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Species of *Bicellaria* (Diptera: Hybotidae) from Asia

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Abstract

Bicellaria amankutanensis **sp. nov.** (Uzbekistan), *B. chimganensis* **sp. nov.** (Uzbekistan), *B. farkaci* **sp. nov.** (China), *B. globulicauda* **sp. nov.** (Uzbekistan), *B. koreana* **sp. nov.** (North Korea, Russia), *B. kovalevi* **sp. nov.** (Georgia), *B. setitibia* **sp. nov.** (Georgia), *B. shatalkini* **sp. nov.** (Russia), *B. thailandica* **sp. nov.** (Thailand), and *B. woodi* **sp. nov.** (Japan) are described and illustrated. *Bicellaria montana* Kato is newly synonymised with *B. uvens* Melander. *Bicellaria spuria ingrata* Collin is considered a distinct species. A key to all known Asian species of *Bicellaria* is provided.

Key words: *Bicellaria*, Empidoidea, Hybotidae, Diptera, Palaearctic Region, Oriental Region, new species, key

Introduction

Bicellaria Macquart, 1823, type species: *Bicellaria nigra* Macquart, 1823 [= *B. spuria* (Fallén, 1816)] is a middle-sized mostly Holarctic genus of Hybotidae with 38 described species or subspecies; 27 of them are Palaearctic and 11 are Nearctic (Barták & Kubík 2013). In this paper, an additional 10 species from Asia are described (one of them from the Oriental Region).

Asian species of *Bicellaria* are very poorly known. Tuomikoski (1955) described *B. stackelbergi* from Kanin (North of European Russia), Siberia (Yakutsk, Altai) and Kamchatka, and reported *B. vana* Collin, 1926 (as subspecies) from Yakutsk, *B. subpilosa* Collin, 1926 from the Caucasus, and *B. uvens* Melander, 1928 (as *B. bisetosa* Tuomikoski, 1936; *B. bisetosa* was proposed as a junior synonym of *B. uvens* by Barták & Kubík 2013) from the Russian Far East but it is unclear if all these species were correctly identified. Collin (1960) described additional species (*B. femorata*) and subspecies (*B. spuria ingrata*) from Palestine (now Israel). Kato (1971) described three species from Japan; however, we found that one of his species (*B. montana*) was identical with *B. uvens* and propose a formal synonymy here. Other authors have not attempted to identify Asian *Bicellaria* to species level: Smith (1965) reported one species from Nepal and indicated it could be *B. vana*, Chvála (1983) reported one undescribed species close to *B. spuria* from Kazakhstan, and Bezzi (1912) from Formosa (= Taiwan) (doubtfully *B. spuria*).

Material and methods

The material studied is deposited in the following collections: CNC (Canadian National Collection of Insects and Arachnids, Ottawa), CULSP (Czech University of Life Sciences, Prague); NHMH (Natural History Museum, Helsinki); NMWC (National Museum of Wales, Cardiff), QSBG (Entomology Museum, Queen Sirikit Botanic Garden, Chiang Mai, Thailand), TAU (Tel Aviv University Entomological collection, Israel), ZMMU (Zoological Museum of Moscow State University, Russia).

Genitalia, together with the preceding 2–3 abdominal segments were removed from the rest of the body using small scissors and macerated in potassium hydroxide solution (approx. 10 %) in small vials submerged in hot water

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for 1–2 hours. After neutralizing with acetic acid, the genitalia were dissected in glycerine and the parts (hypandrium from ventral side, postgonites with phallic apparatus) were photographed using an ®Olympus E-410 digital camera mounted on an ®Olympus BX51 compound microscope and images were edited with the computer software Quick Foto micro 2.3 provided with deep focus 3.1. Final images were a montage composed usually of 7–15 layers and were further edited with ®Microsoft Office Picture Manager, and served as models for hand drawn illustrations; details were added observing genitalia under a stereoscopic microscope.

The morphological terms used here follow Merz and Haenni (2000), Sinclair (2000), and Sinclair and Cumming (2006). Structures of the terminalia are explained in Barták and Kubík (2013). All body measurements (including body and setae length) were taken from dry specimens (therefore the actual length may differ from that of fresh or wet-preserved material) by means of an ocular micrometer mounted on Nikon SMZ 1500 binocular microscope. Male body length was measured from antennal base to the tip of genitalia and female body length from base of antennae to the tip of cerci. Terms "left" and "right" (e.g., right postgonite, left phallic hook) refer to sagittal plane viewing the animal from above. Thoracic setae are counted on one side of body (i.e. "7 acrostichals" means 7 in a single row) except scutellars.

Locality names in Israel were transliterated according to official map of Israel (Israel Touring Map, 1:250,000, 2009) and "List of Settlements", published by the Survey of Israel, Ministry of Labour.

Taxonomic account

Bicellaria Macquart

Bicellaria Macquart, 1823: 155. Type species: *Bicellaria nigra* Macquart, 1823: 156 [= *spuria* (Fallén, 1816)] (monotypy).
Cyrtoma Meigen, 1824: 1. Type species: *Cyrtoma atra* Meigen, 1824: 2, des. Westwood, 1840: 133 [= *spuria* (Fallén, 1816)].
Enicopteryx Stephens, 1829: 264 (catalogue name).
Calo Gistel, 1848: VIII, unjustified new name for *Cyrtoma*. Type species: *Cyrtoma atra* Meigen, 1824 [= *spuria* (Fallén, 1816)].

Diagnosis. Species of the genus are small flies (wing length 1.9~4 mm), brown to dull black with black or pale setae (almost exclusively pale in *B. chimganensis* **sp. nov.**). **Head** hemispherical with prominent ocellar triangle bearing one to two pairs of ocellar setae and short proboscis, palpus with one to ~10 setae. Antenna black, pedicel with circlet of setae, ventral ones often elongated, lateral ones elongated in *B. longisetosa* Chvála, 1991, third segment with one to several elongate dorsal setae situated on proximal part of the segment (*B. austriaca* complex) or on distal part of the segment (*B. dispar* Oldenberg, 1920) or without seta(e), apical stylus two-segmented. Face sometimes very narrow (about 0.02 mm), even narrower below (*B. vana*, *B. koreana* **sp. nov.**, *B. nigra* complex), in most species slightly narrowed ventrally, but also broadened ventrally (*B. pilosa* Lundbeck, 1910). **Thorax** dull black, more or less arched, conspicuously setose. Acrostichals biserial and distinctly separated from dorsocentrals, setae sometimes long (more than 0.15 mm) but shortened in some species (*B. koreana* **sp. nov.**, extremely so in *B. dispar*), taxonomically important but overlooked by previous authors is number of setae in intrahumeral and posthumeral areas (i.e., in presutural area laterad from dorsocentrals). **Legs** slender, at most hind tibia at least slightly swollen apically, usually less distinctly so in females. Fore femur usually with sparse rows of short antero- and posteroventral setae; fore tibia with species-specific ciliation on ventral part in distal third: some species bearing pilosity similar to that of fore basitarsus but absent or very short in other species and posteroventral setae very short, absent or distinctly longer than diameter of tibia in other species (usually short posteroventral setae found in species with long pilosity—typical feature of *B. sulcata* and *B. nigra* complexes). Mid femur usually with very short anteroventrals (somewhat longer in *B. setitibia* **sp. nov.**) and longer posteroventrals. Mid tibia usually with one to several dorsal pairs of setae situated on basal two-thirds, in *B. setitibia* **sp. nov.** with long setae also on apical part. Hind femur usually with two rows of elongate setae anterodorsally and anteroventrally, posteroventrals usually much shorter or (rarely) absent. Hind tibia mostly swollen in males and less so in females, but sometimes almost clavate [*B. stackelbergi*, *B. sulcata* (Zetterstedt, 1842)] or narrow and not at all swollen [*B. simplicipes* (Zetterstedt, 1842)], hind tibia with long and strong apical setae in *B. woodi* **sp. nov. Wing** usually at least slightly darkened, cell dm absent, base of vein M often depigmented, vein A_1 reaching (or nearly so) hind wing margin, area between tip of veins Sc and R_1 stigma-like darkened. **Abdomen** elongate and narrow, in males usually darker

in dorsal view and lighter in lateral view. A detailed description of the male genitalia was given by Barták and Kubík (2013) and the following presents a more detailed comparison with respect to Asian fauna. Male genitalia usually small (somewhat larger and almost globular in *B. globulicauda* **sp. nov.**). Epandrium, cerci and hypoproct usually very similar between species, apparently without useful diagnostic features (except *B. globulicauda* **sp. nov.** with swollen epandrium). Hypandrium usually with two processes (absent in *B. farkaci* sp. nov. or with additional rounded process between processes in one unidentified specimen from Georgia), in most species bearing several moderately long spines near apex, but also long setose along its length (*B. femorata* Collin, 1960, *B. japonica* Kato, 1971). Shape of hypandrial processes very important: in several species processes long and narrow (e.g., *B. koreana* **sp. nov.**), or contrastingly short and broad (*B. uvens*), or long and broad (*B. shatalkini* **sp. nov.**). Hypandrium articulates dorsally with symmetrical postgonites (slightly asymmetrical in *B. chimganensis* **sp. nov.**), mostly roughly rectangular or trapezoid in lateral view, sometimes short (*B. shatalkini* **sp. nov.**) or elongate (*B. kovalevi* **sp. nov.**), triangular or broadened laterally (narrow in lateral view in *B. uvens*), precise shape of postgonites species-specific. Left and right postgonites connected dorsally; middle connected part articulates closely with phallic hooks. Phallus membranous in most species, in *B. longisetosa* dorsal side sclerotized forming roof-like flat sclerite. The structure of the phallic hooks provides many important differentiating characters. Usually two phallic hooks are developed and sometimes the right one is reduced, although in *B. setitibia* the left one is reduced (see remarks under the species). Species of *B. pilosa*-complex have three phallic hooks (left hook bifurcate, extremely so in *B. femorata*, Fig. 7). Female terminal segments with at least 8th sternite nearly always shining (except *B. farkaci* **sp. nov.**), and basal part of tergite 8 shining in most species (often also basal parts of tergites 6–7, but dry specimens often hidden under preceding tergites); rarely (*B. amankutanensis* **sp. nov.**) tergites 5–8 and sternites 6–8 also shining.

***Bicellaria amankutanensis* sp. nov.**
(Figs 1, 2)

Type material. HOLOTYPE ♂, **Uzbekistan**, Amankutan, pasture, 1300 m, 39.19 N, 66.55 E, 23.v.1989, M. Barták (CULSP). **PARATYPES:** 28♂, 33♀, same data as the holotype (CULSP).

Diagnosis. Halter yellow in both sexes; third antennal segment without elongate dorsal setae; mesoscutal setae black and abdominal setae mostly pale; hind basitarsus narrow and hind tibia swollen in both sexes. Male hypandrial processes moderately broad; only one (left) long phallic hook present; female tergites 5–8 and sternites 6–8 polished.

Etymology. The species is named after the type locality (Amankutan, also Aman-Kutan in Uzbekistan).

Description. Male. **Head** brownish-black, grey microtrichose, black setose. Holoptic, facets in dorsal half much larger than in ventral half, about 14–16 facets in line of contiguity of eyes. One pair of rather long black ocellar setae. Occiput dark grey, black setose. Face slightly narrowed ventrally, ventral part about 0.03–0.04 mm broad at narrowest point. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 2–3 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest setae about 0.10 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: stylus (at 0.01 mm resolution) = 16–19: 5–7: 16–20. **Thorax** brownish-black, grey microtrichose, mesoscutum brownish grey microtrichose in dorsal view, prescutellar area differently microtrichose than other parts of mesoscutum, appearing light grey. All thoracic setae black, except on hind coxa. Chaetotaxy: 6–8 broadly biserial long acrostichals (up to 0.15 mm in front of suture); 8–11 uniserial dorsocentrals as long as or slightly longer than acrostichals; about 11–16 setae evenly spread in intrahumeral and posthumeral areas; 1 long and 1–3 somewhat shorter postpronotals; notopleuron with 3–5 setae arranged in one irregular row (one of them often conspicuously longer and stronger than other); 1 supraalar and 1–2 prealar; 1 long postalar; 2 pairs of scutellars. **Legs** including coxae blackish brown, microtrichose and black setose, hind coxa and trochanter (and in some specimens also base of hind femur) with some pale setae. Fore femur with short and sparse anteroventrals one-third as long as depth of femur and with row of slightly longer posteroventrals. Fore tibia with row of posterodorsals up to 2X longer than depth of tibia, otherwise short setose, posteroventrals in apical third slightly shorter than depth of tibia, ventral pilosity absent or very short. Mid femur with sparse row of anteroventrals scarcely one-third as long as depth of femur and with much longer posteroventrals as long as depth of femur. Mid tibia with irregularly arranged setae dorsally up to 2X

long as depth of tibia (0–3 in each anterodorsal and posterodorsal rows), otherwise short setose. Hind femur with 15–18 anterodorsal setae on basal third up to 2X long as depth of femur but shorter apically and with row of 16–20 anteroventrals slightly longer than depth of femur at about middle and shorter both basally and apically; posteroventrals short, scarcely 0.5X long as depth of femur. Hind tibia swollen in apical part (0.14–0.17 mm at broadest point in comparison with 0.06–0.07 mm in basal part), anterodorsals and posterodorsals up to 0.20 mm long, ventral setae short. Tarsi of all legs thin, short setose, basitarsus of hind leg very slightly swollen (0.08 mm wide). **Wing** slightly brownish infuscated; stigma brown, long (0.60 mm), almost parallel-sided and narrow (0.06–0.07 mm), slightly narrower than cell r_1 (about 0.08–0.09 mm broad at narrowest point). Distance between tips of veins R_1 and R_{2+3} about 0.25 mm. Squama light brownish with dark fringes, halter clear yellow. **Abdomen** blackish-brown in ground colour, dark blackish brown in dorsal view and pale grey in lateral view, microtrichose, mostly pale setose, dorsally with short and partly black setae; posteromarginals on sides of tergites 2–5 much longer than corresponding segments, on last tergites subequally as long as corresponding segments. Genitalia (Figs 1, 2) with hypandrial processes moderately long and broad, postgonites elongate-trapezoid, slightly asymmetrical (right one slightly longer and broader at apex); left phallic hook long, right one strongly reduced. **Female**. Mesoscutal setae less numerous and hind tibia slightly narrower than male. Tergites 5–8 polished, sternites 6–8 polished, sternite 5 densely microtrichose (with exception of narrowly polished lateral parts), otherwise abdomen faintly microtrichose. Length: body 2.5–3.1 mm, wing 2.5–2.9 mm.

Remarks. *Bicellaria amankutanensis* **sp. nov.** is very similar to *B. chimganensis* **sp. nov.** Differential characters are given in the Remarks following the description of the latter species. Both species are rather similar to Nearctic *B. halteralis* (Loew, 1862), however, the latter species has much narrower face and very long terminal seta on the hypandrial processes.

***Bicellaria chimganensis* sp. nov.**
(Figs 3, 4)

Type material. HOLOTYPE ♂, **Uzbekistan**, Chimgan, damp valley, 1200 m, 41.38 N, 70.02 E, 18.v.1989, M. Barták (CULSP). **PARATYPES: Uzbekistan**: 12♂, 42♀, same data as holotype; 1♂, 1♀, same locality as holotype, except 1800 m, 41.38 N, 70.06 E; 8♂, 4♀, Aktash, deciduous wood, 500 m, 41.38 N, 69.46 E, 17.v.1989; 1♀, Karamazar, damp meadow, 500 m, 41.32 N, 69.48 E, 18.v.1989; 1♀, same locality, 800 m, 41.30 N, 69.49 E—M. Barták—(CULSP).

Diagnosis. Nearly all setae including acrostichals, dorsocentrals and those on legs pale (white to brownish yellow); halter yellow in both sexes; third antennal segment without elongate dorsal setae; hind basitarsus narrow and hind tibia swollen in both sexes. Male hypandrial processes narrow; only one (left) long phallic hook present; female tergites 5–8 and sternites 6–8 polished.

Etymology. The species is named after type locality (Chimgan Mountain in Uzbekistan).

Description. Male. **Head** brownish-black, rather light grey microtrichose, pale setose. Holoptic, facets in dorsal half much larger than in ventral half, about 11–13 facets in line of contiguity of eyes. One pair of rather long ocellar setae. Face slightly narrowed ventrally, ventral part about 0.03–0.04 mm broad at narrowest point. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 3 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest setae about 0.08 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 12–16: 5–7: 16–20. **Thorax** brownish-black, rather sparsely light grey microtrichose, mesoscutum almost subshining in dorsal view, prescutellar area differently microtrichose than other parts of mesoscutum, appearing light grey. All thoracic setae pale. Chaetotaxy: 6–9 broadly biserial acrostichals; 7–13 uniserial dorsocentrals (both acrostichals and dorsocentrals about 0.10 mm long before suture); about 6–9 setae in intrahumeral and posthumeral areas; 1–2 long and 1–2 shorter postpronotals; notopleuron with 3–6 setae arranged in one irregular row; 1 supraalar and 1 prealar; 1 long postalar; 2 pairs of scutellars. **Legs** including coxae blackish brown, microtrichose and pale setose, tarsi with darker setae. Fore femur short setose, both anteroventrals and posteroventrals much shorter than depth of femur (except preapicals). Fore tibia with 4–5 posterodorsals up to 2X longer than depth of tibia, otherwise short setose, posteroventrals in apical third about as long as depth of tibia, pilosity apparently absent (similar to *B. spuria*). Mid femur with sparse row of anteroventrals one-third as long as depth of femur and with somewhat longer

posteroventrals slightly shorter than depth of femur. Mid tibia with 1–2 pairs of setae dorsally in basal half up to twice as long as depth of tibia, otherwise short setose. Hind femur with 15–20 anterodorsal setae on basal third up to 2X as long as depth of femur, much shorter apically and with row of 16–22 anteroventrals slightly longer than depth of femur at about middle and shorter both basally and apically, posteroventrals half as long as depth of femur. Hind tibia swollen in apical part (0.14–0.16 mm at broadest point in comparison with 0.06 mm in basal part), several anterodorsals and posterodorsals up to 0.20 mm long, ventral setae short. Tarsi of all legs thin, short setose, basitarsus of hind leg very slightly swollen (0.09 mm). **Wing** slightly yellow-brownish infuscated; stigma brown, long (0.70 mm), almost parallel-sided and narrow (0.05 mm), narrower than cell r_1 (about 0.09 mm broad at narrowest point). Distance between tips of veins R_1 and R_{2+3} about 0.30 mm. Squama yellowish with pale fringes, halter clear yellow. **Abdomen** blackish-brown in ground-colour, brown in dorsal view and pale grey in lateral view, microtrichose, pale setose, dorsally with short setae, posteromarginals on sides of tergites as long as or slightly longer than corresponding segments. Genitalia (Figs 3, 4) with hypandrial processes medium long and narrow, with conspicuous but not very long spine at tip; postgonites elongate-trapezoid, slightly asymmetrical (right one slightly longer and broader at apex); left phallic hook long, right one strongly reduced. **Female** mesoscutal setae less numerous and hind tibia narrower (0.11 mm) than in male. Tergites 5–8 polished, sternites 5–8 polished (5th sternite with narrow sparsely microtrichose central stripe), other parts of abdomen microtrichose. Length: body 2.2–3.0 mm, wing 2.3–3.0 mm.

Remarks. *Bicellaria chimganensis* **sp. nov.** can be easily recognized from all other Palaearctic species of *Bicellaria* by its mostly pale setose body (including all mesoscutal setae) and narrow hind basitarsus. Moreover, females have the last four sternites polished. *Bicellaria amankutanensis* **sp. nov.** is undoubtedly closely allied with this species. Beside the main diagnostic character given in the key (different colouring of mesoscutal setae), the species described above has slightly smaller broad part of third antennal segment, less setae on the intrahumeral and posthumeral areas and more sparsely microtrichose mesoscutum giving it a subshining appearance. The genitalia of both species are very similar, *B. chimganensis* **sp. nov.** has slightly narrower hypandrial processes. Female 5th sternite is polished in *B. chimganensis* **sp. nov.** with the exception of sparsely microtrichose central stripe but is densely microtrichose (with the exception of narrow polished lateral parts) in *B. amankutanensis* **sp. nov.**

***Bicellaria farkaci* sp. nov.**
(Figs 5, 6)

Type material. HOLOTYPE ♂, **China**, N. Yunnan, Xue Shan nr. Zhongdian, 4200 m, 24.vi.1996, 27.49 N, 99.34 E, J. Farkač, P. Kabátek and A. Smetana (CULSP). **PARATYPES:** 3♂, 4♀, same data as holotype (CULSP).

Diagnosis. All setae black; third antennal segment without elongate dorsal setae; 4–6 setae on each palpus; front tibia with posteroventral setae slightly shorter than depth of tibia, but longer than ciliation; hind basitarsus narrow and hind tibia slightly swollen in both sexes. Male hypandrial processes absent, phallus with two nearly identical hooks; visible part (approximately posterior half) of female 8th sternite microtrichose.

Etymology. The species is named in honour of one of the collectors and donator of the specimens of the type series, Prof. Jan Farkač (Prague), a specialist on ground beetles (Coleoptera, Carabidae).

Description. Male. **Head** blackish-brown, brownish-grey microtrichose, black setose (including lower occiput). Holoptic, facets in dorsal half much larger than in ventral half, about 10–13 facets in line of contiguity of eyes. One pair of rather short ocellar setae. Occiput rather densely and long setose. Face slightly broadened ventrally, ventral part about 0.07 mm broad. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 4–6 setae. Labrum short, brown, polished. Antenna black, 2nd segment long setose ventrally (longest setae almost 0.20 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 15–20: 3–5: 20–23. **Thorax** blackish-brown, microtrichose, mesoscutum dark brownish black in dorsal view, prescutellar area differently microtrichose than other parts of mesoscutum, appearing pale brownish grey. All thoracic setae black including fringes on squama. Chaetotaxy: 7–8 narrowly biserial acrostichals; 8–9 uniserial dorsocentrals; 1 intrahumeral, 1 posthumeral and 0–2 additional setae in posthumeral and intrahumeral areas; 1 long and 1–2 shorter postpronotals; notopleuron with 3–4 unequally long setae arranged in one irregular row; 1 supraalar and 1 strong prealar; 1 long postalar; 3 pairs of long scutellars;

pleura, antepronotum and sternites without any setae. **Legs** including coxae black, microtrichose and black setose. Fore femur with row of very short anteroventrals and row of longer posteroventrals (slightly shorter than depth of femur). Fore tibia with 0–2 dorsal and 0–1 submedian posterodorsal setae about 1.5X as long as depth of tibia, otherwise short setose, posteroventrals in apical third about as long as depth of tibia, pilosity apparently absent (similar to *B. spuria*); conspicuous anteroventral sense organ ovoid, about 0.10 mm long, consisting of central area of very short hairs and surrounding ovoid circle devoid of microtrichiae. Mid femur with sparse row of anteroventrals one-third as long as depth of femur and with much stronger and longer posteroventrals slightly longer than depth of femur. Mid tibia with 2 anterodorsal (1 subbasal and 1 submedian) and 1 submedian posterodorsal setae 2X as long as depth of tibia and 2 ventral preapical setae. Hind femur with 15–17 anterodorsal setae on basal third slightly longer than depth of femur, with row of 18–20 anteroventrals about as long as depth of femur, much shorter posteroventrals absent on apical half to third. Hind tibia very slightly swollen in apical part (0.12 mm at broadest point in comparison with 0.08 mm in basal part) being much narrower than hind femur (0.18 mm at broadest point), both dorsal and ventral setae slightly longer than depth of tibia, several anterodorsals up to 0.20 mm long. Tarsi of all legs slender, short setose. **Wing** slightly brownish infuscated; stigma dark brown, long (0.80 mm), almost parallel-sided and narrow (0.05 mm), much narrower than cell r_1 (about 0.13 mm broad at narrowest point). Distance between tips of veins R_1 and R_{2+3} about 0.40 mm. Squama dark brown, halter dark brown. **Abdomen** brown, microtrichose, entirely black setose, dorsally with short setae, marginals on sides of tergites 2–5 slightly longer than corresponding segments, on subsequent tergites slightly shorter. Genitalia (Figs 5, 6) with hypandrial processes absent, distal part of hypandrium with some 5 long setae on each half; postgonites triangle-shaped, two nearly identical phallic hooks present. **Female**. Tergites entirely pruinose, sternite 8 microtrichose on apical (visible) half, polished on basal half. Length: body 2.7–3.5 mm, wing 3.2–4.0 mm.

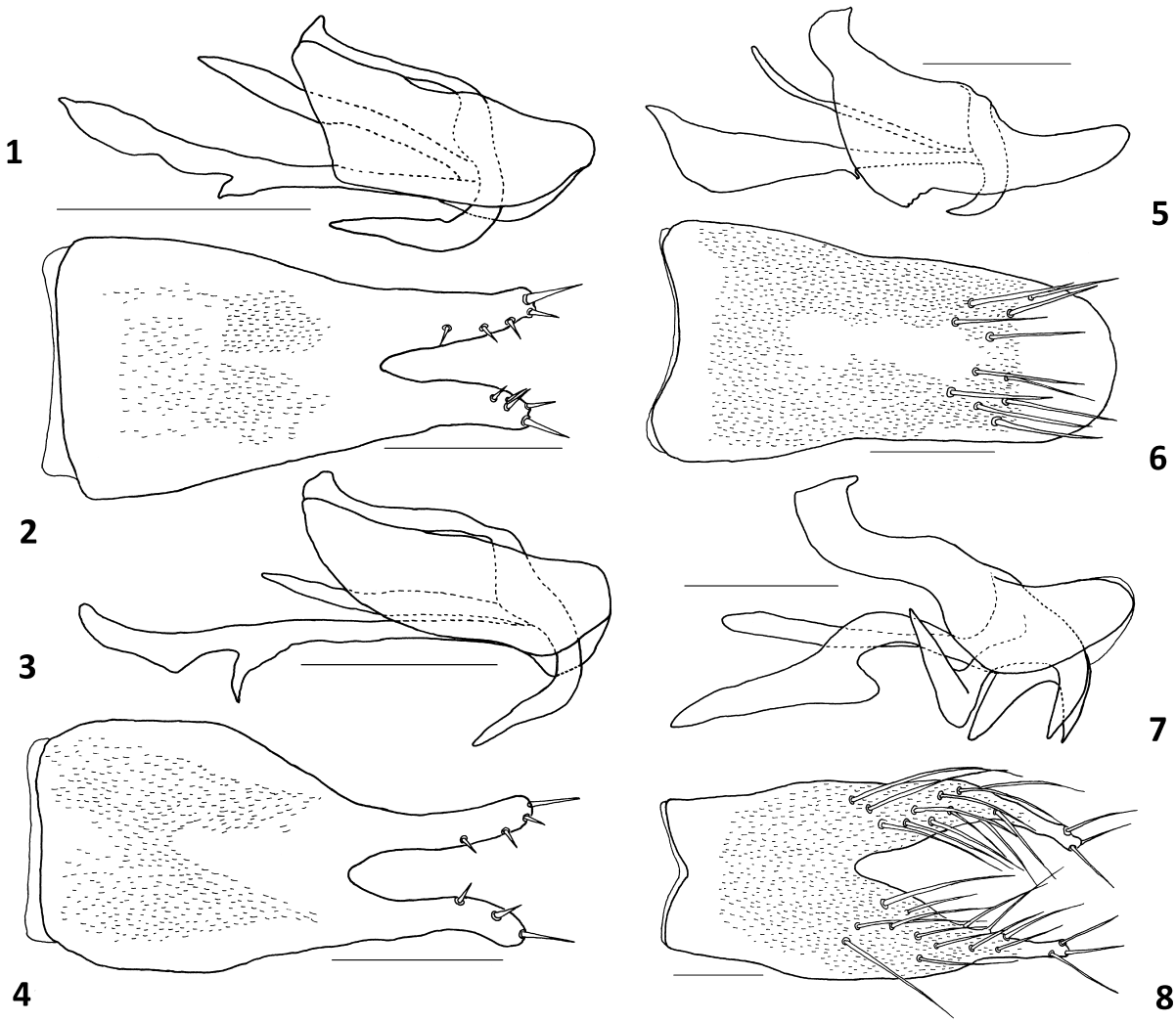
Remarks. All specimens of the type series are rather damaged, devoid of most mesoscutal setae; however, their arrangement, number and length may be judged from their articulations and several setae present on some specimens. The new species is quite different from all known species of *Bicellaria* in having hypandrium rounded caudally, without processes. Also the combination of setose palpus with third antennal segment lacking long dorsal setae is not present in any known species and the microtrichose female 8th abdominal sternite is also a very peculiar feature. According to all these characters this species is easily recognizable from all other species of *Bicellaria* worldwide.

Bicellaria femorata **Collin**

(Figs 7, 8)

Bicellaria femorata Collin, 1960: 392.

Identification of syntypes. *Bicellaria femorata* was described from five specimens: “a male labelled “Jerusalem [=Yerushalayim], O. Theodor”, and a female “Ginegar, Gallilee, 10.xi.[sic!]34. O. Theodor”. Also two females from “B. Alta [= Bet Alfa], 16.i.40, Dr. A. Shulov”, and one from “Judean Hills, 1.ii.31. O. Theodore” [sic!]”. All the above specimens are present in TAU: 1 male labelled “Jerusalem Palestine [=Yerushalayim] O. Theodor / COM. INST. ENT. COLL. No. 12611 / ♂ TYPE / *B. femorata* det. Coll. 58”, 1 female labelled “G 10 1 / Ginegar Galilee Palestine O. Theodor 10.ii.34 / COM. INST. ENT. COLL. No. 12611 / *B. femorata* det. Coll. 58”, 1 female labelled “B. Alfa 16.i.40 / 135 / Palestine Dr. A. Shulov / *B. femorata* det. Coll. 56 / *Bicellaria femorata* n. sp.”, 1 female labelled “B. Alfa [=Bet Alfa] 16.i.40 / 133 / Palestine Dr. A. Shulov / *B. femorata* det. Coll. 56”, and one female labelled “BK VIII 34 / Kir. Anavim [=Qiryat 'Anavim] Judean Hills Palestine O. Theodor 1.2.31 / COM. INST. ENT. COLL. No. 12611 / ♀ TYPE / *B. femorata* det. Coll. 58”. We consider all above mentioned specimens syntypes in spite of small difference in date of the female from Ginegar and they were provided by red labels “Syntype *Bicellaria femorata* rev. Barták 2013”. Moreover, in TAU there are another two specimens collected before 1960: 1 female without locality labelled “11.i.22 / 5.i.22 / 212” and another female labelled “C J VIII 30 / Jerusalem Palestine [=Yerushalayim] O. Theodor 5.i.36” and another 5 females labelled “Jerusalem Palestine [=Yerushalayim] O. Theodor” which were probably also collected before 1960. These are neither provided with circular handwritten Collin´s identification labels nor listed in the original description. For this reason we identified and labelled as syntypes of both Collin´s species (*B. femorata* and *B. spuria ingrata*) only specimens provided by the above mentioned circular label (see also under *B. ingrata*).



FIGURES 1–8. Hypandrium (ventral view) and phallus with postgonites (lateral view). **1–2**. *Bicellaria amankutanensis* **sp. nov. 3–4**. *B. chimganensis* **sp. nov. 5–6**. *B. farkaci* **sp. nov. 7–8**. *B. femorata* Collin. Scale bars = 0.10 mm.

Diagnosis. The species has unique combination of several features: palpus with many setae, halter yellow, mesoscutum with stripes, hind femur spinose, male phallic hooks curiously shaped (Fig. 8). It may be easily identified according to the key.

Additional material examined (13♂, 34♀). **Israel**: 2♂, 9♀, 2 exx, Horvat Nappah, 10.xii.1973, A. Freidberg—(TAU); 3♀, same data—(CULSP); 5♂, 8♀, same locality, 20.xii.1973, A. Freidberg—(TAU); 2♂, same data—(CULSP); 1♂, 1♀, same locality, 1.i.1974, A. Freidberg; 1♂, Upper part of Nahal Tirza, 20.ii.1974, A. Freidberg; 1♂, Kesalon, 10.ii.1973, M. Kaplan; 1♀, Shelomi, 8.i.1975, F. Kaplan; 1♀, Rosh ha'Ayin, 31.xii.1986, Y. Nussbaum—(TAU); 1♂, same data—(CULSP); 1♀, Nahal 'Ammud, 23.ii.1983, I. Yarom; 1♀, 'Ofra, 29.i.1987; 1♀, Nahal Rabba, 20.xii.1981; 1♀, sine loc. (“212” and “11.i.22” and “5.i.22”); 6♀, Jerusalem, Palestine—(TAU); 1♀, Carmel, 14.ii.1976, A. Freidberg—(CULSP).

Distribution. Israel.

Remarks. This species was described in full detail by Collin (1960). *Bicellaria femorata* is included in the *B. austriaca*-complex of species as defined by Chvála (1991), but differs in having a pale halter, long setose hypandrium and swollen and spinose hind femur.

Bicellaria flavipes Kato

Bicellaria flavipes Kato, 1971: 280.

Diagnosis. The species has broadened hind basitarsus, legs brownish yellow, all body setae pale, hypandrial processi moderately long and rather broad, with rather long setae on apex. Phallus and postgonites illustrated in Figure 27.

Distribution. Japan (Honshu and Kyushu).

Remarks. *Bicellaria flavipes* is a member of *B. nigra* complex of species as proposed by Chvála (1991) characterized by swollen hind basitarsus, short posteroventral setae on hind tibia, and narrow face. It may be distinguished from remaining three Palaearctic species of this complex (*B. nigra*, *B. nigrita*, *B. halterata*) by pale legs and pale setae on body.

Bicellaria globulicauda sp. nov.

(Figs 9, 10, 11)

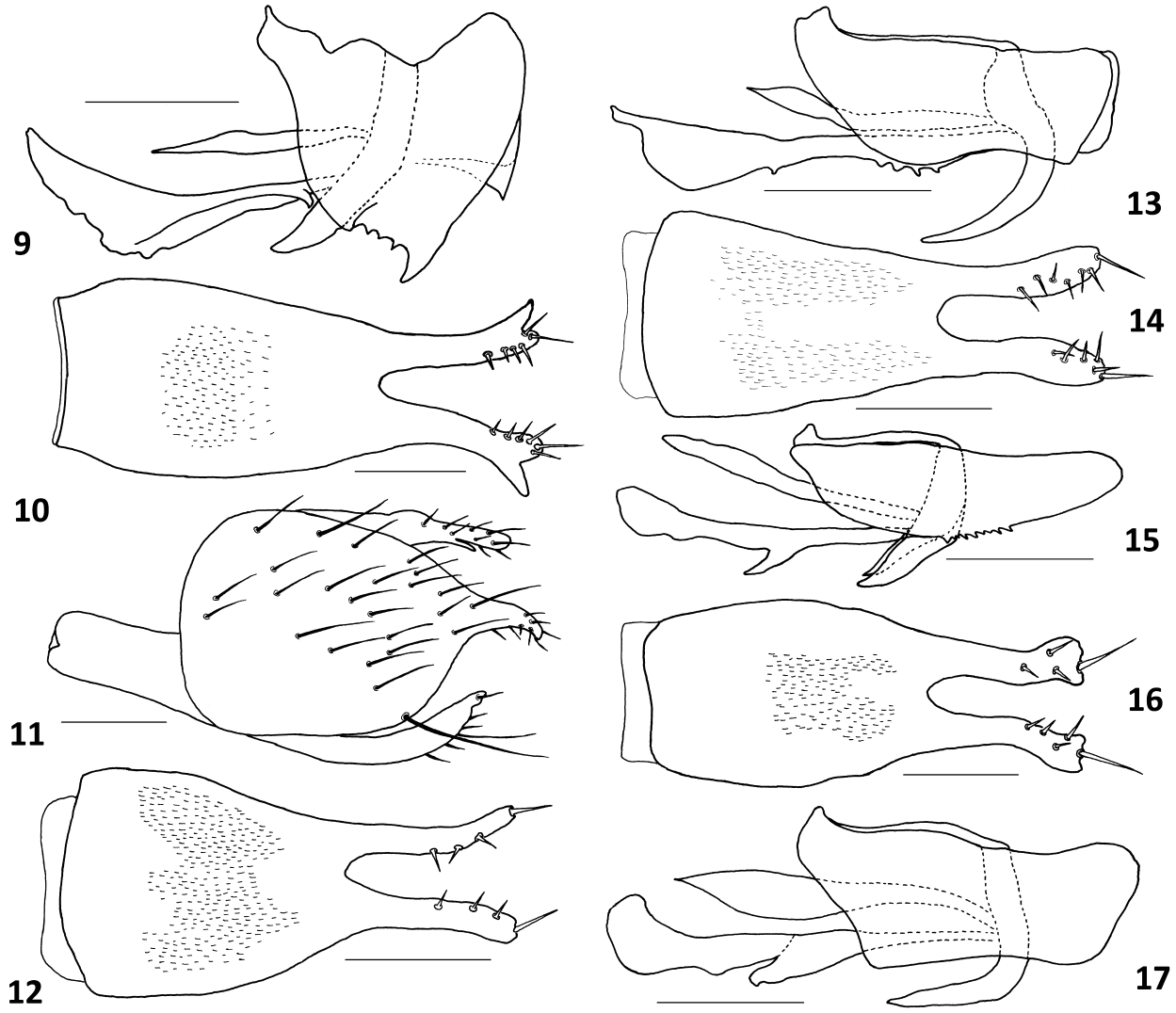
Type material. HOLOTYPE ♂, **Uzbekistan**, Amankutan, pasture, 1600 m, 39.17 N, 66.54 E, 23.v.1989, M. Barták (CULSP). **PARATYPES**: 4♂, 3♀, same data as holotype (CULSP).

Diagnosis. Thoracic setae and most abdominal setae black, base of abdomen on sides with pale setae; third antennal segment without elongate dorsal setae; 2 setae on palpus; front tibia with posteroventral setae longer than ciliation (which is very short or absent); hind basitarsus not swollen and hind tibia very slightly swollen in both sexes. Male hypandrium long with apically bifurcate processes, postgonites with ventral projections; left phallic hook long, right one slightly smaller but equally shaped. Female visible parts of tergites 5–7 and apical half of 8th tergite microtrichose, 8th sternite polished.

Etymology. The species is named after peculiarly enlarged epandrium.

Description. Male. **Head** black, light grey microtrichose, black setose. Holoptic, facets in dorsal half much larger than in ventral half, about 12–13 facets in line of contiguity of eyes. One pair of rather long ocellar setae. Occiput grey, sparsely setose. Face slightly narrowed ventrally, ventral part about 0.03 mm broad at narrowest point. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 2 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest setae about 0.07 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 13–14: 4–7: 18–21. **Thorax** brownish-black, grey microtrichose, mesoscutum brownish grey microtrichose in dorsal view, prescutellar area differently microtrichose than other parts of mesoscutum, appearing light grey. All thoracic setae black. Chaetotaxy: 6–8 rather narrowly biserial long acrostichals (about 0.13 mm long in front of suture); 6–9 uniserial dorsocentrals as long as or slightly longer than acrostichals; some 5–10 setae in intrahumeral and posthumeral areas; 2–4 postpronotals; notopleuron with 3–5 setae arranged in irregular row; 1 supraalar- and 1 prealar; 1 long postalar; 2 pairs of scutellars. **Legs** including coxae brownish-black, microtrichose and black setose, hind coxa in some specimens with several pale setae. Fore femur with sparse rows of anteroventrals and posteroventrals half as long as depth of femur. Fore tibia with posterodorsals as long as depth of tibia, longer setae scarcely discernable, posteroventrals as long as depth of tibia or longer in basal third but shorter in apical part, pilosity absent or very short. Mid femur with sparse row of anteroventrals more than one third as long as depth of femur (even in middle of row) and with slightly longer posteroventrals slightly shorter than depth of femur. Mid tibia with 1–4 setae dorsally in basal half up to 2X as long as depth of tibia, otherwise short setose. Hind femur with 13–17 anterodorsal setae on basal third slightly longer than depth of femur, shorter apically, with row of 13–15 subequally long anteroventrals; posteroventrals short, scarcely one-third as long as depth of femur. Hind tibia very slightly swollen in apical part (0.09–0.10 mm at broadest point in comparison with 0.06–0.07 mm in basal part), several anterodorsals and posterodorsals up to 0.20 mm long, ventral setae short. Tarsi of all legs short, thin, short setose, basitarsus of hind leg not swollen (0.05 mm). **Wing** slightly yellowish infuscated; stigma light brownish yellow, 0.55–0.60 mm long, slightly narrowing apically and narrow (0.04 mm in middle), distinctly narrower than cell r_1 (about 0.09 mm broad at narrowest point). Distance between tips of veins R_1 and R_{2+3} about 0.30–0.35 mm. Squama yellowish with dark fringes, halter clear yellow. **Abdomen** brownish-black, almost velvety brown in dorsal view

and pale grey in lateral view, microtrichose, lateral parts of basal sternites and tergites apparently polished (however, difficult to observe because all male specimens have abdomen distorted). Setae on abdomen pale, dorsally and laterally also with black setae, posteromarginals on sides of tergites 2–4 slightly longer than corresponding segments, slightly shorter on subsequent tergites. Genitalia (Figs 9, 10, 11): hypandrium long with apically bifurcate processes, inner arm with short setae; postgonites short, with ventral projections; left phallic hook long, right one slightly smaller but similarly shaped (appearing as single structure in lateral view). **Female**. Body with setae somewhat less numerous than in male. Visible parts of tergites 5–7 and apical half of 8th tergite microtrichose, 8th sternite polished. Length: body 2.8–3.6 mm, wing 2.4–3.0 mm.



FIGURES 9–17. 9–10. Hypandrium (ventral view) and phallus with postgonites (lateral view) of *Bicellaria globulicauda* **sp. nov. 11.** Epandrium (lateral view) *B. globulicauda* **sp. nov. 12**. Hypandrium (ventral view) *B. setitibia* **sp. nov. 13–16.** Hypandrium (ventral view) and phallus with postgonites (lateral view). **13–14**. *B. ingrata* Collin. **15–16**. *B. kovalevi* **sp. nov. 17**. Phallus with postgonites (lateral view) *B. setitibia* **sp. nov.** Scale bars = 0.10 mm.

Remarks. *Bicellaria globulicauda* **sp. nov.** is somewhat similar to *B. amankutanensis* **sp. nov.** and *B. chimganensis* **sp. nov.** according to combination of the following characters: palpus with 2 setae, 3rd antennal segment without dorsal seta, hind basitarsus not swollen, fore tibia with rather long posteroventrals and without elongate ventral pilosity, and abdomen at least partly pale setose, but it may be easily differentiated on account of the very peculiar form of its male genitalia, as described in the Diagnosis.

***Bicellaria ingrata* Collin**
(Figs 13, 14)

Bicellaria spuria ingrata Collin, 1960: 393.

Identification of syntypes. *Bicellaria spuria ingrata* was described from an unknown number of specimens from "Judean Hills on 14.i.31, and in various other months in the Coastal Plain, Galilee, Jerusalem, and the Jordan Valley". Syntypes of the species could not be found in the British Museum (Erica McAlister, pers. comm.) or in the Oxford University Museum (Amoret Spooner, pers. comm.). In Tel Aviv University Museum there are altogether 32 specimens collected before date of original description (1960). Altogether 17 of them are provided with a circular label with Collin´s handwritten identification label "*B. spuria ingrata* det. Coll. 58" originating not only from localities mentioned in the original description. These labels are under at least several specimens from all localities mentioned in the original description except "Jordan Valley" (all specimens are without this label). For the same reason as mentioned under *B. femorata,* we identified as syntypes only those specimens from localities mentioned in original description to which Collin's handwritten circular identification label is attached and all were labelled: "Syntype *Bicellaria spuria ingrata* rev. Barták 2013". They are as follows: one specimen without abdomen labelled: "Kir Anavim [= Qiryat 'Anavim] Judean Hills Palestine O. Theodor 1.ii.31 / COM INST. ENT COLL No.12611 / *B. spuria ingrata* det. Coll. 58", two males (one dissected) with the same labels, one specimen (without abdomen) with the same labels (except 11.4.31), one female with the same labels (except 2.i.31) and an additional label "BK VI 11", one female with the same labels except "BK VII 10" (14.i.31) and "♀ type" on identification label, one male with the same labels except "BK VII 22" and "♂ type" on identification label, one female with the same labels except "BK VII 5" (14.i.31), one female with labels "Jerusalem [=Yerushalayim] Palestine O. Theodor / COM INST. ENT COLL No.12611 / *B. spuria ingrata* det. Coll. 58", one male labelled "Beth Hakerem Jerusalem Palestina [=Yerushalayim, Bet haKerem] O. Theodor 1. 4. 50 / COM INST. ENT COLL No.12611 / *B. spuria ingrata* det. Coll. 58", two males and one female (on one pin, re-prepared because originally they were drawn in drops of dark glue) labelled "Ben Shemen Coastal Plain Palestine O. Theodor 22. 2. 24 / COM INST. ENT COLL No.12611 / *B. spuria ingrata* det. Coll. 58", one specimen (without abdomen) labelled "MJ V 33 / Mikoe [= Miqwe Yisra`el] Israel Coastal Plain O. Theodor 28. 12. 30 / COM INST. ENT COLL No.12611 / *B. spuria ingrata* det. Coll. 58", one male labelled "En VI 30 / Ein Churod [= 'En Harod] Galilee Palestina O. Theodor / COM INST. ENT COLL No.12611 / *B. spuria ingrata* det. Coll. 58". We decided not to select a lectotype because all specimens are conspecific and we would like to leave free hands to further reviser of the difficult complex of species around *B. spuria* (see also Barták & Kubík 2013) after more materials are collected.

Additional material examined (93♂, 88♀, 2 exx). **Israel**: 1♂, 1♀, Kir Anavim [= Qiryat 'Anavim], 14.i.1931, Judean Hills, Palestine, O. Theodor; 1♂, 1♀, Jerusalem [=Yerushalayim], O. Theodor; 5♂, 1♀, same locality, 2.i.1931; 2♂, same locality, 1.ii.1931; 1♀, Rehovot, 15.ii. 1934; 8♂, 7♀, Antipatris, 21.i.1986, Y. Nussbaum; 5♂, 7♀, 2 exx, Horvat Nappah, 20.xii.1973, A. Freidberg—(TAU); 2♂, 2♀, same data—(CULSP); 3♂, 3♀, same locality, A. Freidberg—(TAU); 10♂, 7♀, Rosh ha'Ayin, 31.xii.1986, I. Nussbaum—(TAU); 1♂, 1♀, same data—(CULSP); 2♂, Latrun, 6.ii.1975, F. Kaplan; 1♀, same locality, 24.xii.1974, A. Freidberg; 2♂, 3♀, 1ex, Montfort, 8.i.1975, A. Freidberg; 2♀, same locality, 10.iii.1981, F. Kaplan; 1♂, same locality, 17.iii.1983, A. Freidberg; 1♂, 4♀, Yavne, 24.xii.1972, A. Freidberg; 6♂, 3♀, 1 ex, Ashdod, 1.i.1975, A. Freidberg; 2♂, 2♀, 1 ex, Tel Aviv, 7.i.1975, A. Freidberg or F. Kaplan; 2♂, 1♀, same locality, 15.xii.1974, A. Freidberg; 1♂, same locality, 24.i.1968, Kugler; 1♀, same locality, 9.i.1952; 1♀, same locality, 8.ii.1952; 3♀, Jordan Valley, 14.ii.1942; 5♂, 6♀, Kefar Szold, 2.i.1973, M. Kaplan; 2♀, Avivim, 5.ii.1987, A. Freidberg—(TAU); 1♀, same data—(CULSP); 2♂, Carmel, 14.ii.1976, A. Freidberg; 2♂, 5♀, Allonim, 17.ii.1973, A. Freidberg; 1♀, 1 ex, Haifa, 17.ii.1973, A. Freidberg—(TAU); 1♂, same data—(CULSP); 1♂, 1♀, Nahal Poleg, 5.ii.1974, A. Freidberg; 1♂, same locality, 6.ii.1973, A. Frediberg; 1 ex, same locality, 14.i.1975, A. Freidberg; 1♂, 2♀, Haspin, 18.xii.1983, Y. Nussbaum—(TAU); 1♀, same data—(CULSP); 6♂, Yeroham, 3.ii.1981, F. Kaplan or A. Freidberg; 1♂, 1♀, Merom Golan, 2.xii.(?), Y. Zvik; 1♀, K. Tuate [= Horvat Tata], 3.iii.1982, Y. Nussbaum; 1♂, S. Revivim, 12.iii.1974, D. Furth; 1♂, 'En Mor, 3.ii.1981, A. Freidberg; 1♀, Qiryat Ono, 5.ii.1982, Y. Zvik; 1♂, Hulda, 4.ii.1976, A. Freidberg; 1♂, 1 ex, Central part of Nahal Tirza, 20.ii.1974, A. Freidberg; 1♂, Zafririm, 18.xi.1983, Y. Nussbaum; 1♀, Yagur, 5.ii.1974, A. Freidberg; 1♀, Nahal 'Iyyon Nature Reserve, HaTanur Waterfall, 6.iii.1985, A. Freidberg; 1♂, Panyas, 16.i.1979, D. Furth; 1♀, Bet Yehoshua', 12.i.1972, M. Kaplan; 1♂, Nahal Oren, 5.xi.1977, D. Furth; 1♂, Devira,

16.i.1975, M. Kaplan; 1♀, Nahal Yehudiya Nature Reserve Qusabiya, 30.xii.1983, Y. Nussbaum; 1 ex, Har Meron, 9.iv.1977, A. Freidberg; 1♂, 2♀, Migdal Afeq, 4.i.1982; 5♂, 3♀, same locality, 13.i.1982; 4♂, 4♀, Rosh ha'Ayin, 18.i.1981—(TAU); **Lebanon**: 1♀, south, Qouzah, 19.ii.1987, Y. Nusbaum—(TAU).

Diagnosis. *Bicellaria ingrata* is very similar to *B. spuria.* The main differential characters are as follows: face broader than in *B. spuria* (usually more than 0.05 mm, diameter of 4–5 facets), prescutellar depression lighter than disc of scutum, usually more than 10 setae in intrahumeral and posthumeral areas, median extensions of postgonites saw-toothed ventrally (see also remarks). Females belonging to the complex of species around *B. spuria* are difficult to identify (see the key).

Redescription. Male. **Head** blackish-brown, brownish-grey microtrichose, black setose. Eyes meet on frons, facets in dorsal half much larger than in ventral half, about 15–18 facets in line of contiguity of eyes. Two pairs of ocellar setae, long (anterior) and shorter (posterior). Occiput with moderately long and rather coarse black setae. Face almost parallel-sided 0.05–0.07 mm broad at narrowest point. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 2–3 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest setae about 0.08 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 12–18: 3–5: 17–21. **Thorax** blackish-brown, microtrichose, mesoscutum brownish grey microtrichose in dorsal view, scutellum and prescutellar area differently microtrichose than other parts of mesoscutum, appearing light grey, light area reaches posterior acrostichals and dorsocentrals. All thoracic setae black. Chaetotaxy: 8–11 biserial long acrostichals (about 0.15 mm long in front of suture); 7–12 uniserial dorsocentrals as long as or slightly longer than acrostichals; some 11–16 setae in intrahumeral and posthumeral areas; 1 long and 2 shorter postpronotals; notopleuron with 4–6 setae arranged in irregular row; 1 supraalar- and a row of 2–5 prealars; 1 long postalar; 2–3 pairs of scutellars. **Legs** including coxae blackish-brown, microtrichose and black setose. Fore femur with sparse rows of anteroventrals and posteroventrals half as long as depth of femur. Fore tibia with 2 posterodorsals slightly longer than depth of tibia, remining setae as long as depth of tibia, posteroventrals as long as depth of tibia or longer in basal third but shorter in apical part, pilosity absent or very short. Mid femur with row of anteroventrals more than one third as long as depth of femur (even in middle of row) and posteroventrals slightly longer than depth of femur. Mid tibia with 2–3 antero- and posterodorsal setae in basal two thirds up to 3X as long as depth of tibia, otherwise short setose. Hind femur with 15–20 anterodorsal setae on basal third slightly longer than depth of femur, shorter apically, with row of 15–19 subequally long anteroventrals; posteroventrals 2/3 as long as depth of femur on proximal third but shorter distally. Hind tibia slightly swollen in apical part (0.13–0.14 mm at broadest point in comparison with 0.07–0.08 mm in basal part, narrower than hind femur: 0.14–0.18 mm at broadest point), 3–6 setae in each antero- and postordorsal row up to 0.24 mm long, ventral setae longer than depth of tibia on proximal 2/3 and shorter on distal third. Tarsi of all legs short, thin, short setose, basitarsus of hind leg not swollen. **Wing** light yellowish-brown infuscated; stigma brown, 0.70–0.85 mm long, slightly narrowing apically and subequally broad at broadest point as cell r_1 at narrowest point (0.06–0.09 mm). Distance between tips of veins R_1 and R_{2+3} about 0.30–0.40 mm. Squama light brown with dark fringes, halter light brown. **Abdomen** blackish-brown, lighter (pale greyish-brown) in lateral view and darker (brown) in dorsal view. Setae on abdomen all black, posteromarginals slightly longer than corresponding segments. Genitalia (Figs 13, 14): hypandrium with short and relatively narrow processes covered with moderately long setae on distal half; postgonites trapezoid and relatively short, median extensions of postgonites saw-toothed ventrally; left phallic hook long, right one reduced. **Female**. Abdomen microtrichose, 8th sternite polished, anterior part of 8th tergite (often hidden under preceding tergite) polished. Length: body 2.8–3.8 mm, wing 2.8–3.6 mm.

Distribution. Israel, Lebanon.

Remarks. This species was originally described as a subspecies of *B. spuria*, however, external differences are striking enough to consider it as a separate species and we formally propose here that it be treated as such. Beside the characters given in the key, both species differ in the shape of the ejaculatory apodeme: in *B. spuria* it is broad posteriorly (near phallic hook, dorsal view) and button-like broadened anteriorly, whereas in *B. ingrata* it is narrow posteriorly (in dorsal view) and lancetoid in shape (with sharp tip) anteriorly. The ejaculatory apodeme usually bears very slight differential features, moreover, it may rotate along its longitudinal axis appearing differently in lateral view even within single specimen but when oriented in standard position (appearing as broad as possible) it may possess characters useful in differentiating species. Further studies are necessary to elucidate this point.

Bicellaria intermedia Lundbeck

Bicellaria intermedia Lundbeck, 1910: 25.

Distribution and diagnosis. See Barták and Kubík (2013).

Bicellaria japonica Kato

Bicellaria japonica Kato, 1971: 282.

Diagnosis. The species has several strong setae on palpus, long dorsal setae on third antennal segment, black setose body and hypandrium long setose similar to *B. femorata* (compare Kato 1971, fig. 4 with Fig. 7). It differs from *B. femorata* in unstriped mesoscutum, dark halter and slender hind legs. The species may be easily recognised according to the key. Phallus and postgonites illustrated in Figure 28.

Distribution. Japan (Honshu and Kyushu).

Remarks. *Bicellaria japonica* probably belongs near to *B. austriaca* complex of species but with quite different hypandrium.

Bicellaria koreana sp. nov.

(Figs 20, 21)

Type material. HOLOTYPE ♂, **North Korea**, S slope of Paekdu Mt., 16.viii.1989, M. Kozánek (CULSP). **PARATYPES: N. Korea**: 3♂, 10♀, same data as holotype; 8♀, Paekdusan, Mupo, 18.vii.1989, M. Kozánek; 1♀, N. Korea, Paekdusan, Samjion, 40 km NW, 17.viii.1989, M. Kozánek; 1♀, N. Korea, Paekdusan, Onsupjong, 19.viii.1989, M. Kozánek; 1♀, N. Korea, Čchong-Rion-San, 1.viii.1989, M. Kozánek–(CULSP). **Russia**: [labels in Cyrillic] **Chita**: 1♀, Černyševsk [= Chernyshevsk], 17.vii.1977; 1♂, same locality, 19.vii.1977; 1♂, same locality, 23.vii.1977; 5♂, Kuenga River, above Chernyshevsk, 8.viii.1977; 2♀, same locality, 10.viii.1977; 1♂, Ukur'evskoe, 1.viii.1977, V. Kovalev; 1♂, same locality, 6.viii.1977, V. Kovalev; **Amur**: 1♂, 1♀, town Zeja, 2.ix.1981, A. Shatalkin; **Tyva Republic** [= Tuva]: 1♀, Saryg-Sep, 28.viii.1973, V. Kovalev; **Kamchatka**: 1♀, Kamenskoe, 29.vii.1973, Negrobov; **Magadan**: 1♀, Palatka, Hasych, 28.viii.1978, V. Kovalev–(ZMMU).

Diagnosis. Halter brown in both sexes; third antennal segment without elongate dorsal setae; fore tibia with posteroventrals not longer than pilosity; body setae both black and pale; hind basitarsus narrow and hind tibia swollen in male and less so in female. Male hypandrial processes long and narrow; only one (left) long and simply curved phallic hook present.

Etymology. The species is named after the country where holotype specimen was taken (Korea).

Description. Male. **Head** brownish-black, brownish grey microtrichose, both black and pale setose. Holoptic, facets in dorsal half much larger than in ventral half, about 15–16 facets in line of contiguity of eyes. Two pairs of black ocellar setae, posterior pair much shorter. Occiput dark setose on upper part and pale setose below. Face strongly narrowed ventrally, dorsal part about 0.06 mm and ventral part about 0.02 mm broad at narrowest point (as in *B. vana*). Clypeus slightly paler grey microtrichose. Palpus short, brown, with 2 pale setae. Labrum short, brown, polished. Antenna black, 2nd segment very short setose (longest ventral setae about 0.06 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 12–15: 4–5: 14–16. **Thorax** blackish-brown, rather light greyish-brown microtrichose, prescutellar area evenly coloured as remaining mesoscutum, scutellum paler grey. Thoracic setae varying from pale to black, with marked tendency to be pale in some specimens (pale in holotype), most notably scutellars and notopleurals (also costal seta) in some specimens whitish-yellow. Chaetotaxy: 7–9 broadly biserial acrostichals; 9–12 uniserial dorsocentrals, both acrostichals and dorsocentrals very short (0.08–0.10 mm) except last 2–3 pairs of dorsocentrals; some 5–8 setae in intrahumeral and posthumeral areas; 3 subequally long postpronotals; notopleuron with 3–5 setae arranged in irregular row (1–2 setae of row often longer and stronger than others); 1 supraalar- and 1–2 prealar; 1 long postalar; 2 pairs of scutellars. Coxae blackish brown, microtrichose, pale (in holotype) but sometimes brown setose. **Legs** brown, microtrichose and mostly dark setose with at least some pale setae present.

Fore femur with sparse rows of fine antero- and posteroventral setae at most half as long as depth of femur. Fore tibia with dorsal setae about as long as depth of tibia or slightly longer, posteroventrals almost absent in distal half of tibia (not longer than pilosity), ventral pilosity slightly shorter than on fore basitarsus. Mid femur with very short or almost absent anteroventrals, posteroventrals about as long as depth of femur. Mid tibia with 1–2 pair(s) of submedian setae dorsally 2X as long as depth of tibia. Hind femur thin (0.09–0.10 mm), with 15–17 anterodorsal setae more than 2X as long as depth of femur on basal part but much shorter apically and with row of 13–16 anteroventrals subequally as long as anterodorsals (except on basal part), posteroventrals scarcely half as long as depth of femur. Hind tibia strongly swollen in apical part (0.13–0.15 mm at broadest place in comparison with 0.05 mm in basal third), longest anterodorsals and posterodorsals up to 0.18 mm long, ventral setae slightly longer than depth of tibia in middle part, much shorter distally. Tarsi of both fore and mid legs very thin and short setose, basitarsus of hind leg thin (0.05–0.06 mm), but distinctly slightly broader than 2nd tarsal segment. **Wing** light brownish infuscated; stigma brown, long (0.60–0.65 mm), almost parallel-sided, 0.05 mm broad, slightly narrower than cell r_1 (about 0.07 mm at broadest point). Distance between tips of veins R_1 and R_{2+3} about 0.20–0.25 mm. Squama dark brown with pale (holotype) or dark fringes, halter brown. **Abdomen** brown, darker (brownish-black) in dorsal view and lighter (greyish-brown) in lateral view, microtrichose, pale setose on sides of basal 2–3 segments (holotype) or only on sides of 2nd segment, subsequent segments dark setose; posteromarginals on sides of tergites 2–4 longer than subsequent segments, on tergites 5–7 slightly shorter. Genitalia (Figs 20, 21) with hypandrial processes long and narrow, with several short setae on apical part; postgonites elongate-ovate in shape, with concave lower margin; left phallic hook long and simply bent, right one almost absent. **Female**. Abdominal setae shorter and paler than in male. Tergite 8 polished on basal part, sternite 8 polished, otherwise abdomen microtrichose. Length: body 2.1–2.9 mm, wing 2.4–2.9 mm.

Remarks. *Bicellaria koreana* **sp. nov.** belongs to the *B. sulcata* complex of species as proposed by Chvála (1991). It differs from the only other Asian representative of the complex (*B. vana*) according to characters given in the key. However, the species described above is very similar to Nearctic *B. furcifer* Melander, 1928 (Figs 18, 19). In fact we found only one reliable character distinguishing both species and this is the longer phallic hook in *B. koreana* **sp. nov.** (compare Figs 18 and 20).

***Bicellaria kovalevi* sp. nov.**
(Figs 15, 16)

Type material. HOLOTYPE ♂, **Georgia**, [printed in Cyrillic] West Georgia, Borzhomskiy Zapovednik, [= Borzhomskiy Nature Reserve] 8.viii.1969, V. Kovalev (ZMMU). **PARATYPES: Georgia**: 2♂, same data as the holotype; 1♂, ♀, same locality, 7.viii.1969, V. Kovalev–(ZMMU); 3♂, 1♀, same data (CULSP); 1♂, West Georgia, Bakuriani, 18.vii.1969, V. Kovalev; 2♀, East Georgia, Lagodekhi Zapovednik, [= Lagodekhskiy Nature Reserve] 25.vii.1969, V. Kovalev–(ZMMU); 1♀, same locality, 27.–28.vii.1969 (CULSP); 1♂, same locality, 26–28.vii.1969; 1♂, Adzharia, Kintrishi Zapovednik, okr. [= Kintrishskiy Nature Reserve] env. Kobuleti, 13.v.1971, V. Kovalev–(ZMMU); 1♂, same data (CULSP).

Diagnosis. Halter blackish brown in both sexes; third antennal segment without elongate dorsal setae; all body setae black; hind basitarsus narrow and hind tibia slightly swollen in both sexes. Male hypandrial processes long and narrow, abruptly axe-like broadened at apex with rather long seta in the middle of broadened part; both phallic hooks present.

Etymology. The species is named in honour of the late Vladimir Kovalev, collector of the type series and well known Russian dipterologist.

Description. Male. **Head** brownish-black, dark brownish grey microtrichose, black setose. Holoptic, facets in dorsal half much larger than in ventral half, about 13–15 facets in line of contiguity of eyes. One pair of rather long ocellar setae. Occiput dark grey. Face slightly narrowed ventrally, dorsal part about 0.05 mm and ventral part about 0.04 mm broad at narrowest point. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 2–3 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest ventral setae about 0.10 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 10–13: 4–6: 17–19. **Thorax** brownish-black, dark brownish grey microtrichose, prescutellar area evenly dark or with only very small lighter patch in front of scutellum. All thoracic setae black. Chaetotaxy: 5–9

broadly biserial long acrostichals (up to 0.15 mm in front of suture); 8–9 uniserial dorsocentrals as long as or slightly longer than acrostichals; about 5–9 setae in intrahumeral and posthumeral areas; 3 almost subequally long postpronotals; notopleuron with 4–5 setae arranged in irregular row (1–2 setae often longer and stronger than others); 1 supraalar- and 2–3 prealar; 1 long postalar; 2 pairs of scutellars. Coxae blackish brown, microtrichose, black setose, fore and mid ones with rather strong upright anterior setae. **Legs** brown, microtrichose and black setose. Fore femur with both antero- and posteroventral setae slightly shorter than depth of femur. Fore tibia with setae about as long as depth of tibia or slightly longer including posteroventrals, 1–3 posterodorsals up to twice as long as depth of tibia, ventral pilosity not developed. Mid femur with sparse row of anteroventrals scarcely one-third as long as depth of femur (in middle part), with much longer posteroventrals as long as or slightly longer than depth of femur. Mid tibia with 2–3 antero- and posterodorsal setae in basal half (up to 0.20 mm long), other short setae slightly longer than depth of tibia. Hind femur with 14–16 anterodorsal setae slightly longer than depth of femur, with row of 14–18 anteroventrals slightly shorter than anterodorsals, posteroventrals half as long as depth of femur. Hind tibia slightly swollen in apical part (0.13 mm at broadest point in comparison with 0.07 mm in basal third), longest anterodorsals and posterodorsals up to 0.20 mm long, ventral setae slightly longer than depth of tibia in middle part, longer proximally and much shorter distally. Tarsi of both fore and mid legs thin and short setose, basitarsus of hind leg thin (0.06–0.07 mm), slightly broader than 2nd segment. **Wing** light brownish infuscated; stigma brown, long (0.60–0.70 mm), almost parallel-sided and subequally broad as cell r_1 (about 0.08 mm at broadest point). Distance between tips of veins R_1 and R_{2+3} about 0.20–0.25 mm. Squama dark brown with dark fringes, halter blackish brown. **Abdomen** blackish-brown, darker (brownish-black) in dorsal view and lighter (greyish-brown) in lateral view, microtrichose, entirely black setose, posteromarginals on sides of tergites much longer than segments (longest lateral and ventral setae up to 0.40 mm long). Genitalia (Figs 15, 16) with hypandrial processes very long and axe-like broadened apically, with single long seta in middle of broadened apex; postgonites elongate-ovate in shape, median extension of postgonites slightly saw-toothed ventrally; left phallic hook long, right one slightly shorter. **Female** prescutellar area often lighter than rest of mesoscutum; abdominal setae shorter than in male. Tergite 8 polished at least on basal half, sternite 8 polished, otherwise abdomen microtrichose. Length: body 2.2–2.7 mm, wing 2.3–2.7 mm.

Remarks. *Bicellaria kovalevi* **sp. nov.** is very similar to *B. spuria.* Differential characters are given in the key. Most striking differences are in the shape of the male genitalia: hypandrial processes are apically broadened in *B. kovalevi* **sp. nov.** but narrow in *B. spuria* and median extension of postgonites is saw-toothed in *B. kovalevi* **sp. nov.** and smooth in *B. spuria*. Moreover, right phallic hook is much longer in above described species than in *B. spuria*. Females are difficult to differentiate. Based on materials at disposal it seems that *B. kovalevi* **sp. nov.** has smaller broad part of 3rd antennal segment and hind basitarsus distinctly slightly broader than 2nd hind tarsomere (in *B. spuria* broad part of 3rd antennal segment usually longer than 0.14 mm and hind basitarsus equally thick as second hind tarsomere).

B. longisetosa Chvála

B. longisetosa Chvála, 1991: 9.

Distribution and diagnosis. See Barták and Kubík (2013).

Bicellaria setitibia sp. nov.
(Figs 12, 17)

Type material. HOLOTYPE ♂, **Georgia**, [in Cyrillic] East Georgia, Lagodekhi zapovednik (Natural Reserve), 26–28.vii.1969, V. Kovalev (ZMMU). **PARATYPES:** 2♀, same data; 1♂, 1♀, same locality, 27.vii.1969 (CULSP: 1♂, 1♀, ZMMU: 2♀). **Russia**: **Republic of North Ossetia-Alania**: 1♂, Kakadur, Vladikavkaz env., 27.vii.1925, Kiritschenko (NHMH).

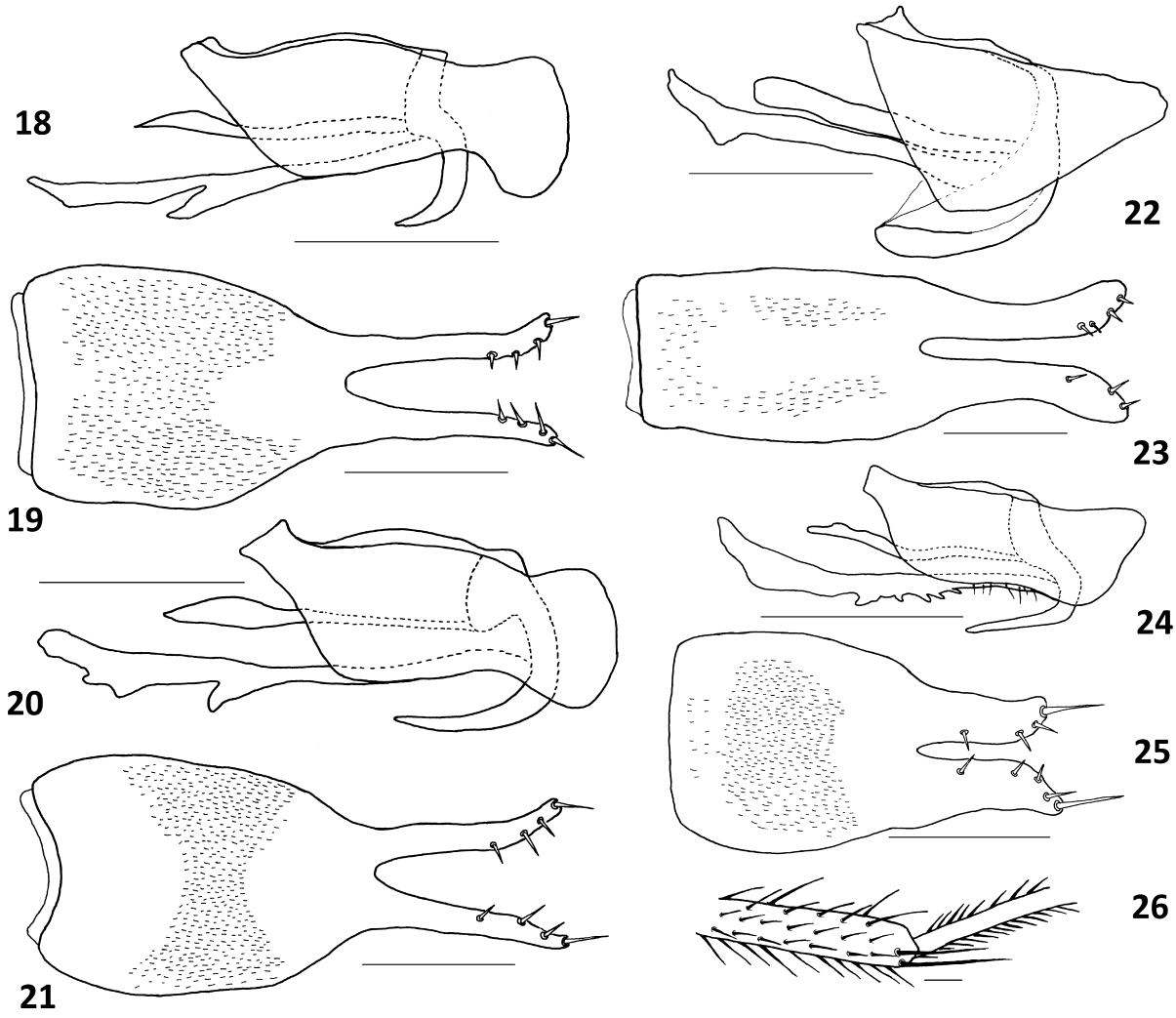
Diagnosis. Halter blackish brown in both sexes; third antennal segment without elongate dorsal setae; both fore and mid tibiae with longer setae also on distal part; hind basitarsus narrow and hind tibia slightly swollen in

both sexes. Male hypandrial processes narrow, with rather long apical seta; only right phallic hook present, long and sharply bent, left one reduced; female tergites 5–8 and sternites 6–7 partly shining, sternite 8 polished.

Etymology. The species is named after the long setose tibiae.

Description. Male. **Head** brownish-black, dark brownish grey microtrichose, black setose. Holoptic, facets in dorsal half much larger than in ventral half, about 15–17 facets in line of contiguity of eyes. One pair of rather long ocellar setae and additional pair of shorter setae on hind part of ocellar triangle. Occiput dark brownish black. Face slightly narrowed ventrally, dorsal part about 0.07 mm and ventral part about 0.05 mm broad at narrowest point. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 2–3 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest ventral setae about 0.15 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 14–16: 4–8: 18–21. **Thorax** brownish-black, dark brownish grey microtrichose, prescutellar area with very small lighter patch in front of scutellum. All thoracic setae black. Chaetotaxy: 7–9 broadly biserial long acrostichals (up to 0.15 mm in front of suture); 9–12 uniserial dorsocentrals as long as or slightly longer than acrostichals; about 16–19 setae in intrahumeral and posthumeral areas; 3–5 subequally long postpronotals; notopleuron with 4–5 unequally long setae arranged in irregular row; 1 supraalar- and 3 prealar; 1 long postalar; 2 pairs of scutellars. **Legs** including coxae blackish brown to brownish black, microtrichose and black setose, parts of trochanters and hind femur posteriorly shining. Fore femur with anteroventral setae one-third as long as depth of femur and posteroventral setae slightly shorter than depth of femur. Fore tibia with posteroventrals as long as (in apical third) or slightly longer than depth of tibia, ventral pilosity very short, row of anterodorsals 0.10–0.15 mm long (3–4 are slightly stronger than others), developed also on hind part of tibia and similar row of slightly longer (about 0.20 mm) posterodorsals. Mid femur with sparse row of anteroventrals scarcely half as long as depth of femur (in middle part) but longer both proximally and distally, with posteroventrals slightly longer than depth of femur. Mid tibia with 4–5 pairs of setae dorsally (about 0.20 mm long) present also on apical third of tibia, other (short) setae including ventral ones slightly longer than depth of tibia. Hind femur with 15–17 anterodorsal setae slightly longer than depth of femur (longer proximally), with row of 16–18 subequally long anteroventrals, posteroventrals 2/3 as long as depth of femur. Hind tibia slightly swollen in apical part (0.11 mm at broadest point in comparison with 0.07 mm in basal third), longest anterodorsals and posterodorsals up to 0.15 mm long, ventral setae slightly longer than depth of tibia in middle part, longer proximally and much shorter distally. Basitarsus of all legs thin and short setose. **Wing** light brownish infuscated; stigma brown, long (0.60–0.70 mm), almost parallel-sided and narrower (0.06–0.07 mm) than cell r_1 (0.09–0.10 mm at broadest point). Distance between tips of veins R_1 and R_{2+3} about 0.35–0.40 mm. Squama dark brown with dark fringes, halter blackish brown. **Abdomen** blackish-brown, darker (brownish-black) in dorsal view and lighter (blackish-brown) in lateral view, microtrichose, entirely black setose, posteromarginals on sides of tergites much longer than segment (longest lateral as well as ventral setae up to 0.35 mm long). Genitalia (Figs 12, 17) similar to *B. spuria* and *B. ingrata*: hypandrial processes narrow, with rather long apical seta; postgonites elongate trapezoid in shape, only right phallic hook present, long and sharply bent, left one reduced. **Female**. Thoracic setae shorter and less numerous than in male (about 10 in intra- and posthumeral areas), abdominal setae shorter. Tergite 5 polished on basal half, tergites 6–8 shining except dorsoapical corner, lateral parts of sternites 6–7 partly polished, sternite 8 polished, otherwise abdomen microtrichose. Length: body 2.7–3.1 mm, wing 2.4–3.2 mm.

Remarks. *Bicellaria setitibia* **sp. nov.** belongs to the *B. spuria* complex of species (characterised by at most 3 setae on apical part of palpus, hind basitarsus slender, fore tibia on apical third without long ventral pilosity and with posteroventrals at least as long as depth of tibia, third antennal segment without long dorsal seta, body entirely black setose and male hypandrial processes long and narrow and only a single phallic hook present). The genitalia are very similar to *B. spuria* (compare Barták & Kubík (2013, figs 33, 34) with Figs 12 and 17). However, both species may be differentiated according to characters given in the key. The small number of specimens did not enable us to decide if the long right hook of the phallus is 'typical' or only an exception (all studied specimens of *B. spuria* and *B. ingrata* had left phallic hook long and right one reduced).



FIGURES 18–26. Hypandrium (ventral view) and phallus with postgonites (lateral view). **18–19**. *Bicellaria furcifer* Melander. **20–21**. *B. koreana* **sp. nov. 22–23**. *B. shatalkini* **sp. nov. 24–25**. *B. thailandica* **sp. nov. 26**. Tip of hind tibia and basitarsus *B. woodi* **sp. nov.** Scale bars = 0.10 mm.

***Bicellaria shatalkini* sp. nov.**
(Figs 22, 23)

Type material. HOLOTYPE ♂, **Russia, Magadan**: r. [=river] Indigirka, ust [= river mouth] Injali, 23.vi.1976, listvennik s ernikom i mkhom na sklone sopki [= larch forest with black crowberry and mosses on slope of a hill], V. Kovalev (ZMMU). **PARATYPES: Russia**: 7♂, 3♀, same data as holotype; **Chita**: 2♂, 1♀, Undurga River, 9.vii.1977, V. Kovalev; 1♂, 1♀, same locality, 13.vii.1977, V. Kovalev (ZMMU: 9♂, 3♀, CULSP: 1♂, 2♀).

Diagnosis. Halter blackish brown in both sexes; third antennal segment without elongate dorsal setae; hind basitarsus narrow and hind tibia slightly swollen in both sexes. Male hypandrial processes long and broad, postgonites triangle-shaped and saw-toothed ventrally; both phallic hooks present, right one slightly shorter than left; female tergite 8 entirely microtrichose.

Etymology. The species is named in honour of Prof. Anatoliy Shatalkin, well known Russian dipterologist (Moscow).

Description. Male. **Head** brownish-black, dark brownish grey microtrichose, black setose. Holoptic, facets in dorsal half much larger than in ventral half, about 14–16 facets in line of contiguity of eyes. One pair of ocellar setae (sometimes an additional shorter pair present). Occiput brownish black. Face slightly narrowed ventrally,

dorsal part about 0.05 mm and ventral part about 0.04 mm broad at narrowest point. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 2 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest ventral setae about 0.09 mm); 3rd without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 12–14: 4–5: 17–19. **Thorax** brownish-black, brownish grey microtrichose, prescutellar area with broad lighter spot in front of scutellum reaching hind dorsocentrals and acrostichals (in some specimens divided by narrow dark midline). All thoracic setae black. Chaetotaxy: 8–11 broadly biserial acrostichals (about 0.12 mm long in front of suture); 9–11 irregularly uniserial dorsocentrals as long as or slightly longer than acrostichals; 10–15 setae in intrahumeral and posthumeral areas; 1 longer and 2–3 shorter postpronotals; notopleuron with 4–6 unequally long setae arranged in irregular row; 1–2 supraalar-, 0–2 prealar and 1–4 additional setae between supraalar- and dorsocentrals (situated laterad of dorsocentral row); 1 long postalar; 2 pairs of scutellars. **Legs** including coxae blackish brown, microtrichose, black setose. Fore femur with both antero- and posteroventral setae half as long as depth of femur and similar row of slightly longer posterodorsals. Fore tibia with irregular rows of unequally long antero- and posterodorsals, longest about twice as long as depth of tibia (up to 0.15 mm long), posteroventrals about as long as depth of tibia, ventral pilosity not developed or very short. Mid femur with sparse row of anteroventrals less than half as long as depth of femur (in middle part), with posteroventrals up to as long as depth of femur. Mid tibia usually with 2 anterodorsals in basal half and 3 posterodorsal setae in basal 2/3, 2–3 X as long as depth of tibia, other short setae slightly longer than depth of tibia. Hind femur with 17–19 anterodorsal setae slightly longer than depth of femur (in basal part, shorter in apical part), with row of 12–18 anteroventrals slightly shorter than anterodorsals, posteroventrals about half as long as corresponding anteroventrals. Hind tibia swollen in apical part (0.13–0.14 mm at broadest point in comparison with 0.07–0.08 mm in basal third), longest anterodorsals and posterodorsals up to 0.15 mm long, ventral setae subequally as long as depth of tibia in middle part, longer proximally and much shorter distally. Tarsi of both fore and mid legs thin and short setose, basitarsus of hind leg thin (0.06 mm), at most slightly broader than 2nd segment. **Wing** brownish infuscated; stigma brown, long (0.55–0.60 mm), almost parallel-sided (about 0.08 mm at broadest point) and slightly broader than narrowest part of cell r_1. Distance between tips of veins R_1 and R_{2+3} about 0.20–0.25 mm. Squama dark brown with dark fringes, halter brownish black. **Abdomen** blackish-brown, slightly darker (brownish-black) in dorsal view than in lateral view, microtrichose, entirely black setose, posteromarginals on sides of tergites much longer than segment. Genitalia (Figs 22, 23) with hypandrial processes long and broad (longer than 0.15 mm), with very short setae on apical third; postgonites triangle-shaped, saw-toothed ventrally; both phallic hooks present, right one slightly shorter than left. **Female**. Setae shorter (especially on abdomen) than in male, and less numerous, narrower hind tibia (0.11 mm in broadest part). Tergites entirely microtrichose including 8th one, sternite 8 polished. Length: body 2.7–3.1 mm, wing 2.5–3.0 mm.

Remarks. *Bicellaria shatalkini* **sp. nov.** probably belongs to the *B. uvens* complex of species; and differs from other species of this complex by its long hypandrial processes.

Bicellaria spuria (Fallén)

Empis spuria Fallén, 1816: 33.

Distribution, diagnosis and synonymy. See Barták and Kubík (2013).

Additional material examined. 1♂, Tomsk, Bakchar (= Bakčar), 9.vii.1972, P. Poljakova (ZMMU).

Bicellaria stackelbergi Tumikoski

Bicellaria stackelbergi Tumikoski, 1955: 74.

Distribution and diagnosis. See Barták and Kubík (2013).

***Bicellaria thailandica* sp. nov.**
(Figs 24, 25)

Type material. HOLOTYPE ♂, **Thailand**, Kamphaeng Phet, Mae Wong NP, Chong Yen, 1306 m, 16°5.212´N, 99°6.576´E, Malaise trap, 31.xii.2007–7.i.2008, C. Piluek leg (NMWC). **PARATYPES: Thailand**: 2♂, 5♀, same locality as holotype, 24–31.xii.2007; 1♀, same locality, 17–24.xii.2007–C. Piluek; 3♀, same locality, 10–17.xii.2007; 1♀, same locality, 28.xi.–3.xii.2007; 1♀, same locality, 12–19.xi.2007–C. Piluek & A. Inpuang; 1♂, Chiang Mai, Doi Phahompok NP Kiewlom 2, montane forest, 2112 m, 20°3.426´N, 99°8.553´E, Malaise trap, 14–21.ix.2007; 1♂, same locality, 28.ix.–4.x.2007–P. Wongchai; 1♀, Chiang Mai, Doi Phahompok NP Kiewlom 1, montane forest, 2174 m, 20°3.549´N, 99°8.552´E, Malaise trap, 28.v.–7.vi.2008, P. Wongchai –(CULSP: 1♂, 1♀, NMWC: 3♂, 11♀).

Diagnosis. Halter yellowish brown in both sexes; third antennal segment without elongate dorsal setae; all body setae black; hind basitarsus narrow and hind tibia slightly swollen in both sexes. Male hypandrial processes broad, median extension of postgonites saw-toothed; only one (left) long phallic hook present; female tergite 8 polished in basal two -thirds, sternite 8 polished.

Etymology. The species is named after the country of origin (Thailand).

Description. Male. **Head** brownish-black, dark brownish grey microtrichose, black setose. Holoptic, facets in dorsal half much larger than in ventral half, about 10–16 facets in line of contiguity of eyes. One pair of rather short ocellar setae. Occiput dark grey. Face slightly narrowed ventrally, dorsal part about 0.05 mm and ventral part about 0.03 mm broad at narrowest point. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 2 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest ventral setae about 0.10 mm); 3rd without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 12–16: 4–5: 15–19. **Thorax** brownish-black, brownish grey microtrichose and slightly subshining including prescutellar area. All thoracic setae black. Chaetotaxy: 5–7 broadly biserial long acrostichals (up to 0.10 mm in front of suture); 6–8 uniserial dorsocentrals as long as or slightly longer than acrostichals; some 3–5 setae in intrahumeral and posthumeral areas; 1 long and 1–2 somewhat shorter postpronotals; notopleuron with 3–4 setae arranged in irregular row (1–2 setae often longer and stronger than others); 1 supraalar- and 1 prealar; 1 long postalar; 2 pairs of scutellars. **Legs** including coxae blackish brown, microtrichose and black setose, hind femur with polished area in proximal posterior and ventral half. Fore femur with short and sparse anteroventrals half as long as depth of femur, with row of slightly longer posteroventrals. Fore tibia with setae about as long as depth of tibia including posteroventrals, 1–2 posterodorsal up to 2X as long as depth of tibia, ventral pilosity very short. Mid femur with sparse row of anteroventrals scarcely one-third as long as depth of femur (in middle part), with posteroventrals as long as or slightly longer than depth of femur. Mid tibia with one anterodorsal seta in proximal third and another at about middle (up to 0.20 mm long) and 1 submedian posterodorsal, other short setae slightly longer than depth of tibia. Hind femur with 14 anterodorsal setae slightly longer than depth of femur, with row of 17 anteroventrals slightly longer than anterodorsals at about middle and shorter both basally and apically, posteroventrals short, scarcely half as long as depth of femur, slightly longer on basal part. Hind tibia slightly swollen in apical part (0.11 mm at broadest point in comparison with 0.06–0.07 mm in basal third), longest anterodorsals and posterodorsals up to 0.25 mm long, ventral setae slightly longer than depth of tibia. Tarsi of all legs thin and short setose, basitarsus of hind leg thin (0.06 mm), with rather long setae dorsally (1–2 setae up to twice as long as depth of basitarsus). **Wing** brownish infuscated; stigma brown, long (0.70 mm), almost parallel-sided and narrow (0.06–0.07 mm), slightly narrower than cell r_1 (about 0.09–0.10 mm broad at narrowest point). Distance between tips of veins R_1 and R_{2+3} about 0.30 mm. Squama light brownish with dark fringes, halter yellowish brown. **Abdomen** blackish-brown, dark and almost velvety brown in dorsal view and dark brownish grey in lateral view, microtrichose, pale setose, dorsally with short and partly black setae, posteromarginals on sides of tergites 2–5 much longer than segment, on subsequent tergites subequally long as their corresponding segments. Genitalia (Figs 24, 25) with hypandrial processes broad; postgonites elongate-trapezoid in shape, median extension of postgonites saw-toothed and setose ventrally; left phallic hook long, right hook strongly reduced. **Female**. Abdominal setae much shorter than in male. Tergites 6–8 polished in basal 1/4 to 1/2, sternite 8 polished, lateral parts of tergites 2–5 slightly subshining, otherwise abdomen microtrichose. Length: body 2.7–3.3 mm, wing 2.4–3.1 mm.

Remarks. All specimens of type series are rather damaged, devoid of most mesoscutal setae; however, their

arrangement, number and length may be judged from their articulations and several setae present on some specimens. The species described above is very similar to *B. spuria* and differential characters are given in the key. Most striking differences are in the shape of male genitalia: the hypandrial processes are much narrower in *B. spuria* than in the above described species and the median extension of postgonites is saw-toothed in *B. thailandica* **sp. nov.** and smooth in *B. spuria*. Moreover, the ventral apodeme (not illustrated) is very narrow in dorsal view in *B. thailandica* **sp. nov.** (not broader than phallic hook), whereas it is much broader (about three times broader than phallic hook) in *B. spuria*. Another peculiar feature of the species is the setose median extensions of postgonites.

FIGURES 27–28. Phallus and postgonites (paratypes, photographs by T. Saigusa). **27**. *Bicellaria flavipes* Kato. **28**. *B. japonica* Kato.

Bicellaria uvens Melander

Bicellaria uvens Melander, 1928: 74.
Bicellaria bisetosa Tuomikoski, 1936: 84.
Bicellaria montana Kato, 1971: 283, **syn. nov.**

Distribution, diagnosis. See Barták and Kubík (2013).

Additional material examined. Japan: 1♂ (dissected, "*Bicellaria montana/ uvens*, det. B.J. Sinclair 2012), Hokkaido, Daisetzusan Aizankei, 17.vii.1986, D.M. Wood, Malaise trap (CNC); **Russia**: 1♂, Magadanskaya oblast (= region), Aborigen Field Stn., 500 m, 25.vii.–10.viii.1990, D.M. Wood (CNC).

Remarks. Kato (1971) described *B. montana* from Japan, illustrating the hypandrial processes and hind leg. We found on examination that his species is identical with *B. uvens* (= *B. bisetosa* Tuomikoski) and while we have not been able to examine type material we here propose formally that *B. montana* Kato, 1971 is a junior synonym

of *B. uvens* Melander 1928. This proposal was supported by T. Saigusa (pers. comm. to B. Sinclair, 2013) who compared illustrations in Barták and Kubík (2013) with one dissected paratype of *B. montana* and stated they are almost identical. He also provided photographs of genitalia which were identical to our specimens of *B. uvens*.

Bicellaria vana Collin

Bicellaria vana Collin, 1926: 190.

Distribution and diagnosis. See Barták and Kubík (2013), published record from Asia: Yakutsk (Tuomikoski 1955).

Bicellaria woodi sp. nov.
(Fig. 26)

Type material. HOLOTYPE ♂, **Japan**, Hokkaido, Daisetsuzan Nt. Pk., Tenninkyo, 800 m, 10–14.vii.1986, D.M. Wood (CNC). **PARATYPES: Japan:** 2♀, same data as holotype (CNC, CULSP).

Diagnosis. All setae black; third antennal segment without elongate dorsal setae; 1–2 setae on each palpus; hind basitarsus very narrow and hind tibia slightly swollen in both sexes. Male hypandrial processes long and broad, strip-like. Hind tibia with two long and strong preapical (ventral and anteroventral) setae.

Etymology. The species is named in honour of collector of type series specimens, Monty D. Wood (Ottawa).

Description. Male. **Head** blackish-brown, brownish-grey microtrichose, black setose (including lower occiput). Holoptic, facets in dorsal half much larger than in ventral half, about 15–18 facets in line of contiguity of eyes. One pair of ocellar setae (lost in all specimens). Occiput rather densely and not very long coarse setose. Face slightly narrowing ventrally, dorsal part about 0.07 mm broad and ventral 0.05 mm. Clypeus slightly paler grey microtrichose. Palpus short, brown, with 1–2 setae. Labrum short, brown, polished. Antenna black, 2nd segment short setose (longest setae almost 0.12 mm); 3rd segment without elongate dorsal setae; ratio of broad part of segment 3: narrow part of segment 3: arista (at 0.01 mm resolution) = 15–16: 10–11: 19. **Thorax** blackish-brown, microtrichose, mesoscutum dark brownish black in dorsal view, prescutellar area evenly dark. All thoracic setae nearly completely rubbed out, apparently all black and coarse. Chaetotaxy: 8–9 biserial acrostichals; 8–10 uniserial dorsocentrals; some 10 setae in posthumeral and intrahumeral areas; 4–5 postpronotals; notopleuron with 7–8 setae arranged in irregular row (strong and long in front part of notopleuron); 1–2 supraalar- and 3–4 prealar; 1 postalar; at least 3 pairs of long scutellars (one preserved in one female is nearly 0.60 mm long). **Legs** including coxae black, microtrichose and black setose. Both forelegs in male missing (see female description). Hind coxa with long upright standing setae. Mid femur with sparse row of very short anteroventrals and with much stronger and longer posteroventrals subequally long as depth of femur. Mid tibia with 2 anterodorsal (one subbasal and one submedian) and 1 submedian posterodorsal setae 3X as long as depth of tibia (longest about 0.30 mm) and 2 (anterior and anteroventral) conspicuously strong but rather short preapical setae, ventral setae slightly longer than depth of tibia. Hind femur with about 20 anterodorsal and 19 anteroventral setae subequally as long as depth of femur, posteroventrals slightly shorter than anteroventrals. Hind tibia slightly swollen in apical part (0.13 mm at broadest point in comparison with 0.08 mm in basal part) much narrower than hind femur (0.19 mm at broadest point), both dorsal and ventral setae slightly longer than depth of tibia, 4–5 pairs of dorsal setae, longest posterodorsal 0.32 mm long, two strong and long preapical setae in anterior and anteroventral positions (Fig. 26). Tarsi of all legs very thin and short setose. **Wing** brownish infuscated, fore margin dark brown, especially between veins C and R_1; stigma very long (1.00 mm), almost parallel-sided and narrow (0.05 mm), narrower than cell r_1 (about 0.08 mm broad at narrowest point). Distance between tips of veins R_1 and R_{2+3} about 0.20 mm. Squama dark brown with black fringes, halter brown. **Abdomen** brown, microtrichose, entirely black setose, setae long, even those on 1st sternite unusually long. Genitalia (undissected) with hypandrial processes long and broad, strip-like (as in *B. shatalkini* sp. nov.). **Female**. Fore coxa densely setose. Fore femur with row of fine anteroventrals half as long as depth of femur, with similar row of slightly longer posteroventrals. Fore tibia with posteroventrals distinctly longer than depth of tibia and without ventral pilosity (present as usual on fore basitarsus), with 1–3 setae dorsally about twice as long

as depth of tibia. Tergites entirely pruinose including visible parts of tergites 6–7, sternite 8 polished. Length: body 3.6–3.9 mm, wing 3.4–3.6 mm.

Remarks. All specimens of type series are rather damaged, devoid of most mesoscutal setae and most abdominal setae; however, their arrangement, number and length may be judged from their articulations and from several setae present on some places on some specimens. The new species somewhat resembles *B. farkaci* **sp. nov.** in general appearance but the palpus has only 1–2 setae, female sternite 8 is polished and genitalia quite different. *Bicellaria woodi* **sp. nov.** is easily recognizable in both sexes and unique in the World fauna due to two strong preapical anterior (and anteroventral) setae on the hind tibia. We decided not to damage the only male (holotype) by genital dissection, so are unable to present a full description of the genitalia.

Key to *Bicellaria* of Asia

Note. When determining the identity of Asian species of *Bicellaria* it is important to also consult the key of Barták and Kubík (2013) to European species. The distribution of most species in the Asian part of the Palaearctic remains largely unknown and many "European" species in fact have broader distribution [for example, the surprising finding of *B. longisetosa* in the Amur region and *B. intermedia* in the Bajkal area as reported in Barták & Kubík (2013)]. It is likely that other species presently known only from Europe will eventually be found in Asia.

1 Palpus with 4 or more black setae . . . 2
- Palpus with 1–3 setae (those occurring on the palpifer are not counted) . . . 5
2 (1) Halter yellow. Mesoscutum with stripes. Hind femur spinose. Male phallic hooks curiously shaped (Fig. 7) (Israel) . . . ***B. femorata* Collin**
- Halter brown to blackish-brown. Mesoscutum without stripes. Hind femur with only ordinary setae. Male phallic hooks different . . . 3
3 (2) Third antennal segment without long dorsal setae. Male without hypandrial processes (Fig. 6). Female with pruinose visible part of 8th sternite (China: Yunnan) . . . ***B. farkaci* sp. nov.**
- Third antennal segment with long dorsal seta(e) (if without this seta(e), follow couplet 5). Male with hypandrial processes. Female with visible part of 8th sternite polished . . . 4
4 (3) Second antennal segment without conspicuously long lateral seta. Altogether 6–7 setae in intra- and posthumeral areas. Male hypandrial processes very narrow at apex, long setose even on base (see Kato 1971, fig. 4A) (Japan) . . . ***B. japonica* Kato**
- Second antennal segment with at least 1 very long lateral or lateroventral seta 0.2–0.3 mm long. More than 10 setae in intra- and posthumeral areas. Male hypandrial processes broad at apex, short setose on base (see Barták & Kubík 2013, fig. 20) (Europe, East Palaearctic) . . . ***B. longisetosa* Chvála**
5 (1) Hind basitarsus distinctly swollen, more than 2X as broad as hind tarsomere 3. Face very narrow (0.02 mm, about as 1–2 facets). Fore tibia without posteroventrals on apical third in exactly posterior view (Japan) . . . ***B. flavipes* Kato**
- Hind basitarsus not swollen, less than 2X as broad as hind tarsomere 3. Other characters different (except *B. vana* and *B. koreana* sp. nov.) . . . 6
6 (5) Third antennal segment with 1 or more dorsal seta(e) (Europe, Siberia) . . . ***B. intermedia* Lundbeck**
- Third antennal segment without long seta(e) dorsally . . . 7
7 (6) Fore tibia with ventral pilosity on apical third at most slightly shorter than on fore basitarsus, posteroventral setae at most as long as pilosity and usually shorter than depth of tibia (observe in exactly posterior view) . . . 8
- Fore tibia with ventral pilosity on apical third at most 1/3 as long as on fore basitarsus and/or posteroventral setae at least 2X as long as pilosity and usually longer than depth of tibia . . . 9
8 (7) Body entirely black setose. Male phallic hook slightly bent (see Barták & Kubík 2013, fig. 43) . . . ***B. vana* Collin**
- At least first two abdominal segments pale setose on sides. Male phallic hook strongly bent (Fig. 20) (East Palaearctic) . . . ***B. koreana* sp. nov.**
9 (7) Abdomen partly pale setose (at least on sides of tergite 2) . . . 10
- Abdomen entirely black setose . . . 13
10 (9) Halter brown to yellowish-brown. Legs polished. Male: two phallic hooks present, hoe-like broadened (best visible from behind—see Barták & Kubík 2013, fig. 35) (Palaearctic species?) . . . ***B. stackelbergi* Tuomikoski**
- Halter yellow. Legs microtrichose. Male: 1–2 hook(s) of phallus present, if two, then not broadened . . . 11
11 (10) Hind tibia very slightly swollen. Male left epandrial lamella large, almost globular (Fig. 11), hypandrial processes bifurcate apically (Fig. 10). Female 5th tergite microtrichose (Uzbekistan) . . . ***B. globulicauda* sp. nov.**
- Hind tibia distinctly swollen. Male left epandrial lamella triangle-shaped as usual, not conspicuously large, hypandrial processes simple. Female 5th tergite polished . . . 12
12 (11) Setae on mesoscutum all pale (Uzbekistan) . . . ***B. chimganensis* sp. nov.**
- Setae on mesoscutum all black (Uzbekistan) . . . ***B. amankutanensis* sp. nov.**
13 (9) Hind tibia with 2 long and strong anteroventral/ventral setae (Fig. 26) (Japan) . . . ***B. woodi* sp. nov.**
- Hind tibia without conspicuously long and strong anteroventral/ventral setae . . . 14

14 (13) Male . . . 15
- Female . . . 21
15 (14) Two phallic hooks long, protruding beyond postgonites with tip visible below postgonites in lateral view, the shorter hook more than 2/3 as long as the longer hook. Usually more than 15 setae in intrahumeral and posthumeral areas. Hypandrial processes either broad or narrow and apically axe-like broadened . . . 16
- Only a single long phallic hook present, the shorter hook less than 1/3 as the longer hook, not protruding beyond postgonites and not visible below postgonites inlateral view. Usually less than 14 setae in intrahumeral and posthumeral areas (except *B. setitibia* **sp. nov.**). Hypandrial processes narrow or broad (*B. thailandica* **sp. nov.**) . . . 18
16 (15) Postgonites broadened laterally, narrow in lateral view, hypandrial processes very short (usually less than 0.11 mm) (see Barták & Kubík 2013, figs 41, 42) (Holarctic species) . . . ***B. uvens* Melander**
- Postgonites triangle-shaped in lateral view, hypandrial processes longer (usually more than 0.12 mm) . . . 17
17 (16) Hypandrial processes narrow, axe-like broadened apically, with a single long seta in the middle of apex. Postgonites elongate triangular (Fig. 15) (Georgia) . . . ***B. kovalevi* sp. nov.**
- Hypandrial processes strip-like, not broadened apically, without any long seta. Postgonites short triangular (Fig. 22) (East Palaearctic) . . . ***B. shatalkini* sp. nov.**
18 (15) Mid tibia with 4–5 pairs of long setae dorsally, at least one pair on apical fourth of tibia. About 15 setae in posthumeral and intrahumeral areas. Hypopygium in Figs 12 and 17 (North Ossetia-Alania, Georgia) . . . ***B. setitibia* sp. nov.**
- Mid tibia with at most 3 pairs of long setae dorsally, lacking even one pair on apical fourth of tibia. Usually less than 14 setae in posthumeral and intrahumeral areas (except some *B. ingrata*) . . . 19
19 (18) Legs with generally longer setae (even on hind basitarsi). Hypandrial processes broad, median extensions of postgonites setose and saw-toothed ventrally (Figs 24, 25) and ventral apodeme very narrow in dorsal view (about as broad as phallic hook) (Thailand) . . . ***B. thailandica* sp. nov.**
- Legs with generally shorter setae (including hind basitarsi). Male hypandrial processes long and narrow. Remaining characters in different combination . . . 20
20 (19) Face narrower (usually less than 0.04 mm, diameter of 2–3 facets). Prescutellar depression evenly dark. Usually less than 9 setae in intrahumeral and posthumeral areas. Median extensions of postgonites smooth ventrally (see Barták & Kubík 2013, fig. 33) (Palaearctic?) . . . ***B. spuria* (Fallén)**
- Face broader (usually more than 0.05 mm, diameter of 4–5 facets). Prescutellar depression lighter than disc of scutum. Usually more than 10 setae in intrahumeral and posthumeral areas. Median extensions of postgonites saw-toothed ventrally (Fig. 13) (Israel) . . . ***B. ingrata* Collin**
21 (14) Mid tibia with 4–5 pairs of long setae dorsally, at least one pair on apical fourth of tibia. About 10 setae in posthumeral and intrahumeral areas, abdominal tergites 6–8 shining except dorsoapical corner . . . ***B. setitibia* sp. nov.**
- Mid tibia with at most 3 pairs of long setae dorsally, lacking one pair on apical fourth of tibia (females belonging to this section are difficult to differentiate without associated males) . . . 22
22 (21) Legs with generally longer setae (even on hind basitarsi), ground ciliation longer than diameter of limbs. Halter yellowish-brown. . . . ***B. thailandica* sp. nov.**
- Legs with generally shorter setae (including hind basitarsi), ground ciliation at most as long as diameter of limbs. Halter brown to brownish-black . . . 23
23 (22) Usually 2 dorsal setae on fore trochanter. Usually more than 9 setae in posthumeral and intrahumeral areas. Hind tibia swollen (usually about 0.13 mm at broadest point) . . . ***B. uvens* Melander**
- Not as above . . . 24
24 (23) Face broad (usually more than 0.05 mm, diameter of 4–5 facets). Usually more than 9 setae in posthumeral and intrahumeral areas. Legs longer setose (mid femur in middle with anteroventrals at least half as long as depth of femur) . ***B. ingrata* Collin**
- Face narrow (usually less than 0.04 mm, diameter of 2–3 facets). Usually less than 8 setae in posthumeral and intrahumeral areas. Legs shorter setose (mid femur in middle with anteroventrals at most ¼ as long as depth of femur) . . . 25
25 (24) Abdominal tergite 8 entirely microtrichose . . . ***B. shatalkini* sp. nov.**
- **A**bdominal tergite 8 shining at least on basal third. . . . 26
26 (25) Broad part of third antennal segment usually shorter than 0.11 mm. Hind basitarsus slightly broader than second hind tarsomere . . . ***B. kovalevi* sp. nov.**
- Broad part of third antennal segment usually longer than 0.12 mm. Hind basitarsus equally thick as second hind tarsomere . . . ***B. spuria* (Fallén)**

Unidentified specimens

***Bicellaria* sp. 1: Russia: Krasnoyarsk Territory**: 1♂, Dudinka (NHMH). External characters similar to *B. uvens*, however, hypandrium as in *B. spuria* (processes narrow, short setose, slightly V-shaped divergent), postgonites shortened (less than 2X as long as high, symmetrical, only left phallic hook present, long and broad, simply bent at apex.

***Bicellaria* sp. 2: Georgia: Adzharia**: 1♂, env. Kobuleti, Kintrishskiy zapovednik (= Nature Reserve), 26.v.1971, V. Kovalev (ZMMU). Specimen superficially similar to *B. spuria*: entirely black setose, third antennal segment without any long dorsal seta, face medium broad—0.05 mm, mesoscutal setae rather long, some 8 setae in

intrahumeral and posthumeral areas, 1–3 rather long dorsal setae on each tibia, hind tibia swollen apically—0.15 mm broad at broadest point, two basal segments of hind tarsi slightly swollen—basitarsus 0.10 mm broad. However, genitalia peculiar: hypandrium with short and long setose processes and with rounded and broad additional process between them; postgonites rounded trapezoid with slightly pronounced dorsoapical corner; two equally shaped, long and simply bent phallic hooks; median extension of postgonites with several long teeth visible in ventral view.

***Bicellara* sp. 3: Russia: Primorskiy Territory**: 1♂, Yuzhnoe Primor'e, Kamenushka, 13.vi.1984, A. Shatalkin (ZMMU). Specimen corresponding in all details with the description of *B. flavipes*, but genitalia different, resembling somewhat *B. intermedia*: hypandrial processes long and narrow, with several short setae, two long and unequally bent phallic hooks.

All three specimens mentioned above were not formally described as new species because only one specimen was available to us.

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