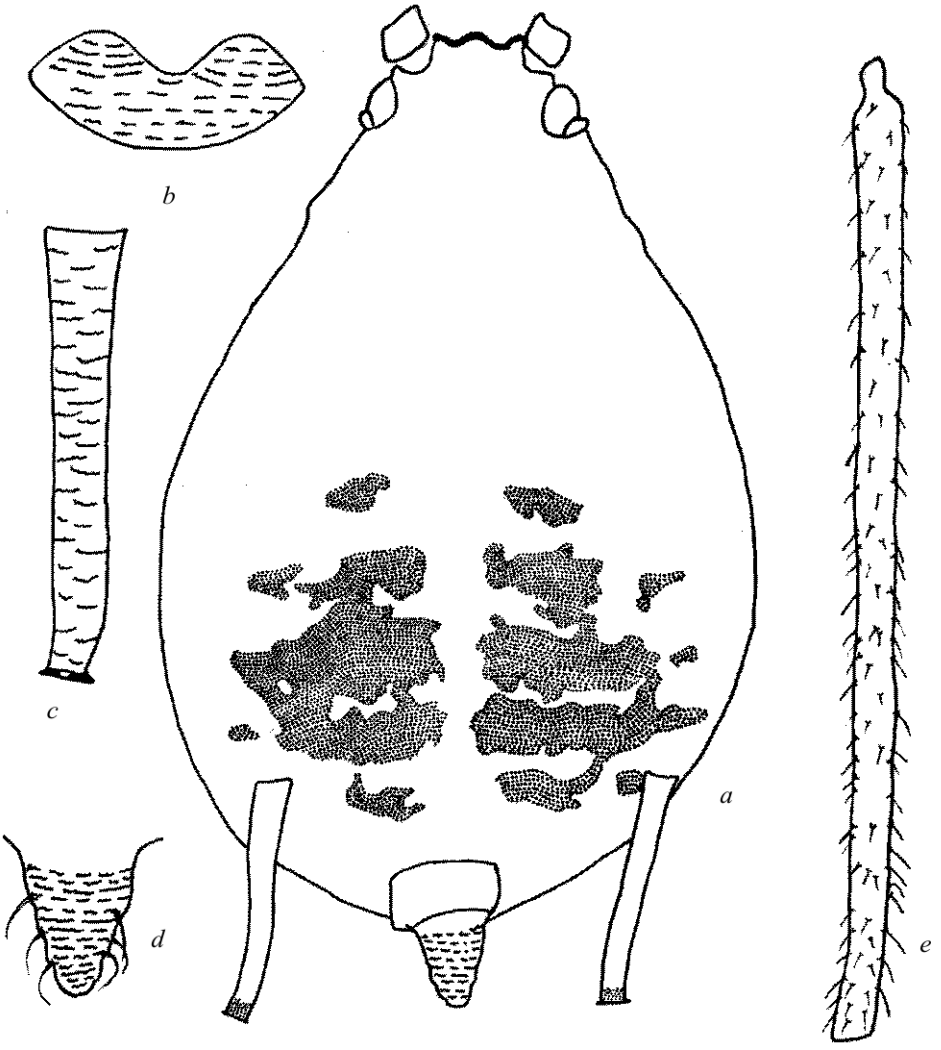

Fig. 1. Apterous viviparous female of *Aphidura togaica* sp. n.: (*a*) habitus, (*b*) processus mammiformis, (*c*) siphunculus, (*d*) cauda, (*e*) hind tibia.

segment (0.006–0.008) 0.3 times as long as basal articular diameter of segment. Rostrum long, reaching hind coxae. Ultimate rostral segment as long as, or slightly longer than 2nd segment of hind tarsus, with 10–14 accessory hairs. Processus mammiformis not sclerotized, pale; its lateral tubercles of medium height, but not flat (Fig. 1*b*). Abdominal tergites without marginal tubercles. Dorsal hairs thick, blunt at apex, situated on small tubercles. Hairs on abdominal tergites III–VI (0.010–0.011) 0.5 times as long as basal articular diameter of 3rd antennal segment. Hairs on abdominal tergite VIII (0.023–0.026) slightly exceeding basal articular diameter of 3rd antennal segment. Subgenital plate elliptical, with 2 hairs along anterior margin and with 12–20 (usually 14–16) hairs along posterior margin. Siphunculi slightly swollen and curved (Fig. 1*c*), 2.4–3.4 times as long as cauda and 0.20–0.23 times as long as body. Cauda short, triangular (Fig. 1*d*); in some specimens, with very slight constriction, pale, with 6–12 (usually 9–10) hairs, as long as or slightly longer than its basal width, about equal in length to ultimate rostral segment. Legs normally developed, tibia with two types of hairs: blunt spatulate hairs and thickened pointed hairs (Fig. 1*e*). Former of them typical of distal, latter of proximal part of tibia. All 1st tarsal segments with 3 hairs.

Measurements of holotype: body 1.83, antennae 1.46/1.46, 3rd antennal segment 0.43/0.43, 4th antennal segment 0.22/0.22, 5th antennal segment 0.20/0.20, 6th antennal segment 0.47(0.09 + 0.38)/0.47(0.09 + 0.38), siphunculi 0.42/0.42, cauda 0.14, ultimate rostral segment 0.12, 2nd segment of hind tarsus 0.10.

Color in life: body pale yellow, sclerotized maculae brown, eyes dark red.

Alate viviparous female (5 specimens examined). dorsal sclerotization consisting of sclerotized patch on abdominal tergites III–V, maculae or interrupted bands on tergites VI–VIII, postsiphuncular sclerites and marginal maculae on all abdominal tergites. Head and thorax brown. Antennae (except base of 3rd and 4th segments), apices of femora and tibia, tarsi, ultimate rostral segment, and siphunculi dark brown. 3rd antennal segment with 22–36, 4th segment with 0–1 secondary rhinaria. Cauda pale, triangular-conical. Subgenital plate with 15–20 hairs along posterior margin. Other characters as those in apterous viviparous female.

Measurements of allotype: body 1.96, antennae 1.55/1.57, 3rd antennal segment 0.46/0.46, 4th antennal segment 0.25/0.26, 5th antennal segment 0.21/0.21, 6th antennal segment 0.47(0.09 + 0.38)/ 0.48(0.09 + 0.39), siphunculi 0.35/0.36, cauda 0.14, ultimate segment of rostrum 0.12, 2nd segment of hind tarsus 0.10.

Differential diagnosis. *A. togaica* Kadyrbekov sp. n. is close to *A. gypsophilae* Mamontova-Solucha, 1963 in habitus (color, shape of cauda, number of hairs on the cauda, shape of hairs on the tibia). However, the ultimate rostral segment of the new species is equal to or longer than the 2nd segment of the hind tarsus (shorter in *A. gypsophilae*), and has a greater number of accessory hairs; the hairs on the frons and tergite VIII are 5 times as long, the ratio of the length of the processus terminalis to the base of the 6th antennal segment is smaller (3.4–4.4 versus 5.0–5.5), and the 3rd antennal segment of alatae has a greater number of secondary rhinaria (23–35 versus 10–15).

Biology. Living on *Gypsophila perfoliata* L.(Caryophyllaceae). In loose colonies on upper and lower side of leaves.

Aphidura massagetica Kadyrbekov, sp. n. (Fig. 2)

Material. Holotype: apterous viviparous female, slide no. 1660 (new series), South-East Kazakhstan, Almaty Province, State National Natural Park "Altyn-Emel," southern spurs of Dzhungar Alatau Mountains, Sholak Mountains, near cordon Sholak, 850 m above sea level, 13.V.1993, R.Kh. Kadyrbekov; paratypes: 8 apterous viviparous females and 1 alatiform apterous viviparous female, same locality.

Description. Apterous viviparous female (9 specimens examined). Body broadly oval, 1.90–2.35. Sclerotization of tergites expressed in varying degrees in all specimens as separate, usually interrupted bands and maculae on pro-, meso-, and metanotum (Fig. 2*a*), and ranging from separated bands to sclerotized patch with small unsclerotized areas on abdominal tergites I–VI. Abdominal tergites VII and VIII only with large maculae. Sclerotized areas distinctly reticulate. Head, 1st, 2nd, 6th antennal segments, apex of 5th antennal segment, apices of femora, apices and bases of tibiae, tarsi, and cauda pale brown; siphunculi dark brown. Frons with small sinus. Antennal tubercles low and rounded. Median frontal tubercle rounded, slightly lower than antennal tubercles, with 6 relatively short hairs (0.020–0.025) that approximately equal in length to basal articular diameter of 3rd antennal segment (0.022). Antennae 6-segmented, 1.4–1.6. Secondary rhinaria absent. 3rd antennal segment 1.6–1.8 times as long as 4th segment, processus terminalis 3.2–4.2 times as long as base of 6th segment, with 3–4 apical hairs. 1st segments with 4–6 hairs. Hairs on 3rd antennal segment short (0.005–0.006), 0.20–0.25 times as long as basal articular diameter of segment. Rostrum extending beyond middle coxae. Ultimate rostral segment slender, 0.9–1.0 times as long as 2nd segment of hind tarsus, with 8–10 accessory hairs. Processus mammiformis weakly sclerotized, pale, its lateral tubercles low and flat (Fig. 2*b*). Spiracles rounded, not large. Abdominal tergites without marginal tubercles. Dorsal hairs short and blunt. Hairs on abdominal tergites III–VI (0.008–0.011) 0.3–0.5 times as long as basal articular diameter of 3rd antennal segment. Hairs on abdominal tergite VIII (0.011–0.015) 0.5–0.7 times as long as basal articular diameter of 3rd antennal segment. Subgenital plate elliptical, with 2 hairs along anterior margin and 12–15 hairs along posterior margin.

Siphunculi semi-cylindrical, slightly wider at base than near apex (Fig. 2*c*), 2.2–2.4 times as long as cauda and 0.17–0.20 times as long as body. Cauda triangular-conical (Fig. 2*d*), with 8–9 hairs, its length 1.3–1.4 times its basal width, 1.4–1.6 times length of ultimate rostral segment. Legs normally developed, hairs at bases of hind tibia short, blunt or weakly capitate. Longest hairs in middle of inner margin of hind femur 0.025–0.028. All 1st tarsal segments with 3 hairs.

Measurements of holotype: body 2.21, antennae 1.65/1.67, 3rd antennal segment 0.47/0.48, 4th anten-

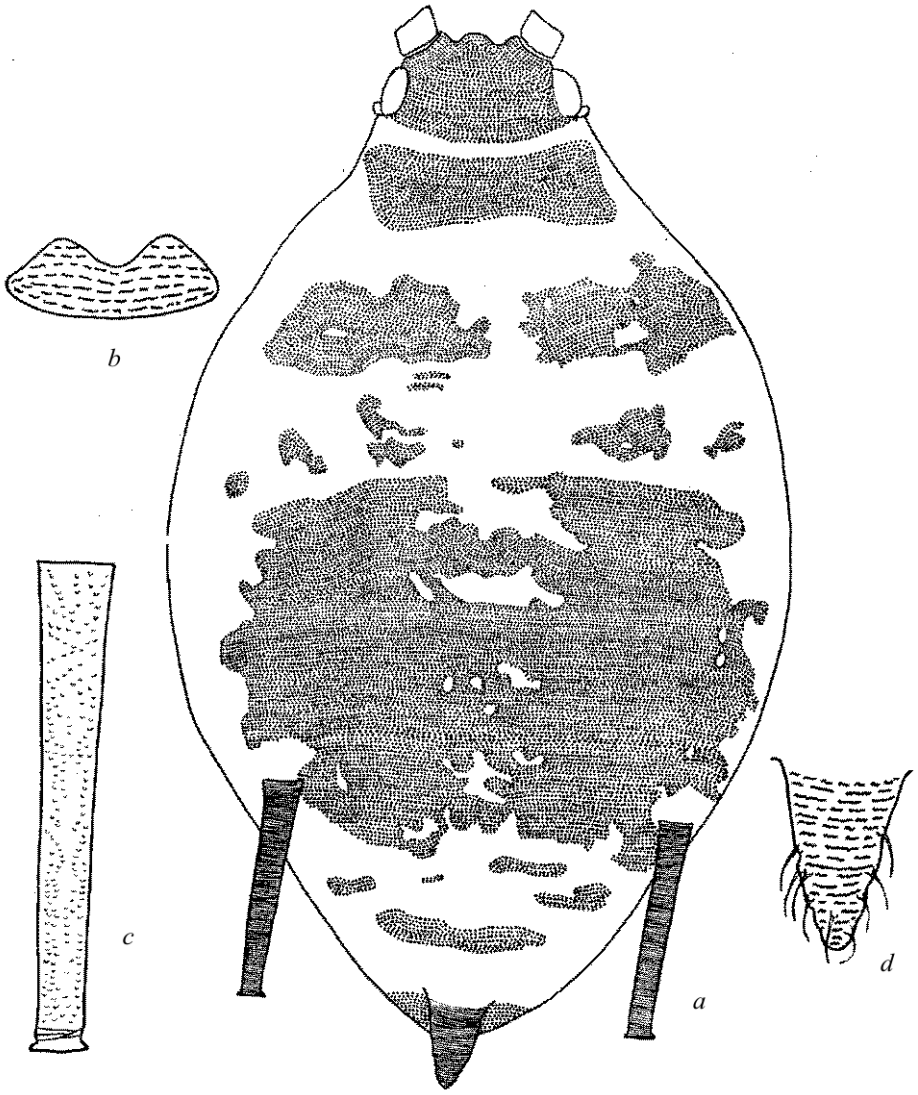

Fig. 2. Apterous viviparous female of *Aphidura massagetica* sp. n.: (*a*) habitus, (*b*) processus mammiformis, (*c*) siphunculus, (*d*) cauda.

nal segment 0.27/0.25, 5th antennal segment 0.23/0.25, 6th antennal segment 0.52(0.10+0.42)/ 0.53(0.12+0.41), siphunculi 0.44/0.43, cauda 0.18, ultimate rostral segment 0.12, 2nd segment of hind tarsus 0.13.

Alatiform apterous viviparous female (1 specimen examined). Most characters as those in apterous viviparous female. 3rd antennal segment with 22–24 secondary rhinaria. Thorax with wing tubercles. Hairs shorter than those of apterous viviparous female; on frons (0.022) 0.9, on antennae (0.005) 0.2, on tergites (0.006–0.007) 0.25, on tergite VIII (0.017) 0.7 times as long as basal articular diameter of 3rd antennal segment. Hairs on middle of inner margin of hind femur 0.014.

Measurements of allotype: body 2.08, antennae 1.59/1.63, 3rd antennal segment 0.42/0.43, 4th antennal segment 0.25/0.24, 5th antennal segment 0.23/0.23, 6th antennal segment 0.53(0.12+0.41)/ 0.57(0.12+0.46), siphunculi 0.41/0.41, cauda 0.16, ultimate rostral segment 0.13, 2nd segment of hind tarsus 0.14.

Color in life: body green, sclerotized maculae black, eyes dark red.

Differential diagnosis. The new species is most similar to *A. mingens* Pintera, 1970 (Pintera, 1970), from which it differs in having much shorter hairs on the frons and tergites, a shorter last segment of the rostrum, and a smaller number of accessory hairs on

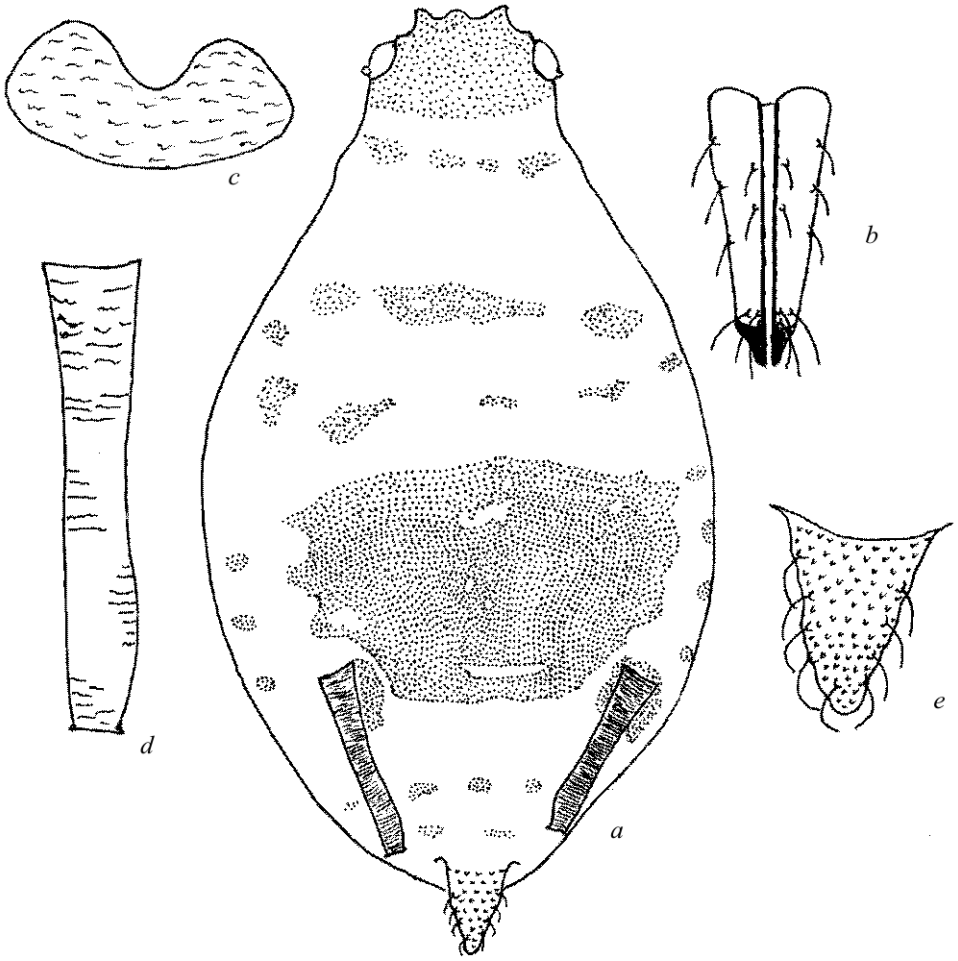

Fig. 3. Apterous viviparous female of *Aphidura nomadica* sp. n.: (*a*) habitus, (*b*) ultimate rostral segment, (*c*) processus mammiformis, (*d*) siphunculus, (*e*) cauda.

the ultimate rostral segment (8–10 versus 11–14); the smaller ratio of the length of siphunculi to the length of body (0.17–0.20 versus 0.22–0.30), and the greater number of hairs along the posterior margin of subgenital plate (12–15 versus 11–13).

Biology. Living on *Silene lithophila* Kar. et Kir. (Caryophyllaceae). In loose colonies on peduncle.

Etymology. The new species is named after the ancient nomadic tribe of Saks-Massagetae living in south-eastern Kazakhstan.

Aphidura nomadica Kadyrbekov, sp. n. (Fig. 3)

Material. Holotype: apterous viviparous female, slide no. 2589 (new series), Central Kazakhstan, Karaganda Province, southern spurs of Saryarka, Nurtaldy River valley, 90 km NE Sity of Karaganda, 29.VII.1997, R.Kh. Kadyrbekov; paratypes: 5 apterous viviparous females, same locality; 1 apterous viviparous female, slide no. 465 (new series), South-East Kazakhstan, Zhambyl Province, Kordai Mountains, Rgayty River valley, 700 m above sea level, 22.V.1987, R.Kh. Kadyrbekov.

Description. Apterous viviparous female (7 specimens examined). Body broadly oval, 1.68–2.27. Sclerotization of tergites more or less similar: pro-, meso-, and metanotum with separate, usually interrupted bands and maculae, abdominal tergites I–VI with sclerotized patch with small unsclerotized areas. Tergites VII and VIII with small maculae only. All abdominal tergites with marginal maculae. Postsiphuncular sclerites well developed. (Fig. 3*a*). Sclerotized areas without clearly expressed reticulation. Head, 1st, 2nd, 5th, 6th antennal segments, and apex of 4th antennal segments (sometimes all segments), apex of tibia, and tarsi pale brown, siphunculi dark brown, cauda light. Frons with small sinus. Antennal tubercles low and rounded. Median frontal tubercle

rounded, slightly lower than antennal tubercles, with 6 blunt hairs (0.020–0.035) 0.9–1.2 times as long as basal articular diameter of 3rd antennal segment (0.020–0.029). Antennae 6-segmented, 1.45–1.60. Secondary rhinaria absent. 3rd antennal segment 1.7–2.1 times as long as 4th segment and 1.1–1.2 times as long as processus terminalis, 6th segment 1.02–1.16 times as long as 3rd segment, processus terminalis 3.2–3.9 times as long as base of 6th segment, with 3–4 apical hairs. 1st segment with 4–6 and 2nd with 3–4 hairs. Hairs on 3rd antennal segment short (0.005–0.006), 0.20–0.25 times as long as basal articular diameter of segment. Rostrum reaching middle coxae. Ultimate rostral segment stocky, 1.00–1.15 times as long as 2nd segment of hind tarsus, with 10–12 accessory hairs (Fig. 3*b*). Processus mammiformis weakly sclerotized, pale, its lateral tubercles low and wide (Fig. 3*c*). Spiracles rounded, not large. Abdominal tergites without marginal tubercles. Dorsal hairs short and blunt. Hairs on abdominal tergites III–VI (0.008–0.011) 0.3–0.5 times as long as basal articular diameter of 3rd antennal segment. Hairs on abdominal tergite VIII (0.020–0.026) 0.7–0.9 times as long as basal articular diameter of 3rd antennal segment. Subgenital plate elliptic, with 2–3 hairs along anterior margin and 12–16 hairs along posterior margin.

Siphunculi slightly swollen on inner side before apex (Fig. 3*d*), 2.3–2.7 times as long as cauda and (0.18) 0.21–0.25 times as long as body. Cauda triangular or triangular-conical with 7–11 hairs (Fig. 3*e*), 1.1–1.2 times as long as its basal width, 1.2–1.5 times as long as ultimate rostral segment. Legs normally developed, hairs at bases of hind tibia short and blunt. Longest hairs in middle of inner margin of hind femur 0.028–0.029. All 1st tarsal segments with 3 hairs.

Measurements of holotype: body 2.14, antennae 1.58/1.55, 3rd antennal segment 0.47/0.46, 4th antennal segment 0.23/0.23, 5th antennal segment 0.20/0.20, 6th antennal segment 0.51(0.12+0.39)/0.49(0.10+0.39), siphunculi 0.47/0.46, cauda 0.18, ultimate rostral segment 0.14, 2nd segment of hind tarsus 0.12.

Color in life: body green, sclerotized maculae black, eyes dark red.

Differential diagnosis. The new species is most similar to *A. picta* Hille Ris Lambers, 1956 (Hille Ris Lambers, 1956; Narzikulov and Umarov, 1969) by the shape of weakly swollen siphunculi, the degree of sclerotization of the dorsal side of the body and by the pale color of the processus mammiformis and cauda. *A. nomadica* Kadyrbekov, sp. n. differs from *A. picta* by the greater number of accessory hairs on the ultimate rostral segment (10–12 versus 8), the ratio of the length of the siphunculi to the length of the body (usually 0.21–0.25 versus 0.16–0.18), the shape of the cauda and the ratio of the length of the cauda to its basal width (1.1–1.2 versus 2.0–2.3), and by the different host plant.

Biology. Living on *Silene suffrutescens* M. B. and *Silene* sp. (Caryophyllaceae). In loose colonies on peduncle.

Etymology. The new species is named after the general collective name of Asian nomadic peoples - the nomads.

Aphidura naimanica Kadyrbekov, sp. n. (Fig. 4)

Material. Holotype: apterous viviparous female, slide no. 858 (new series), South-East Kazakhstan, Almaty Province, southern spurs of Dzhungar Alatau Mountains, Toksanbai Mountain ridge, 10 km NE Shubar Village, 2000 m above sea level, 15.VII.1987, R.Kh. Kadyrbekov; paratypes: 4 apterous viviparous females and 1 alate viviparous female, same locality; 4 apterous viviparous females, slides no. 1288 (new series), East Kazakhstan, East Kazakhstan Province, Peski Aygyrkum, 9 km SE Kabyrgatal Village, 2.VII.1989, R.Kh. Kadyrbekov.

Description. Apterous viviparous female (9 specimens examined). Body broadly elliptical, 1.56–2.24. Dorsal sclerotization more or less expressed in all specimens (Fig. 4*a*). Usually it present as interrupted bands and large maculae on pro-, meso-, and metanotum and on abdominal tergites VII–VIII; abdominal tergites I–VI with sclerotized patch with separate unsclerotized areas or with separate large maculae; postsiphuncular sclerites always present. Head, 1st, 2nd, 6th antennal segments, apices of 4th and 5th antennal segments, distal part of femur, apex and base of tibia, tarsi, and cauda pale brown, siphunculi dark brown. Cuticle weakly reticulate. Head with small frontal sinus. Median frontal tubercle rounded, slightly lower than antennal tubercles, with 6 capitate hairs (0.022–0.028), each of which equal to or slightly exceeding basal articular diameter of 3rd antennal segment. Antennae 6-segmented, 0.7–0.8 times as long as body. Secondary rhinaria absent. 3rd antennal segment 1.7–1.9 times as long as 4th segment, that in turn 1.1–1.3 times as long as 5th segment. 6th antennal

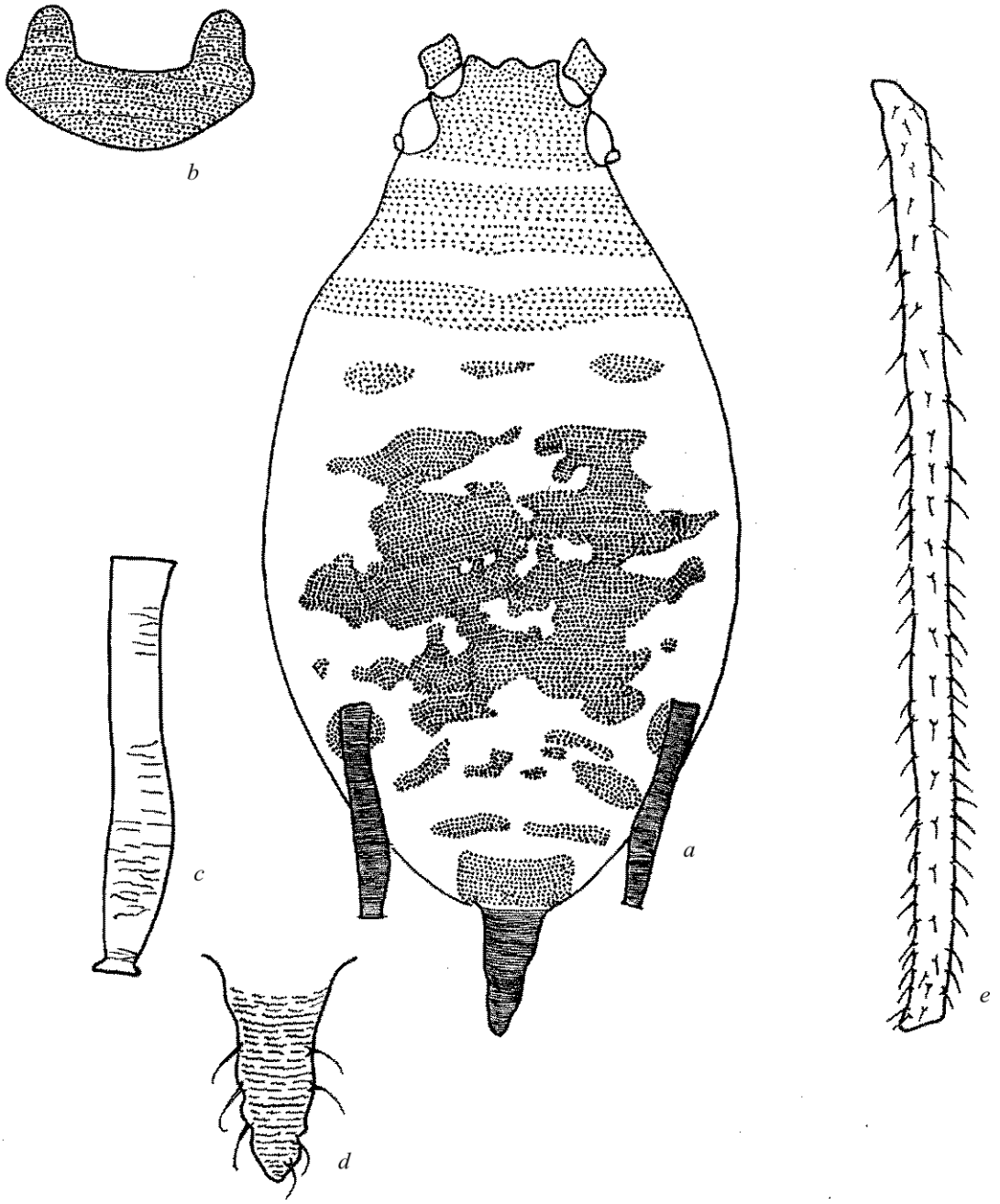

Fig. 4. Apterous viviparous female of *Aphidura naimanica* sp. n.: (*a*) habitus, (*b*) processus mammiformis, (*c*) siphunculus, (*d*) cauda, (*e*) hind tibia.

segment 1.1–1.4 times as long as 3rd segment. Processus terminalis 3.3–4.5 times as long as base of 6th segment, with 3–4 apical hairs. 1st and 2nd segments with 5–9 and 3–5 hairs, respectively. Hairs on 3rd antennal segment short (0.006–0.008), 0.3 times as long as basal articular diameter. Rostrum reaching posterior margin of middle coxae. Ultimate rostral segment slender, 1.1–1.2 times as long as 2nd segment of hind tarsus, with 10–14 accessory hairs. Processus mammiformis weakly sclerotized, its lateral tubercles narrow and high (Fig. 4*b*). Spiracles rounded, not large. Abdominal tergites without marginal tubercles. Dorsal hairs thick, weakly capitate at apex, situated on small tubercles. Hairs on abdominal tergites III–VI 0.5–0.6 times as long as basal articular diameter of 3rd antennal segment (0.011–0.014). Hairs on abdominal tergite VIII (0.022–0.028) equal to or slightly exceeding basal diameter of 3rd antennal segment. Subgenital plate elliptical, with 2 hairs along anterior margin and 12–15 hairs along posterior margin.

Siphunculi swollen, slightly narrowed from base to middle, then extended and narrowed again to distinct flange (Fig. 4*c*), 1.7–2.7 times as long as cauda and (0.16) 0.17–0.22 (0.24) times as long as body. Cauda finger-shaped or conical finger-shaped, usually with small constriction (Fig. 4*d*), with 6–10, usually 8–9 hairs, its length 1.5–1.9 times its basal width, (1.3) 1.5–1.8 times length of ultimate rostral segment. Legs normally developed, tibia with two types of hair: short spatulate hairs and long pointed hairs (Fig. 4). First type characteristic of distal, 2nd one of proximal part of tibia. Longest hairs in middle of inner margin of hind femur 0.024–0.028. All 1st tarsal segments with 3 hairs.

Measurements of holotype: body 1.70, antennae 1.38/1.37, 3rd antennal segment 0.35/0.35, 4th antennal segment 0.21/0.20, 5th antennal segment 0.16/0.16, 6th antennal segment 0.50(0.09 + 0.41)/ 0.50(0.09 + 0.41), siphunculi 0.35/0.35, cauda 0.20, ultimate rostral segment 0.12, 2nd segment of hind tarsus 0.10.

Color in life: body yellowish-green, sclerotized maculae black, eyes dark red.

Alate viviparous female (1 specimen examined). Body broadly elliptical, 2.06. Dorsal sclerotization consisting of sclerotized bands on metanotum and abdominal tergites VII–VIII, sclerotized patch on abdominal tergites I–VI, postsiphuncular sclerites, and marginal maculae on all abdominal tergites. Hairs slightly shorter than those of apterous viviparous females. Hairs on frons (0.014) 0.6, on antennae (0.006) 0.25, on tergites (0.007–0.008) 0.3, on tergite VIII (0.017) 0.8 times as long as basal articular diameter of 3rd antennal segment. Antennae 0.94–0.95 times as long as body. 3rd antennal segment with 26–27 secondary rhinaria. 3rd antennal segment 0.80–0.86 times as long as processus terminalis and 1.58–1.60 times as long as 4th segment. 6th antennal segment 1.4–1.5 times as long as 3rd segment. Processus terminalis 5.2–5.3 times as long as base of 6th segment. Siphunculi with hardly noticeable swelling, 0.17 times as long as body. Hairs in middle of inner margin of hind femur 0.011. Other characters as those in apterous viviparous female.

Measurements of allotype: body 2.06, antennae 1.95/1.93, 3rd antennal segment 0.49/0.50, 4th antennal segment 0.31/0.31, 5th antennal segment 0.26/0.25, 6th antennal segment 0.74(0.12 + 0.62)/ 0.69(0.11 + 0.58), siphunculi 0.36/?, cauda 0.18, ultimate rostral segment 0.13, 2nd segment of hind tarsus 0.13.

Differential diagnosis. The new species belongs to a group close to *A. ornatella,* which itself closest to this new species. *A. naimanica* differs from *A. ornatella* by the shape of cauda, by the degree of sclerotization of the tergites, by the large number of hairs along the posterior margin of the subgenital plate, longer hairs in the middle of the inner margin of the hind femur and by different host plant.

Biology. Living on *Silene lithophila* Kar. et Kir. (Caryophyllaceae). In loose colonies on stem under flowers.

Etymology. The new species is named for one of the Kazakh tribes (Naiman) of the territory in which it lives.

Aphidura alatavica Kadyrbekov, sp. n. (Fig. 5)

Material. Holotype: apterous viviparous female, slide no. 1549 (new series), South-East Kazakhstan, Almaty Province, Dzhungar Alatau Mountains, near Lepsinsk, 1512 m above sea level, 12.VIII.1989, R.Kh. Kadyrbekov; paratypes: 4 apterous viviparous females, same locality; 1 apterous viviparous female, slide no. 2133 (new series), South-East Kazakhstan, Almaty Province, Northern Tien Shan, Trans-Ili Alatau Range, valley of the Ulken Shymbulak River, 1798 m above sea level, 15.VII.1991, R.Kh. Kadyrbekov; 4 apterous viviparous females, slide no. 2499 (new series), South-East Kazakhstan, Almaty Province, Northern Tien Shan, Trans-Ili Alatau Range, valley of the Bolshaya Almatinka, 2500 m above sea level, 14.VIII.1996, R.Kh. Kadyrbekov.

Description. Apterous viviparous female (10 specimens examined). Body broadly elliptical, 1.68–1.96. Dorsal sclerotization varying from sclerotized patch with separate unsclerotized areas on metanotum and abdominal tergites I–VI to separate bands on thoracic and abdominal tergites (Fig. 5*a*). Head, 1st, 2nd, 6th antennal segments, apices of 4th and 5th antennal segments, distal part of femora, apices and bases of tibia, tarsi, siphunculi, and cauda brown. Head with small frontal sinus. Median frontal tubercle rounded, slightly lower than antennal tubercles, with 6 long hairs (0.035–0.040), each 1.6–1.8 times as long as basal articular diameter of 3rd antennal segment. Antennae 6-segmented, 0.72–0.77 times as long as body. Secondary rhinaria absent. 3rd antennal segment 1.6–1.8 times as long as 4th segment, that in turn 1.30–1.45

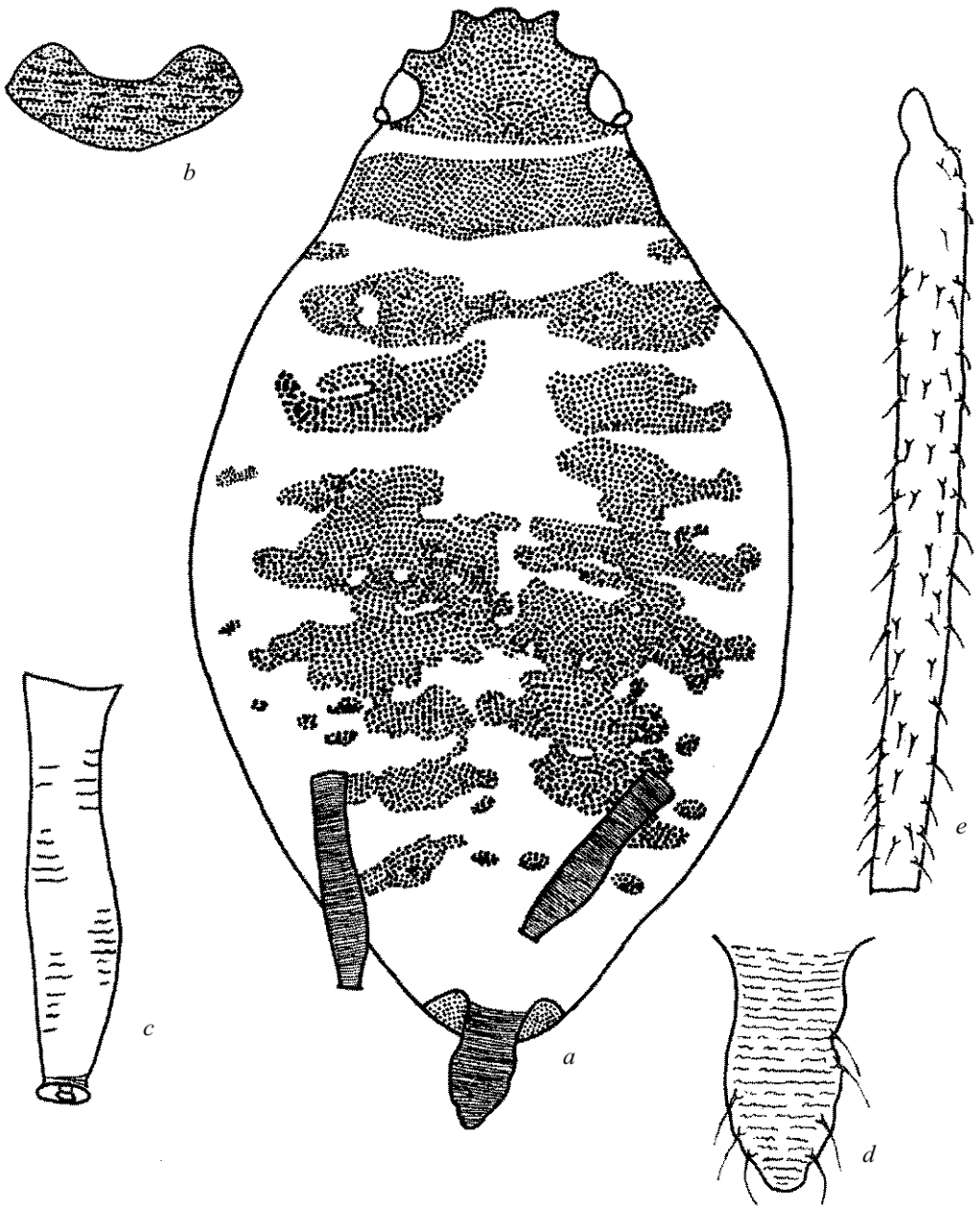

Fig. 5. Apterous viviparous female of *Aphidura alatavica* sp. n.: (*a*) habitus, (*b*) processus mammiformis, (*c*) siphunculus, (*d*) cauda, (*e*) hind tibia.

times as long as 5th segment. 6th antennal segment 1.1–1.3 times as long as 3rd segment. Processus terminalis 3.4–4.4 times as long as base of 6th segment, with 3–4 apical hairs. 1st and 2nd segments with 6–8 and 3–4 hairs, respectively. Hairs on 3rd antennal segment short (0.010–0.011), 0.4–0.5 times as long as basal articular diameter of segment. Rostrum reaching posterior margin of middle coxae. Ultimate rostral segment slender, 1.1–1.3 times as long as 2nd segment of hind tarsus, with 10–12 accessory hairs. Processus mammiformis sclerotized, its lateral tubercles narrow and high (Fig. 5*b*). Spiracles rounded, not large. Abdominal tergites without marginal tubercles. Dorsal hairs blunt. Hairs on abdominal tergites III–VI (0.010–0.011) 0.4–0.6 times as long as basal articular diameter of 3rd antennal segment. Hairs on abdominal tergite VIII (0.028–0.029) 1.3–1.4 times as long as basal articular diameter of 3rd antennal segment. Subgenital plate broadly elliptical, with 2 hairs along anterior margin and 12–18 hairs along posterior margin.

Siphunculi distinctly swollen beyond middle and then narrowed towards small but distinct flange (Fig. 5*c*), 1.5–1.7 times as long as cauda and 0.17–0.20

times as long as body. Cauda finger-shaped or conical finger-shaped, with small constriction closer to base (Fig. 5*d*), with 6–9, usually with 8–9 hairs, its length 1.7–2.0 times its basal width, 1.7–1.9 times length of ultimate rostral segment. Legs normally developed, hairs at bases of tibia thickened and pointed (Fig. 5*e*). Longest hairs in middle of inner margin of hind femur 0.020–0.022. All 1st tarsal segments with 3 hairs.

Measurements of holotype: body 1.96, antennae 1.41/1.42, 3rd antennal segment 0.40/0.42, 4th antennal segment 0.23/0.22, 5th antennal segment 0.17/0.16, 6th antennal segment 0.48(0.09+0.39)/ 0.47(0.09+0.38), siphunculi 0.36/0.36, cauda 0.23, ultimate rostral segment 0.13, 2nd segment of hind tarsus 0.11.

Color in life: body yellowish-green, sclerotized maculae black, siphunculi and cauda brown, eyes dark red.

Differential diagnosis. The new species belongs to a group of Central Asian upland species that are close to *A. ornatella* and are characterized by narrow and high tubercles of the processus mammiformis. Within this group the species is most similar to *A. naimanica* in the shape of the cauda. *A. alatavica* Kadyrbekov sp. n. differs from *A. naimanica* Kadyrbekov, sp. n. in the low value of the ratio of the length of the siphunculi and cauda (1.5–1.7 versus 1.7–2.7), longer hairs on the median frontal tubercle and hind femora, and also in the host plant.

Biology. Living on *Cerastium cerastoides* (L.) Britt and *C. holosteoides* Fries. (Caryophyllaceae). In loose colonies on stem under flowers.

Aphidura melandrii Kadyrbekov, sp. n. (Fig. 6)

Material. Holotype: apterous viviparous female, slide no. 1495 (new series), South-East Kazakhstan, Almaty Province, Dzhungar Alatau Mountains, Kungey Mountain ridge, 10 km SE Koktuma Village, 9.VII.1989, R.Kh. Kadyrbekov; paratypes: 19 apterous viviparous females, same locality; 5 apterous viviparous females, slides no. 875 (new series), South-East Kazakhstan, Almaty Province, Dzhungar Alatau Mountains, Karaoy River valley, 1470 m above sea level, 17 km N Tekeli Sity, 17.VII.1987, R.Kh. Kadyrbekov.

Description. Apterous viviparous female (25 specimens examined). Body broadly oval, 1.95–2.31. Pro-, meso-, and metanotum with solid sclerotized band. Abdominal tergites I–VI with sclerotized patch with separate rare small unsclerotized areas, sometimes this patch partially divided into separate bands (Fig. 6*a*). Cuticle reticulate. Head, 1st, 2nd, 6th antennal segments, apices of 3rd, 4th, and 5th antennal segments, ultimate rostral segment, processus mammiformis, distal half of femur, apex and base of tibia, tarsi, siphunculi, and cauda dark brown. Head with small frontal sinus. Median frontal tubercle square, slightly lower than antennal tubercles, with 6 long hairs (0.040–0.044) 1.8–2.0 times as long as basal articular diameter of 3rd antennal segment. Antennae 6-segmented, 0.60–0.75 times as long as body. Secondary rhinaria absent. 3rd antennal segment 1.6–1.8 times as long as 4th segment, that in turn 1.3–1.5 times as long as 5th segment. 6th antennal segment 1.2–1.3 times as long as 3rd segment. Processus terminalis 3.3–4.2 times as long as base of 6th segment, with 3–4 apical hairs. 1st and 2nd segments with 6–8 and 4–6 hairs, respectively. Hairs on 3rd antennal segment short (0.010–0.011), 0.4–0.5 times as long as basal articular diameter of segment. Rostrum reaching but not extending beyond middle coxae. Ultimate rostral segment 1.0–1.2 times as long as 2nd segment of hind tarsus, with 10–12 accessory hairs. Processus mammiformis sclerotized, its lateral tubercles flat and low (Fig. 6*b*). Spiracles rounded, not large. Abdominal tergites without marginal tubercles. Dorsal hairs thick, blunt, situated on small tubercles. Hairs on abdominal tergites III–VI 0.4–0.5 times as long as basal articular diameter of 3rd antennal segment (0.010–0.011). Hairs on abdominal tergite VIII (0.030–0.040) 1.6–1.8 times as long as basal articular diameter of 3rd antennal segment. Subgenital plate broadly elliptical, with 2 hairs along anterior margin and 10–15, usually 11–13, hairs along posterior margin. Siphunculi distinctly swollen beyond middle and then narrowed towards small but distinct flange, (1.6) 1.7–2.0 times as long as cauda and 0.18–0.20 times as long as body (Figs. 6*c*–6*d*). Cauda finger-shaped or conical finger-shaped, without constriction (Fig. 6*e*), with 7–11, usually 8–10 hairs; its length 1.5–1.8 times its basal width, 1.7–2.0 times length of ultimate rostral segment. Legs normally developed, hairs at bases of tibia thickened and pointed (Fig. 6*f*). Longest hairs in middle of inner margin of hind femur 0.037–0.040. All 1st tarsal segments with 3 hairs.

Measurements of holotype: body 2.18, antennae 1.46/1.44, 3rd antennal segment 0.39/0.39, 4th antennal segment 0.22/0.22, 5th antennal segment 0.20/0.18, 6th antennal segment 0.49(0.09+0.40)/

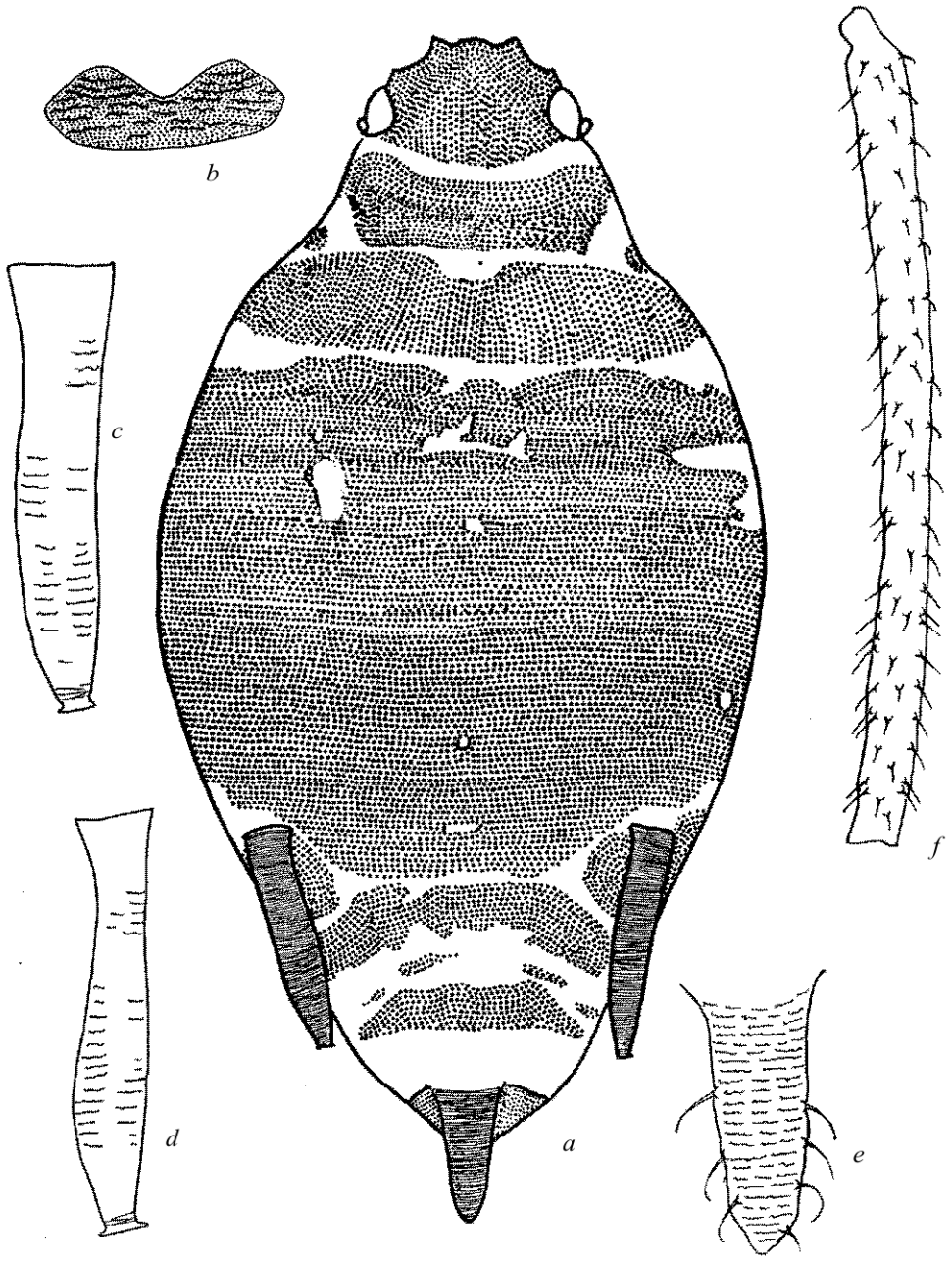

Fig. 6. Apterous viviparous female of *Aphidura melandrii* sp. n.: (*a*) habitus, (*b*) processus mammiformis, (*c*) siphunculus, (*d*) siphunculus, (*e*) cauda, (*f*) hind tibia.

0.49(0.09+0.40), siphunculi 0.39/0.40, cauda 0.23, ultimate rostral segment 0.12, 2nd segment of hind tarsus 0.10.

Color in life: body yellowish-green, sclerotized maculae black, siphunculi and cauda brown, eyes dark red.

Differential diagnosis. This is the only species of Central Asian uplands that has the processus mammiformis with gently sloping low tubercles.

Biology. Living on *Melandrium album* (Mill.) Garke. (Caryophyllaceae). In loose colonies on stem under flowers.

Aphidura ornatella Narzikulov and Winkler, 1960 (Fig. 7)

This species was described from several specimens of apterous viviparous females from Hissar Mountain Range (Tajikistan) (Narzikulov, Winkler, 1960), but

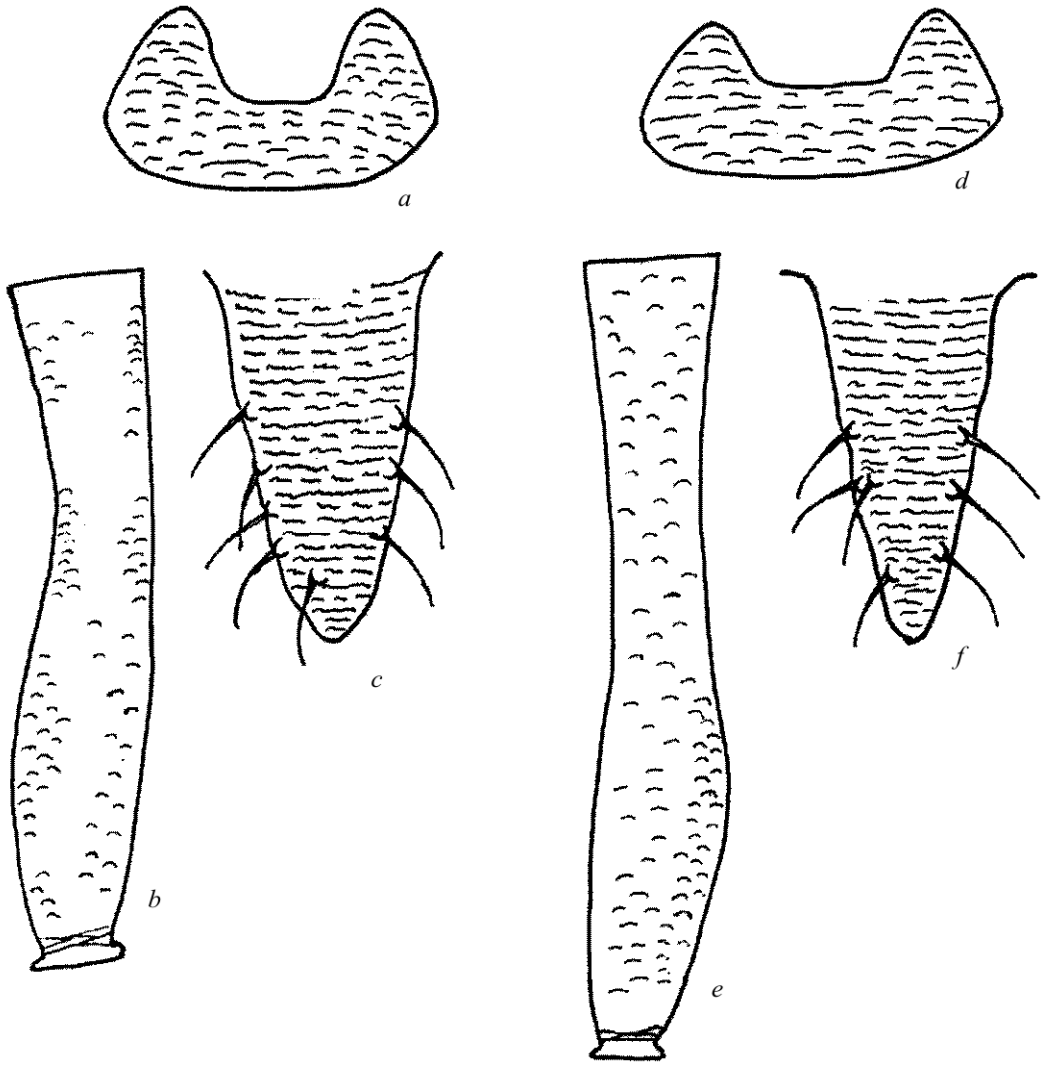

Fig. 7. Apterous viviparous female of *Aphidura ornatella* Narz. et Winkl. (*a–c*) and *A. bharatia* David, Sekh. et Bindra (*d–f*): (*a, d*) processus mammiformis; (*b, e*) siphunculus; (*c, f*) cauda.

A. ornatella also is common in the North Tien Shan and Dzhungar Alatau Mountains (Kadyrbekov, 1993). Taking into account that in the description of Narzikulov and Winkler some important morphological characters are absent, I have made a more detailed description.

Description. Apterous viviparous female (27 specimens examined). Body broadly oval, 1.44–2.09. Pro- and mesonotum with uninterrupted sclerotized bands. Metanotum and abdominal tergites I–VI usually with solid sclerotized patch with rare small unsclerotized areas, tergites VII–VIII with separate sclerotized maculae. Postsiphuncular sclerites well developed. Cuticle reticulate. Head, 1st, 2nd, 6th antennal segments, apex of 5th antennal segment, ultimate rostral segment, apices of femur and tibia, tarsi, siphunculi, and cauda dark brown. Head with small frontal sinus. Median frontal tubercle square, slightly lower than antennal tubercles, with 6 blunt hairs (0.025–0.028 mm long in specimens from Kazakhstan populations and 0.032 mm long in specimens from Tajik population) 1.1–1.4 times as long as basal articular diameter of 3rd antennal segment. Antennae 6-segmented, 0.70–0.75 times as long as body. Secondary rhinaria absent. 3rd antennal segment 1.5–1.8 times as long as 4th segment, that in turn 1.2–1.4 times as long as 5th segment. 6th antennal segment 1.1–1.3 times as long as 3rd segment. Processus terminalis 3.5–4.5 times as long as base of 6th segment, with 3–4 apical hairs. 1st and 2nd segments with 5–9 and 4–5 hairs, respectively. Hairs on 3rd antennal segment short (0.008–0.011), 0.3–0.5 times as long as basal articular diameter of segment. Rostrum reaching middle coxae, but

not extending beyond them. Ultimate rostral segment 1.0–1.2 times as long as 2nd segment of hind tarsus, with 8–10 accessory hairs. Processus mammiformis sclerotized, its lateral tubercles narrow and high (Fig. 7*a*). Spiracles roundish, not large. Abdominal tergites without marginal tubercles. Dorsal hairs thick, blunt, situated on small tubercles. Hairs on abdominal tergites III–VI (0.010–0.011) 0.5 times as long as basal articular diameter of 3rd antennal segment. Hairs on abdominal tergite VIII of specimens of Kazakh population (0.022–0.028) 1.1–1.3 times as long as basal articular diameter of 3rd antennal segment. Subgenital plate oval, with 2 hairs along anterior margin and 10–13 hairs along posterior margin.

Siphunculi distinctly swollen beyond middle and then narrowed towards small but distinct flange, 1.6–2.2 times as long as cauda and 0.17–0.20 (0.25) times as long as body (Fig. 7*b*). Cauda elongate conical, without constriction (Fig. 7*c*), with 7–8 long curved hairs, its length (1.3) 1.6–2.1 times its basal width, (1.4) 1.7–1.9 times as long as ultimate rostral segment. Legs normally developed, hairs at bases of tibia thickened and pointed. Longest hairs in middle of inner margin of hind femur 0.020–0.022. All 1st tarsal segments with 3 hairs.

Alate viviparous female (1 specimen examined.). Body broadly oval, 1.69. Dorsal sclerotization consisting of sclerotized bands on metanotum and abdominal tergites VII–VIII, sclerotized patch on abdominal tergites I–VI, postsiphuncular sclerites and marginal maculae on all abdominal tergites. Antennae 6-segmented, 1.02–1.05 times as long as body. 6th antennal segment 1.4–1.5 times as long as 3rd segment, processus terminalis 4.6–5.6 times as long as base of 6th segment. 3rd antennal segment with 29–30 secondary rhinaria distributed along entire length of segment. Ultimate rostral segment equal to 2nd segment of hind tarsus. Siphunculi with hardly noticeable swelling on inner margin beyond middle and with distinct flange. Cauda elongate conical, without constriction, with 10 hairs. Other characters as those in apterous viviparous female.

Color in life: body green, sclerotized maculae black, siphunculi and cauda dark brown, eyes dark red.

Biology. Living on *Silene commutata* Guss., *S. lithophila* Kar. et Kir., *Oberna behen* (L.) I. Konn., and *O. wallichiana* Klotzsch. (Caryophyllaceae). In loose colonies on stem under flowers.

Distribution. Mountain areas of east of Central Asia (Dzhungar Alatau Mountains, Northern Tien Shan, Hissar-Darvoz).

Aphidura bharatia David, Sekhon et Bindra, 1970 stat. rest.

Some important diagnostic features are absent in the description of this species (David et al., 1970). Through the help of R.L. Blackman, who made at our request a number of measurements and descriptions of some characters of a paratype deposited in the collection of the British Museum of Natural History, it was found that the processus mammiformis of apterous viviparous females is colored brown, its are tubercles narrow and high (Fig. 7*d*), the ultimate rostral segment has 8–10 accessory hairs, and the subgenital plate hash 18 hairs along the posterior margin.

This species together with *A. alatavica, A. naimanica*, and *A. ornatella* form a single species group, that is characterized, in addition to swollen siphunculi, by the presence of narrow and high tubercles of the processus mammiformis. *A. bharatia* differs from similar species in having longer frontal and dorsal hairs, a smaller number of hairs on the cauda, and in the ratios of the siphunculi to the body and cauda.

Previously *A. bharatia* was reduced to a synonym of *A. ornatella* (Blackman and Eastop, 2006), but the morphological differences listed above allow us to consider it a separate species.

Aphidura mingens Pintera, 1970 stat. rest.

The species was reduced to a synonym of *A. picta* Hille Ris Lambers, 1956 (Blackman and Eastop, 2006). However, the siphunculi of *A. picta* have a slightly swelling, whereas the siphunculi of *A. mingens* (Pintera, 1970) are semi-cylindrical and a straight tube. Also, *A. mingens* has a higher ratios of the length of processus terminalis to the length of the base of the 6th antennal segment (3.2–4.4 versus 2.3–3.3) and the length of the siphunculi to the length of body (0.22–0.30 versus 0.16–0.18), and more accessory hairs on the ultimate rostral segment (11–14 versus 8) and more hairs on the cauda (7 versus 8–10). In addition, their host plants belong to different genera of Caryophyllaceae. In our opinion the above morphological characteristics allow the reestablishment of *A. mingens* to the status of valid species.

Aphidura mordvilkoi Shaposhnikov, 1984

= *A. prinsepiae* Pashtshenko, 1988, syn. n.

Both species, *A. mordvilkoi* and *A. prinsepiae*, were described superficially so a detailed comparison on the basis of these descriptions is impossible (Shaposhnikov, 1984; Pashtshenko, 1988). However, some characteristics of both species are the same: the ratio of the processus terminalis and the base of the 6th antennal segment, the constant presence of secondary rhinaria on the 3rd and 4th segments of antennae. Through the help of A.V. Stekolshchikov (Zoological Institute, Russian Academy of Sciences, St. Petersburg) who made at my request some measurements of the type series of *A. mordvilkoi* the following characters and proportions were obtained: chaetotaxy of 1st tarsal segments 3, 3, 3; siphunculi 0.23–0.26 times as long as body and 2.1–2.7 times as long as cauda; cauda 1.2–1.4 times as long as its basal width, hairs on frons 0.35–0.55(0.65) mm long, subgenital plate with 13–20 hairs along the posterior margin, ultimate rostral segment with 2–4(5) hairs; cauda with (7)8–12(15) hairs. Both species do not differ in most of these characters. There are differences in the number of hairs on the 1st segment of the tarsi and in the presence of small marginal tubercles on tergites I–IV. These characters are difficult to distinguish when studying under the microscope and so errors occur in the descriptions. In our view, two closely related, narrowly local, allopatric, morphologically almost identical species cannot live in the same region on the same species of host plant. G.Ch. Shaposhnikov (personal communication) considered *A. prinsepiae* as a synonym of *A. mordvilkoi*. R.L. Blackman and V.F. Eastop hold the same views (Blackman and Eastop, 2006).

Key to the Known Species of the Genus Aphidura

1. 1st segment of all tarsi with 3–4 hairs; dark sclerotized species with straight siphunculi; living on shrubs of family Rosaceae ..... 2.

—1st segment of all tarsi with 3 hairs, sometimes hind tarsi with 2 hairs; living on herbaceous plants of family Caryophyllaceae ..... 3.

2. Processus terminalis 3.8–4.2 times as long as base of 6th segment of apterous viviparous females; ultimate rostral segment with 8–10 accessory hairs; abdominal tergites without marginal tubercles; secondary rhinaria always present only on 3rd antennal segment of alate viviparous females; siphunculi 0.18–0.23 times as long as body; on *Cerasus* spp., *Aflatunia ulmifolia;* Georgia, Iran, Tajikistan, Kyrgyzstan, Southern Kazakhstan .... *A. bozhkoae* (Narzikulov, 1957).

—Processus terminalis 2.2–2.7 times as long as base of 6th segment of apterous viviparous females; ultimate rostral segment with 2–5 accessory hairs; marginal tubercles often present on abdominal tergites I–IV; secondary rhinaria always present on 3rd and 4th, and often also on 5th antennal segments of alate viviparous females; siphunculi 0.23–0.30 times as long as body; on *Prinsepia sinensis*; Far East of Russia .... *A. mordvilkoi* Shaposhnikov, 1984.

3. Head, dorsum, and siphunculi (except apices) always pale, not sclerotized; few dark spots and traces of bands on abdominal tergites present only in some specimens of *A. togaica* ..... 4.

—Head and dorsum always dark sclerotized; abdominal tergites always with dark pattern; siphunculi pale brown or brown .....7.

4. Large spinal and marginal tubercles with hairs present on dorsal side of body, 2 tubercles present on pronotum; 6th antennal segment 1.4–1.6 times as long as 3rd segment; processus terminalis 2.3–4.4 times as long as base of 6th segment; ultimate rostral segment 1.25–1.40 times as long as 2nd segment of hind tarsus; cauda 1.9–2.2 times as long as this segment; secondary rhinaria present on 3rd–5th antennal segments of alate viviparous females; on *Acanthophyllum* sp.; Iran .... *A. acanthophylli* Remaudière, 1989.

—Large spinal and marginal tubercles with hairs absent on dorsal side of body; 6th antennal segment only 1.1–1.3 times as long as 3rd segment; processus terminalis more than 3 times as long as base of 6th segment; ultimate rostral segment not more than 1.2 times as long as 2nd segment of hind tarsus; cauda not more than 1.6 times as long as this segment; secondary rhinaria present on 3rd antennal segment and sometime 1 rhinarium present on 4th antennal segment of alate viviparous females of *A. pujoli;* not on *Acanthophyllum* sp. ..... 5.

5. Siphunculi semi-cylindrical; processus terminalis 5.0–5.5 times as long as base of 6th segment; 3rd antennal segment of alate viviparous females with 10–15 secondary rhinaria; Ukraine (Crimea), Russia

(Western Siberia) .... *A. gypsophilae* Mamontova-Solukha, 1963.

—Siphunculi slightly swollen; processus terminalis not more than 4.4 times as long as base of 6th antennal segment; 3rd antennal segment of alate viviparous females with more than 20 secondary rhinaria ..... 6.

6. Hairs on medial frontal tubercles very short, 0.25 times as long as basal articular diameter of 3rd antennal segment; ultimate rostral segment 0.8 times as long as 2nd segment of hind tarsus, with 6–8 accessory hairs; siphunculi relatively short, 1.7–1.9 times as long as cauda and not more than 0.16 times as long as body; cauda with 6–7 hairs; on *Dianthus* spp.; Portugal, Spain, Italy, Pakistan ..... *A. pujoli* (Gomez-Menor, 1950).

—Hairs on medial frontal tubercles noticeably longer, 1.1–1.3 times basal articular diameter of 3rd antennal segment; ultimate rostral segment 1.0–1.2 times as long as 2nd segment of hind tarsus, with 10–14 accessory hairs; siphunculi longer, 0.20–0.23 times as long as body and 2.3–3.4 times as long as cauda; cauda usually with 8–10 hairs; on *Gypsophila* spp.; Kazakhstan (desert area) .... *A. togaica* sp. n.

7. Siphunculi clearly swollen in distal half ..... 8.

—Siphunculi semi-cylindrical, straight or slightly curved ..... 14.

8. Processus mammiformis and cauda light brown or brown ..... 9.

—Processus mammiformis and cauda pale ..... 13.

9. Hairs on medial frontal tubercle no less than 1.5 times as long as basal articular diameter of 3rd antennal segment ..... 10.

—Hairs on medial frontal tubercle 1.0–1.4 times as long as basal articular diameter of 3rd antennal segment ..... 12.

10. Ultimate rostral segment with 12–14 accessory hairs; siphunculi long, 0.21–0.25 times as long as body and 2.2–2.6 times as long as cauda (Fig. 7*e*); cauda with 5–7 hairs (Fig. 7*f*); on *Saponaria* sp., *Silene* sp.; North India, Pakistan .... *A. bharatia* David, Sekhon et Bindra, 1970.

—Ultimate rostral segment with 10–12 accessory hairs; siphunculi relatively short, 0.17–0.20 times as long as body and not more than 2 times as long as cauda ..... 11.

11. Tubercles of processus mammiformis narrow and high; cauda finger-shaped or conical finger-shaped, with constriction in the middle (Fig. 5*d*); siphunculi 1.5–1.7 times as long as cauda; hairs in middle of inner margin of hind femur 0.020–0.022 mm; on *Cerastium* spp.; South-East Kazakhstan .... *A. alatavica* sp. n.

—Tubercles of processus mammiformis wide and gently sloping; cauda finger-shaped or conical finger-shaped, without constriction (Fig. 6*e*); siphunculi 1.7–1.9 times as long as cauda; hairs in middle of inner margin of hind femur 0.037–0.040 mm; on *Melandrium album* (Mill.) Garke.; South-East Kazakhstan ..... *A. melandrii* sp. n.

12. Ultimate rostral segment with 10–14 accessory hairs; cauda finger-shaped or conical finger-shaped, usually with constriction in the middle (Fig. 2*e*); subgenital plate with 12–15 hairs on posterior margin; longest hairs in middle of inner margin of hind femur 0.024–0.028 mm; on *Gypsophila* spp.; east of Kazakhstan ..... *A. naimanica* sp. n.

—Ultimate rostral segment with 8–10 accessory hairs; cauda elongate conical, without constriction (Fig. 5*e*); subgenital plate with 10–13 hairs on posterior margin; longest hairs in middle of inner margin of hind femur 0.020–0.022 mm; on *Silene* spp., *Oberna* spp.; mountainous areas of east of Central Asia ..... *A. ornatella* Narzikulov & Winkler, 1960.

13. Processus terminalis 2.3–3.3 times as long as base of 6th segment; siphunculi 0.16–0.18 times as long as body; cauda with 6–7 hairs, its length 2.1–2.3 times its basal width; ultimate rostral segment with 8 accessory hairs; on *Dianthus* spp.; Italy, Yugoslavia, the Czech Republic, Greece, Israel, Turkey, Iran, Tajikistan, Russia (Western Siberia) .... *A. picta* Hille Ris Lambers, 1956.

—Processus terminalis 3.3–3.8 times as long as base of 6th segment; siphunculi 0.21–0.25 times as long as body; cauda with 8–11 hairs, its length 1.1–1.2 times its basal width; ultimate rostral segment with 10–12 accessory hairs; on *Silene suffrutescens*; Central and South-East Kazakhstan .... *A. nomadica* sp. n.

14. Median frontal tubercle almost unmarked, antennal tubercles very high; longest hair on abdominal tergites III–VI 0.045–0.055 mm; 3rd antennal segment of alate viviparous female with 3–8 secondary rhinaria; on *Silene italica*; France, Greece .... *A. delmasi* Remaudière et Leclant, 1965.

—Medial frontal tubercle well developed, equal to or slightly lower than antennal tubercles; 3rd antennal segment of alate viviparous female with more than 10 secondary rhinaria ..... 15.

15. Hairs on medial frontal tubercle short, not more than 0.015 mm long ..... 16.

—Hairs on medial frontal tubercle at least 0.020 mm long ..... 17.

16. Hairs on medial frontal tubercle 0.010–0.015 mm; processus terminalis 2.7–3.7 times as long as base of 6th segment; ultimate rostral segment with 6–10 accessory hairs; subgenital plate with 14–18 hairs on posterior margin; siphunculi 0.17–0.21 times as long as body and 1.7–2.0 times as long as cauda; cauda with 10–16 hairs; on *Silene* spp.; France, Italy, Switzerland, Hungary, Ukraine, Russia ..... *A. ornata* Hille Ris Lambers, 1956.

—Hairs on medial frontal tubercle 0.005–0.007 mm; processus terminalis 4.0–5.7 times as long as base of 6th segment; ultimate rostral segment with 10–12 accessory hairs; subgenital plate with 8–12 hairs on posterior margin; siphunculi 0.22–0.30 times as long as body and 2.2–2.6 times as long as cauda; cauda with 5–9 hairs; on *Silene* (*Otites*) spp. ..... *A. pannonica* Szelegiewicz, 1967.

A. Ultimate rostral segment always longer than 2nd segment of hind tarsus; Hungary, Moldova, Ukraine, North and East Kazakhstan .... *A. pannonica* ssp. *pannonica* Szelegiewicz, 1967.

—Ultimate rostral segment 0.90–0.96 times as long as 2nd segment of hind tarsus; Ukraine .... *A. pannonica* ssp. *cretacea* Mamontova, 1968.

17. Hairs on medial frontal tubercle 0.020–0.025 mm; ultimate rostral segment 0.9–1.0 times as long as 2nd segment of hind tarsus, with 8–10 accessory hairs; subgenital plate with 13–16 hairs on posterior margin; siphunculi 0.17–0.20 times as long as body; length of cauda 1.4–1.6 times as long as its width at base; on *Silene lithophila;* South-East Kazakhstan .. .. *A. massagetica* sp. n.

—Hairs on medial frontal tubercle 0.040 mm long; ultimate rostral segment longer than 2nd segment of hind tarsus with 11–14 accessory hairs; subgenital plate with 10–13 hairs on posterior margin; siphunculi 0.22–0.30 times as long as body; length of cauda 1.7–2.0 times its width at base; on *Silene thymifolia*; Italy, Bulgaria .... *A. mingens* Pintera, 1970.

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