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Three new species of the *Acantholycosa*-complex (Aranei: Lycosidae) from the south of the Russian Far East

Три новых вида из *Acantholycosa*-комплекса (Aranei: Lycosidae) с юга Дальнего Востока России

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KEY WORDS: Araneae, Asia, endemism, Lycosidae, new species, Sikhote-Alin Mt. Range, taxonomy, wolf spiders.

КЛЮЧЕВЫЕ СЛОВА: Araneae, Азия, эндемизм, Lycosidae, новые виды, хребет Сихотэ-Алинь, таксономия, пауки-волки.

ABSTRACT: Three new species from the south of the Russian Far East belonging to the *Acantholycosa*-complex are diagnosed, described and illustrated: *Acantholycosa irinae* sp.n. (♂♀), *A. marusiki* sp.n. (♂♀) and *Sibirocosa arsenyevi* sp.n. (♂♀). Endemism of the wolf spiders of the *Acantholycosa*-complex from the Sikhote-Alin Mt. Range is discussed.

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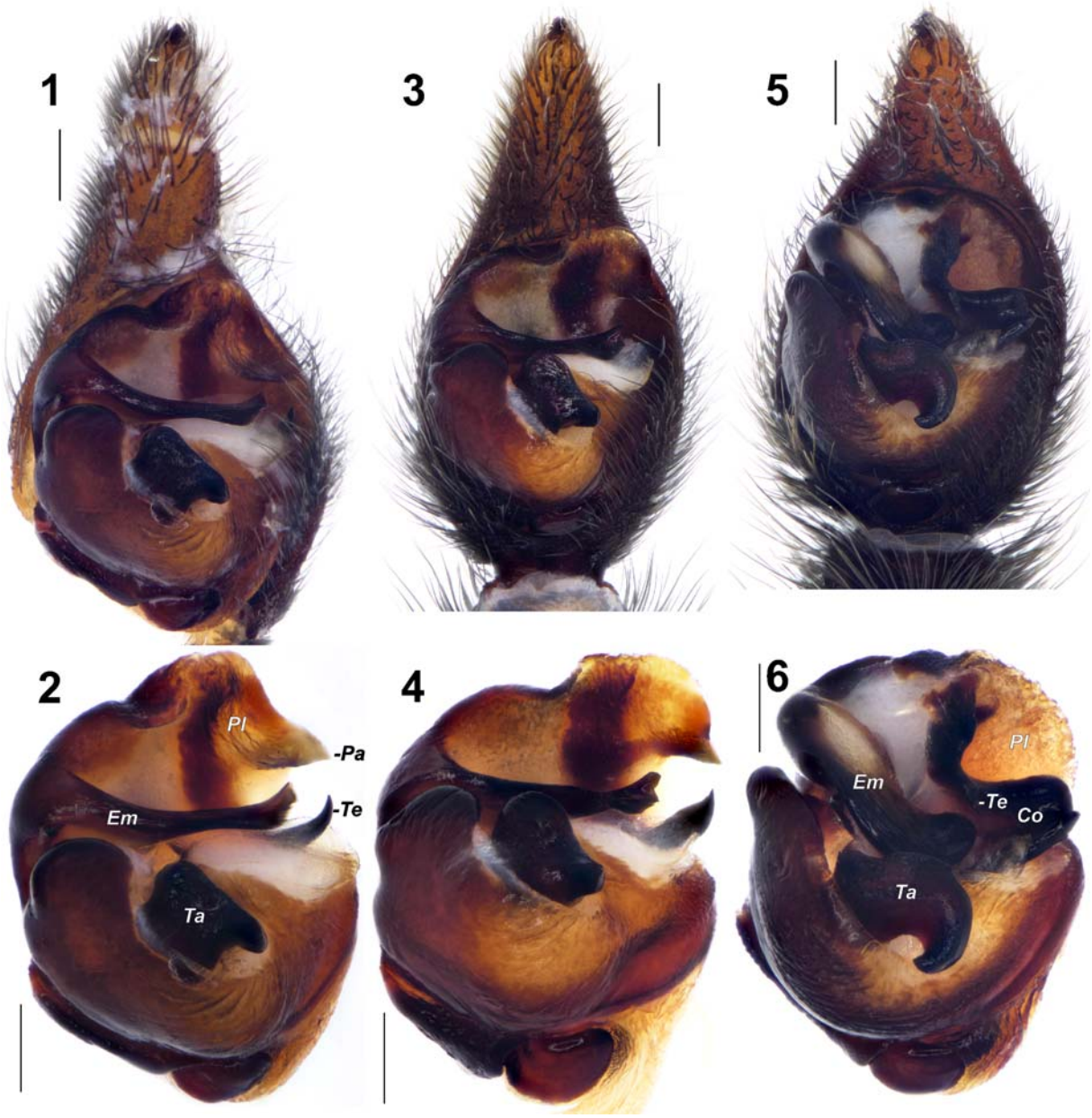
РЕЗЮМЕ: Три новых вида, принадлежащих к *Acantholycosa*-комплексу, диагностированы, описаны и иллюстрированы с юга Русского Дальнего Востока: *Acantholycosa irinae* sp.n. (♂♀), *A. marusiki* sp.n. (♂♀) и *Sibirocosa arsenyevi* sp.n. (♂♀). Обсуждён эндемизм у пауков-волков из *Acantholycosa*-комплекса хребта Сихотэ-Алинь.

Introduction

According to Marusik *et al.* [2015], *Acantholycosa* Dahl, 1908 and the related five genera, viz. *Gulocosa* Marusik, Azarkina et Koponen, 2015; *Melecosa* Marusik, Azarkina et Koponen, 2015; *Mongolicosa* Marusik, Azarkina et Koponen, 2004; *Pyrenecosa* Marusik, Azarkina et Koponen, 2015 and *Sibirocosa* Marusik, Azarkina et Koponen, 2004, form the *Acantholycosa*-complex, of which members can easily be recognized by having four or more pairs of ventral spines on tibiae I. In addition, representatives of this complex are characterized by a specific conformation of the copulatory organs: i.e., the modified palea, the wide embolus, and apical pockets of the epigyne being separated from fovea [Omelko *et al.*, 2016]. Congeners of the *Acantholycosa*-complex are relatively well-studied [Marusik *et al.*, 2004, 2015; Marusik, Omelko, 2011, 2017; Fomichev, Marusik, 2018]. All the species of this group, with a few exceptions, inhabit alpine screes only (up to 4000 m a.s.l.) and usually are local endemics [Marusik *et al.*, 2004; Fomichev, Marusik, 2018]. In the southern part of the Russian Far East, this generic complex is represented by the genera *Acantholycosa*, *Gulocosa* and *Sibirocosa* [Marusik *et al.*, 2015]. The most speciose genus is *Acantholycosa*, consisting of 31 valid species and a subspecies within the Holarctic Region [WSC, 2019]. *Sibirocosa* is a relatively small genus, currently including seven valid species from Eastern Siberia and the Far East [WSC, 2019]. *Gulocosa* is a monotypic genus, endemic to the southern part of the Russian Far East [Marusik *et al.*, 2015]. During the 2019 field trip to the Russian Far East, the authors collected several new species belonging to the *Acantholycosa*-complex.

The aims of the present paper are (1) to provide detailed descriptions of three new species, and (2) to discuss geographic distribution of the wolf spiders of the *Acantholycosa*-complex in the south of the Russian Far East.



Figs 1–6. Bulbus of *Acantholycosa irinae* sp.n. (1–2), *A. marusiki* sp.n., (3–4) and *Sibirocosa arsenyevi* sp.n. (5–6): 1, 3, 5 — palp, ventral view; 2, 4, 6 — bulbus, ventral view. Scale: 0.2 mm. Abbreviations: *Em* — embolus, *Co* — conductor, *Pa* — paleal apophysis, *Pl* — palea, *Ta* —tegular apophysis, *Te* — terminal apophysis.

Рис. 1–6. Бульбус *Acantholycosa irinae* sp.n. (1–2), *A. marusiki* sp.n., (3–4) и *Sibirocosa arsenyevi* sp.n. (5–6): 1, 3, 5 — пальпа, вентрально; 2, 4, 6 — бульбус, вентрально. Масштаб: 0.2 мм. Сокращения: *Em* — эмболюс, *Co* — кондуктор, *Pa* — отросток палеи, *Pl* — палея, *Ta* — тегулярный отросток, *Te* — терминальный отросток.

Material and methods

Specimens were photographed by means of a Nikon DS-Ri2 camera attached to a Nikon SMZ25 stereomicroscope at the Far Eastern Federal University, Vladivostok, Russia. Photographs were taken in dishes with soft white paper at the bottom, filled with alcohol. Digital images were montaged by using Zerene Stacker software (http://zerenesystems.com/cms/stacker). Epigynes were cleared in a KOH/water solution. All measurements are in millimeters. All the examined material is deposited in the Zoological Museum of the Moscow State University, Moscow, Russia (ZMMU; curator: K.G. Mikhailov) and the Institute of Systematics and Ecology of Animals SB RAS, Novosibirsk, Russia (ISEA; curator: G.N. Azarkina).

Abbreviations used in the text and figure plates and the format of descriptions follow those by Marusik *et al.* [2004]: *Leg segments*: Fe — femur, Pa — patella, Mt — metatarsus, Ti — tibia, Ta — tarsus. *Spination*: d — dorsal, p — prolateral, r — retrolateral, v — ventral. *Copulatory organs*: *Ap* — apical pocket, *Bc* — basal part of conductor, *Cd* —

Figs 7–12. Bulbus of *Acantholycosa irinae* sp.n. (7–8), *A. marusiki* sp.n. (9–10), embolic devision, tegulum and tegular apophysis of *Sibirocosa arsenyevi* sp.n. (11–12): 7, 9 — retrolateral view; 8, 10 — anterior view; 11 — embolic devision, posterior view; 12 – tegulum and tegular apophysis, terminal view. Scale: 0.2 mm. Abbreviations: *Em* — embolus, *Et* — embolic tooth, *Co* — conductor, *Ie* — inner part of embolus, *Pl* — palea, *Ta* — tegular apophysis, *Te* — terminal apophysis.

Рис. 7–12. Бульбус *Acantholycosa irinae* sp.n. (7–8), *A. marusiki* sp.n. (9–10), эмболюсный отдел, тегулум и тегулярный отросток *Sibirocosa arsenyevi* sp.n. (11–12): 7, 9 — ретролатерально; 8, 10 — спереди; 11 — эмболюсный отдел, сзади; 12 — тегулюм и тегулярный отросток, вид сверху. Масштаб: 0,2 мм. Сокращения: *Em* — эмболюс, *Et* — зуб эмболюса, *Co* — кондуктор, *Ie* — внутренняя часть эмболюса, *Pl* — палея, *Ta* — тегулярный отросток, *Te* — терминальный отросток.

copulatory duct, *Co* — conductor, *Em* — embolus, *Et* — embolic tooth, *Ie* — inner part of embolus, *Fo* — fovea, *Le* — lips of epigyne, *Lm* — lateral margins of fovea, *Pa* — paleal apophysis, *Pl* — palea, *Re* — receptacle, *Sb* — septal base, *Sd* — sperm duct, *Ss* — septal stem, *Ta* — tegular apophysis, *Te* — terminal apophysis.

Descriptions

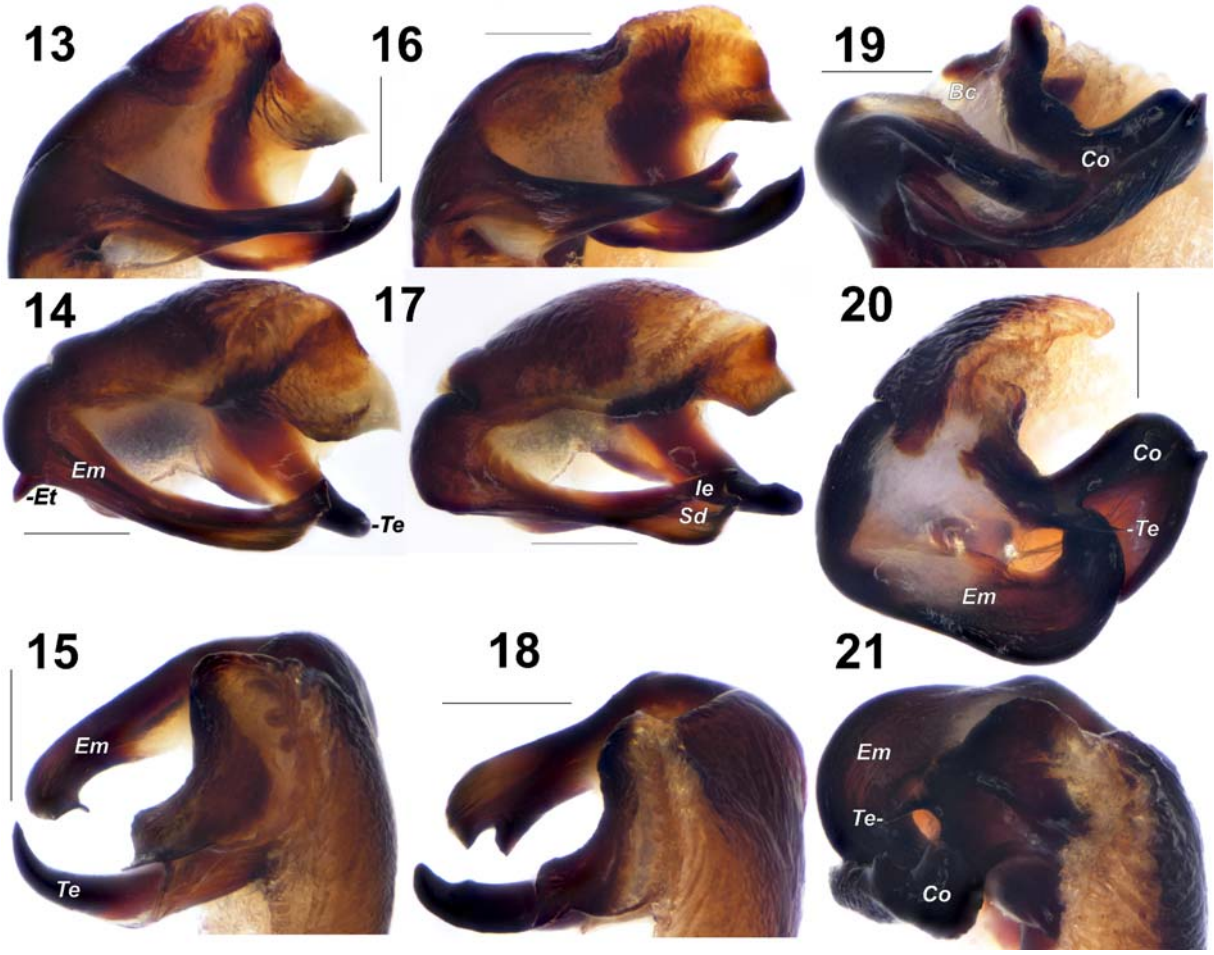
Acantholycosa irinae **sp.n.**

Figs 1–2, 7–8, 13–15, 22–24, 48–49, 59, Map.

TYPES. Holotype ♂ (ZMMU) from Russia, Maritime Territory, Sikhote-Alin Mt. Range, Alekseevskiy Mountain Range, Ol'khovaya Mt. (43°20.432′N, 133°39.441′E), scree, 1460–1600 m a.s.l., 3.07.2019, M.M. Omelko, A.A. Fomichev. Paratypes: 1 ♀ (ZMMU) and 1 ♀ (ISEA 001.8416), together with the holotype.

ETYMOLOGY. The specific name is dedicated to Ms Irina B. Fomicheva (Novosibirsk, Russia), the first author's mother.

DIAGNOSIS. *A. irinae* sp.n. is most similar to *A. aborigenica* Zyuzin et Marusik, 1988 in having the embolic tip being bent up and the tegular apophysis lacking an apical arm, and in the epyginal conformation. The males of the new species can be distinguished from those of *A. aborigenica* by the shape of tegular apophysis, with a longer basal arm (cf. Figs 1–2 and 31, 36, 37), the longer paleal apophysis (cf. Figs 2 and 31), the larger terminal apophysis (cf. Figs 13–15 and 32–34) and by the presence of an embolic tooth near the embolic base. The females can easily be distinguished from those of *A. aborigenica* by having a wider space between the septal base and lateral margins of fovea, and the septal stem not reaching the apical pocket (*vs*. reaching the apical pocket in *A. aborigenica*) (cf. Figs 22–24 and 38–40).



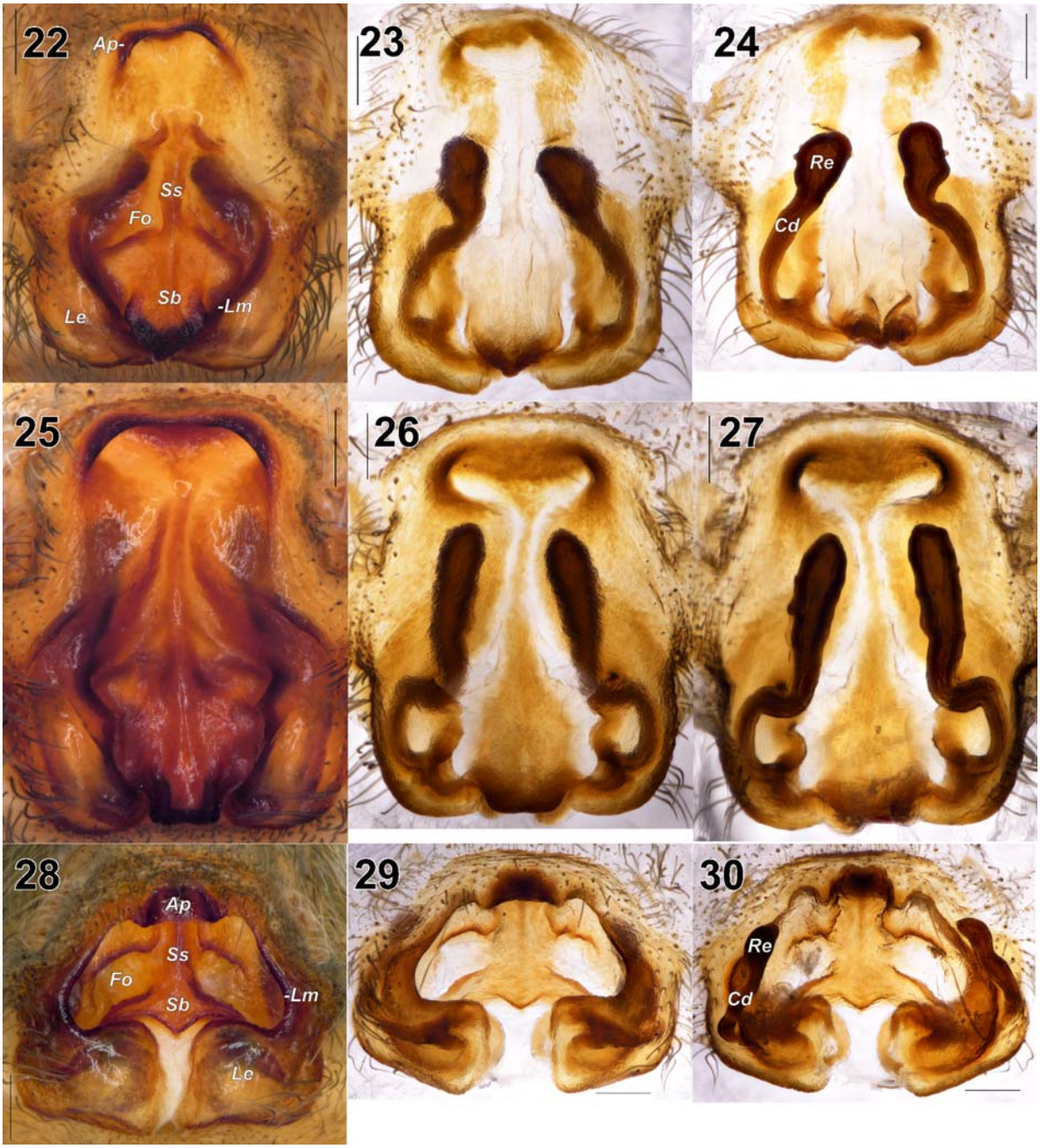
Figs 13–21. Embolic division of *Acantholycosa irinae* sp.n. (13–15), *A. marusiki* sp.n. (16–18) and *Sibirocosa arsenyevi* sp.n. (19–21): 13, 16, 19 — ventral view; 14, 17, 20 — anterior view; 15, 18, 21 — retrolateral view. Scale: 0.2 mm. Abbreviations: *Bc* — basal part of conductor, *Co* — conductor, *Em* — embolus, *Et* — embolic tooth, *Ie* — inner part of embolus, *Sd* — sperm duct, *Te* — terminal apophysis.

Рис. 13–21. Эмболюсный отдел *Acantholycosa irinae* sp.n. (13–15), *A. marusiki* sp.n. (16–18) и *Sibirocosa arsenyevi* sp.n. (19–21): 13, 16, 19 — вентрально; 14, 17, 20 — спереди; 15, 18, 21 — ретролатерально. Масштаб: 0,2 мм. Сокращения: *Bc* — базальная часть кондуктора, *Co* — кондуктор, *Em* — эмболюс, *Et* — зуб эмболюса, *Ie* — внутренняя часть эмболюса, *Sd* — проток спермы, *Te* — терминальный отросток.

DISTRIBUTION. Known from the type locality only (Map).

DESCRIPTION. Male (holotype). Carapace 4.14 long, 3.26 wide. Total length 7.72. Carapace dark brown with light brown median band widened around fovea and behind eye area. Lateral stripes almost invisible. Eye field black. Chelicerae dark brown, maxillae light brown, labium brown. Sternum dark brown, almost black, without stripes and spots. Abdomen dorsally dark gray with light brown cardiac mark and series of spots and stripes composed by white hairs; laterally dark gray, ventrally dark brown with two longitudinal rows of irregular yellow spots. Leg measurements (holotype): I missing; II ? (3.99 + 3.82, Ti, Mt and Ta missing); III 15.92 (3.85 + 1.53 + 3.38 + 4.81 + 2.35); IV 19.69 (4.75 + 1.52 + 4.18 + 6.97 + 2.27). Both legs I missing, therefore spination could not be determined. All leg segments dark brown, with light patches and rings, except for light brown coxae and brown metatarsi. Palp as shown in Figs 1–2, 7–8, 13–15. Cymbium with one claw. Tegular apophysis (*Ta*) small, without an apical arm. Terminal apophysis (*Te*) narrow, long, claw-shaped. Palea with a large triangular apophysis (*Pa*). Embolus wide, with a large tooth at its base (*Et*).

Female (paratypes). Carapace 4.10–4.34 long, 3.25–3.27 wide. Total length 8.20–8.66. Carapace coloration as in the male, but lateral stripes more visible. Chelicerae brown, with thin black longitudinal stripe. Maxillae and labium brown, visibly darker at their basal parts. Sternum dark brown, with poorly visible longitudinal stripe. Abdomen coloration as in the male but lighter. Leg measurements: I 14.01 (3.73 + 1.60 + 3.69 + 3.41 + 1.58); II 13.71 (3.69 + 1.54 + 3.45 + 3.49 + 1.54); III 13.70 (3.42 + 1.54 + 3.00 + 4.13 + 1.61); IV 18.67 (4.51 + 1.46 + 4.28 + 6.24 + 2.18). Spination of leg I: Fe 3d, 2p, 2(1)r; Pa 1r; Ti 1p, 1r, 5-5v; Mt 2p, 2r, 2-2v. Legs coloration as in the male but lighter. Epigyne as shown in Figs 22–24. Fovea (*Fo*) and septal base (*Sb*) diamond-shaped. Fovea as wide as long. Septum with a distinct stem (*Ss*), which is shorter than the septal base. Lips



Figs 22–30. Epigyne of *Acantholycosa irinae* sp.n. (22–24), *A. marusiki* sp.n. (25–27) and *Sibirocosa arsenyevi* sp.n. (28–30): 22, 25, 28 — intact, ventral view; 23, 26, 29 — macerated, ventral view; 24, 27, 30 — macerated, dorsal view. Scale: 0.2 mm. Abbreviations: *Ap* — apical pocket, *Cd* — copulatory duct, *Fo* — fovea, *Le* — lips of epigyne, *Lm* — lateral margins of fovea, *Re* — receptacle, *Sb* — septal base, *Ss* — septal stem.

Рис. 22–30. Эпигина *Acantholycosa irinae* sp.n. (22–24), *A. marusiki* sp.n. (25–27) и *Sibirocosa arsenyevi* sp.n. (28–30): 22, 25, 28 — интактная, вентрально; 23, 26, 29 — мацерированная, вентрально; 24, 27, 30 — мацерированная, дорзально. Масштаб: 0,2 мм. Сокращения: *Ap* — апикальный карман, *Cd* — копулятивный проток, *Fo* — ямка, *Le* — губы эпигины, *Lm* — латеральные края ямки, *Re* — рецептакула, *Sb* — основание септума, *Ss* — стебель септума.

Map. Type localities of *Acantholycosa irinae* sp.n. (circle), *A. marusiki* sp.n. (square) and *Sibirocosa arsenyevi* sp.n. (triangle).

Карта. Типовые локалитеты *Acantholycosa irinae* sp.n. (кружок), *A. marusiki* sp.n. (квадрат) и *Sibirocosa arsenyevi* sp.n. (треугольник).

(*Le*) almost touching each other. Apical pocket (*Ap*) large, as long as septal stem, with two distinct hoods. Receptacles (*Re*) droplet-shaped, clearly delineated from copulatory ducts (*Cd*). Copulatory ducts twice as long as receptacles.

Acantholycosa marusiki **sp.n.**
Figs 3–4, 9–10, 16–18, 25–27, 50–51, 54–55, 56–58, Map.

TYPES. Holotype ♂ (ZMMU) from Russia, Maritime Territory, Sikhote-Alin Mt. Range, Snezhnaya Mt. (43°44.064′N, 134° 25.804′E), scree, 1440–1680 m a.s.l., 6–8.07.2019, M.M. Omelko, A.A. Fomichev. Paratypes: 7 ♂♂, 1 ♀ (ZMMU) and 8 ♂♂, 2 ♀♀ (ISEA 001.8417), together with the holotype.

ETYMOLOGY. The specific name is a patronym in honour of the famous Russian arachnologist, our mentor and friend Yuri M. Marusik (Magadan, Russia) for his substantial contribution to the study of the Palaearctic wolf spiders.

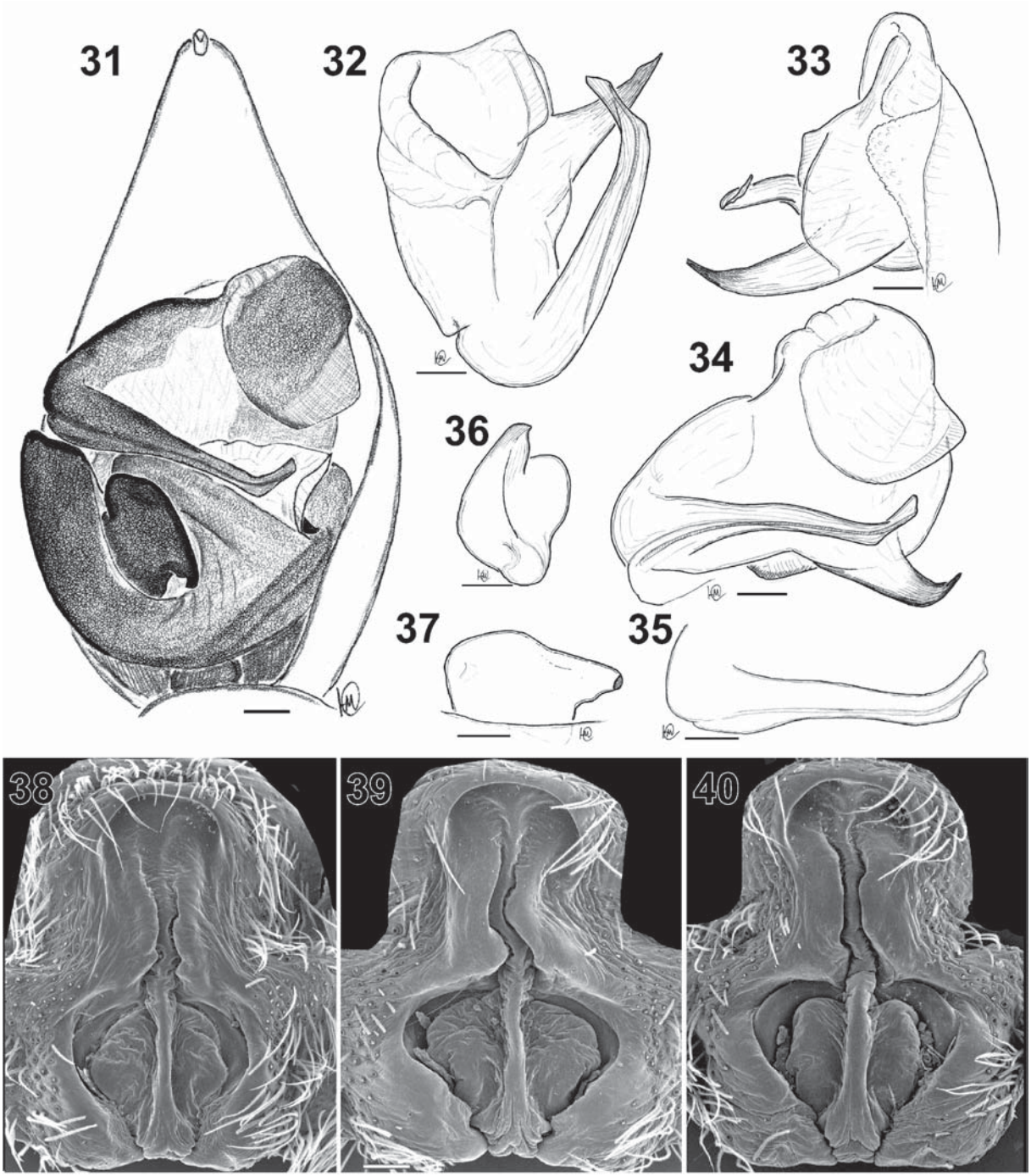
DIAGNOSIS. *A. marusiki* sp.n. is closely related to *A. azarkinae* Marusik et Omelko, 2011 and *A. valeriae* Omelko, Komisarenko et Marusik, 2016. The males of the new species can be distinguished from both related species by having the small, sharply pointed paleal apophysis (*vs*. absent in *A. valeriae*; wide and rounded in *A. azarkinae*) (cf. Figs 4, 16, 17 with figs 9, 15 in Omelko *et al.* [2016] and figs 3, 9 in Marusik & Omelko [2011]). The males of *A. marusiki* sp.n. can also be differentiated from those of *A. azarkinae* by the shape of tegular apophysis, with a curved retrolateral edge (*vs*. straight) and the embolus being significantly wider at its base in the new species (cf. Figs 3, 4, 16 with figs 1, 3, 9 in Marusik & Omelko [2011]). The males of *A. marusiki* sp.n. differ from those of *A. valeriae* in having dense black pubescence on legs I (Fig. 55), the straight embolus (*vs*. curved proximally) and the rounded upper part of tegular apophysis (*vs*. pointed) (cf. Fig. 16 with fig. 9 in Omelko *et al.* [2016]). The females of the new species can be separated from those of *A. azarkinae* by curved lateral edges of the fovea, the C-shaped copulatory ducts and the septal stem starting from the lower edge of septal base (*vs*. from the upper edge in both closely related species) (cf. Figs 25–27 with figs 26–28 in Marusik & Omelko [2011] and figs 24–26 in Omelko *et al.* [2016]) . Finally, the females of the new species can be easily distinguished from *A. valeriae* by the apical pocket having two hoods (cf. Fig. 25 with fig. 21 in Omelko *et al.* [2016]).

DISTRIBUTION. Known from the type locality only (Map).

DESCRIPTION. Male (holotype). Carapace 4.17 (3.83–4.20) long, 3.22 (2.92–3.34) wide; total length 7.63 (6.93–7.78) (holotype/size variation). Carapace dark brown, with light brown median band widened around fovea and behind eye area. Lateral stripes poorly visible. Median band and lateral sides of carapace covered with white hairs. Eye field black. Abdomen dorsally black, with brown cardiac mark and series of spots and stripes composed by white hairs; laterally grayish with white pubescence; ventrally brown with two rows of irregular yellow spots. Chelicerae dark brown, with light brown lines. Maxillae yellowish, labium dark brown. Sternum dark brown, with yellowish longitudinal stripe. Leg measurements (holotype): I 13.68 (3.61 + 1.51 + 3.52 + 3.31 + 1.73); II 13.66 (3.67 + 1.50 + 3.30 + 3.58 + 1.61); III 13.51 (3.44 + 1.37 + 3.06 + 4.03 + 1.61); IV 17.73 (4.37 + 1.46 + 3.79 + 5.93 + 2.18). Spination of leg I: Fe 3d, 2p, 2r; Pa 1r; Ti 1p, 1r, 5-5v; Mt 2p, 1r, 2-2v. Tibia I and metatarsi I with very dense black pubescence (Fig. 55). All leg segments dark brown with light spots and rings, except for yellow coxae (Fig. 51) and light brown tarsi. Palp as shown in Figs 3–4, 9–10, 16–18. Cymbium with 1 large claw. Tegular apophysis (*Ta*) small, without apical arm and with a short basal arm. Terminal apophysis (*Te*) large, claw-shaped. Palea with small triangular apophysis (*Pa*). Embolus twisted near the tip, without basal spine, tip subdivided into two lobes.

Female (paratypes). Carapace 4.50–4.65 long, 3.43–3.65 wide. Total length 9.00–10.03. Coloration as in the males, but generally lighter. Number of white hairs on carapace lower than in males. Leg measurements: I 14.73 (3.81 + 1.76 + 3.91 + 3.52 + 1.73); II 13.91 (3.76 + 1.65 + 3.37 + 3.47 + 1.66); III 14.14 (3.59 + 1.48 + 3.12 + 4.20 + 1.75); IV 19.11 (4.58 + 1.58 + 4.19 + 6.44 + 2.32). Spination of leg I: Fe 3d, 2p, 2r; Pa 1r; Ti 1p, 1r, 5-5v; Mt 1p, 2r, 2-2v. Leg coloration as in the males, but lighter and less contrast. Epigyne as shown in Figs 25–27. Fovea 1.5 times longer than wide. Septum with large base (as long as septal stem) and distinct stem. Lips not touching each other. Apical pocket as wide as fovea, with two hoods. Receptacles elongate without distinct heads. Copulatory ducts twice shorter than receptacles, C-shaped.

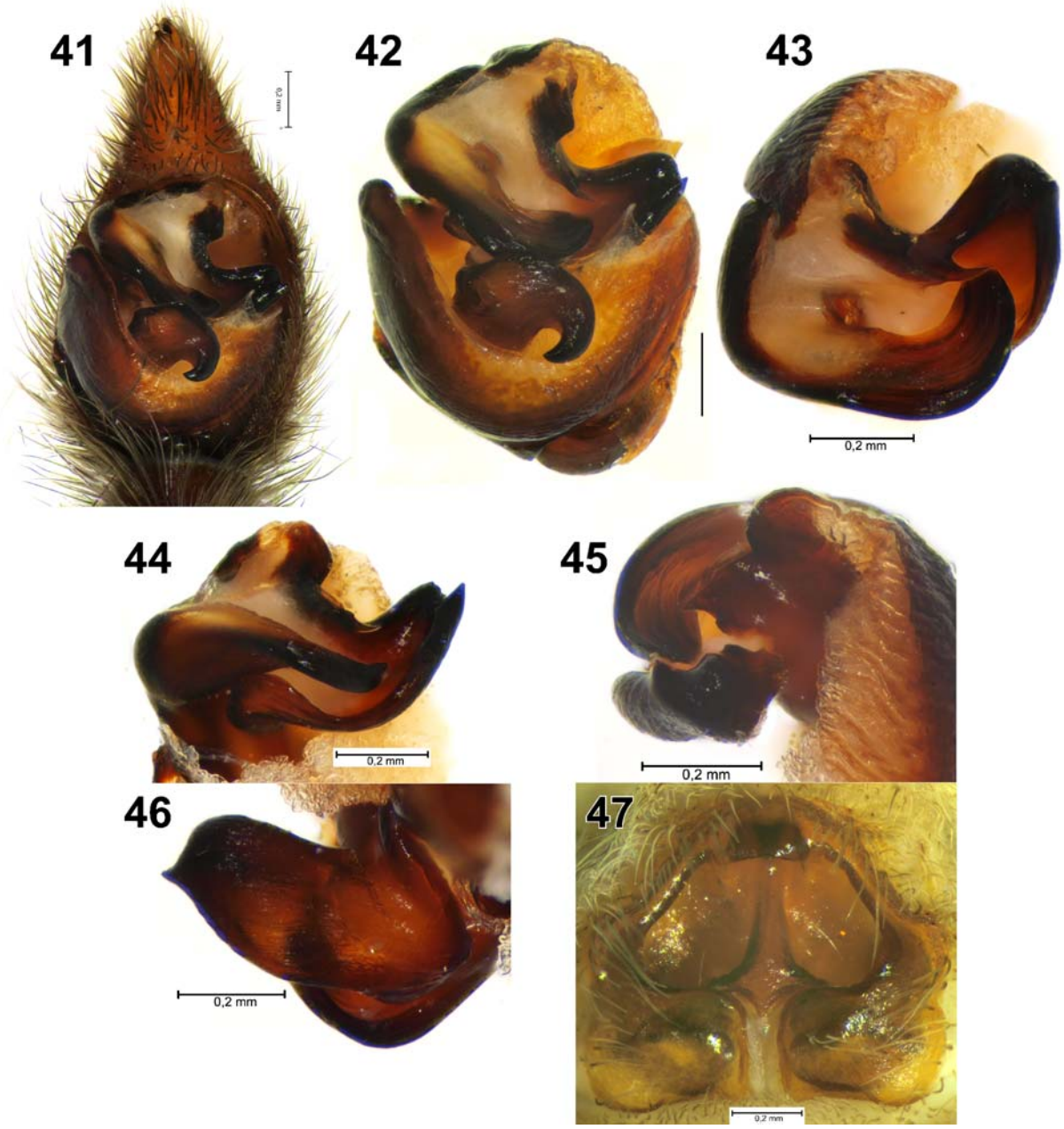
COMMENTS. This species was found in the same locality and even in the same scree with *Sibirocosa arsenyevi* sp.n. (see below). Such syntopy of two different species belonging to the *Acantholycosa*-complex, which usually have the same, narrow ecological niche (scree habitat), is rather rare and observed in the Russian Far East for the first time. However, examples of such syntopy are known from South Siberia [Marusik *et al*., 2004; Fomichev, unpublished data]: viz., the Altai (e.g., *Acantholycosa azyuzini* Marusik, Hippa et Koponen, 1996 co-occurs with *A. levinae* Marusik, Azarkina et Koponen, 2004; *A. katunensis* Marusik, Azarkina



Figs 31–40. Copulatory organs of *Acantholycosa aborigenica* Zyuzin et Marusik, 1988 (after Marusik *et al.* [2004]): 31 — palp, ventral; 32 — embolic devision, anterior view; 33 — ditto, retrolateral view; 34 — ditto, ventral view; 35 — embolus, anterior view; 36 — tegular apophysis, ventral view; 37 — ditto, anterior view; 38–40 — epigyne, ventral view. Scale: 0.1 mm.

Рис. 31–40. Копулятивные органы *Acantholycosa aborigenica* Zyuzin et Marusik, 1988 (по Marusik *et al.* [2004]): 31 — пальпа, вентрально; 32 — эмболюсный отдел, спереди; 33 — то же, ретролатерально; 34 — то же, вентрально; 35 — эмболюс, спереди; 36 — тегулярный отросток, вентрально; 37 — то же, спереди; 38–40 — эпигина, вентрально. Масштаб: 0,1 мм.

et Koponen, 2004 with *A. zinchenkoi* Marusik, Azarkina et Koponen, 2004; *A. mordkovitchi* Marusik, Azarkina et Koponen with *A. norvegica* (Thorell, 1872); *A. dudkorum* Marusik, Azarkina et Koponen, 2004 with *A. logunovi* Marusik, Azarkina et Koponen, 2004), Western Sayan Mts (e.g., *A. sayanensis* Marusik, Azarkina et Koponen, 2004 with *A. sterneri* (Marusik, 1993) and *A. norvegica*), and Gornaya Shoriya (*A. sterneri* with *A. norvegica*).



Figs 41–47. Copulatory organs of *Sibirocosa manchurica* Marusik, Azarkina et Koponen, 2004: 41 — palp, ventral view; 42 — bulbus, ventral view; 43 — embolic devision, anterior view; 44 — ditto, ventral view; 45 — ditto, retrolateral view; 46 — ditto, posterior view; 47 — epigyne, ventral view. Scale: 0.2 mm.

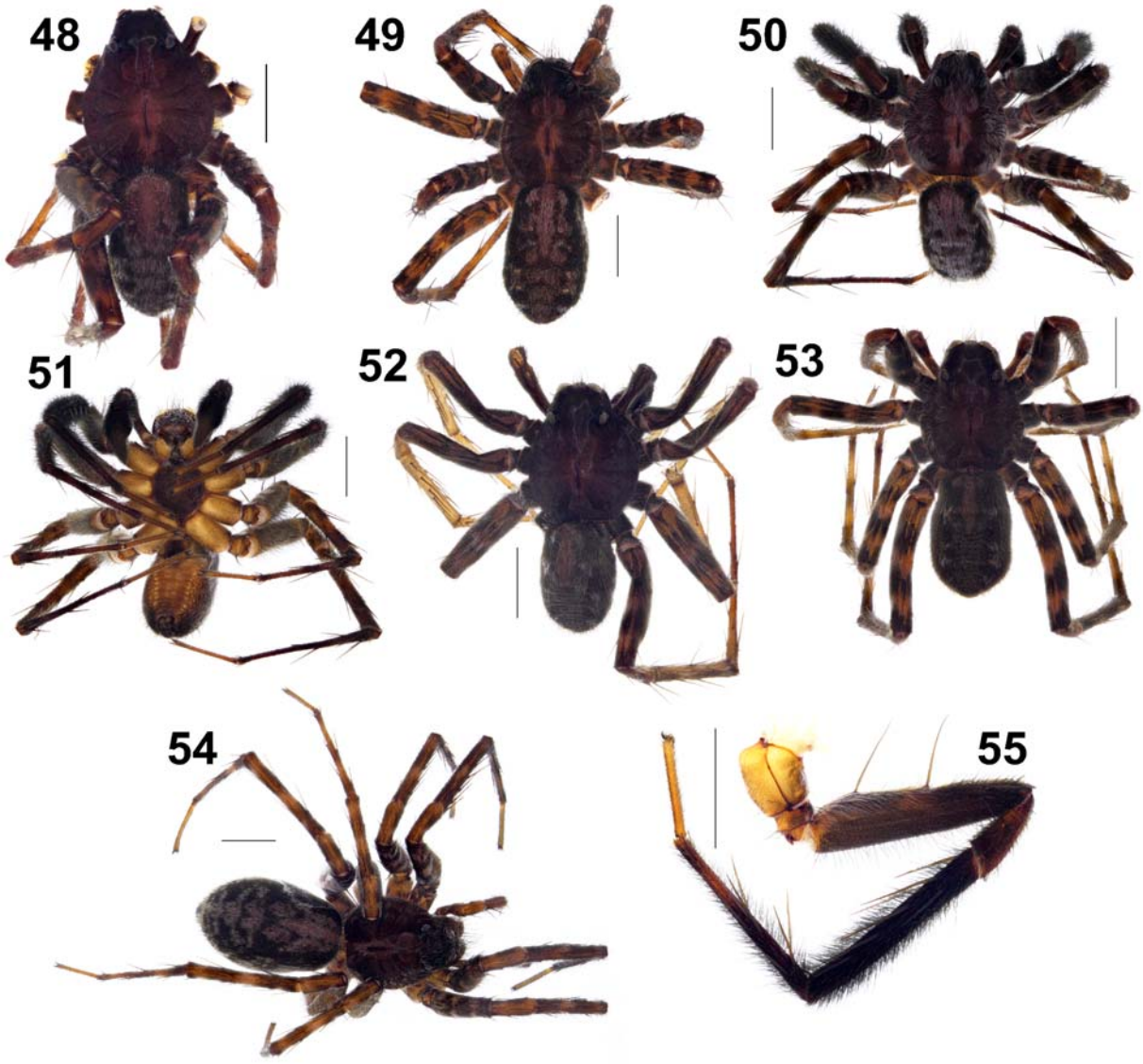
Рис. 41–47. Копулятивные органы *Sibirocosa manchurica* Marusik, Azarkina et Koponen, 2004: 41 — пальпа, вентрально; 42 — бульбус, вентрально; 43 — эмболюсный отдел, спереди; 44 — то же, вентрально; 45 — то же, ретролатерально; 46 — то же, сзади; 47 — эпигина, вентрально. Масштаб: 0,2 мм.

Sibirocosa arsenyevi **sp.n.**
Figs 5–6, 11–12, 19–21, 28–30, 52–53, 58, Map.

TYPES. Holotype ♂ (ZMMU) from Russia, Maritime Territory, Sikhote-Alin Mt. Range, Snezhnaya Mt. (43°44.064′N, 134° 25.804′E), scree, 1440–1680 m a.s.l., 6–8.07.2019, M.M. Omelko, A.A. Fomichev. Paratypes: 2 ♀♀ (ZMMU), 4 ♂♂, 1 ♀ (ISEA 001.8418), together with the holotype.

ETYMOLOGY. The specific name is a patronym in honour of Vladimir K. Arsenyev (1872–1930), a prominent Russian traveler, geographer, ethnographer, writer, and explorer of the Russian Far East.

DIAGNOSIS. *S. arsenyevi* sp.n. is closely related to *S. manchurica* Marusik, Azarkina et Koponen, 2004, which inhabits the screes of Oblachnaya Mt. situated some 20 km SW of Snezhnaya Mt. The males of the new species can be distinguished by the shorter and strongly bent embolus with a straight prolateral edge (*vs*. a slightly curved edge in *S. manchurica*) (cf. Figs 20 and 43). The terminal apophysis of the new species is significantly larger than that of *S. man-*



Figs 48–55. General appearance of *Acantholycosa irinae* sp.n. (48–49), *A. marusiki* sp.n. (50–51, 54), *Sibirocosa arsenyevi* sp.n. (52–53) and leg I of *A. marusiki* sp.n. (55): 48, 50, 52 — male, dorsal view; 51 — male, ventral view; 49, 53–54 — female, dorsal view; 55 — leg I of male. Scale: 2 mm.

Рис. 48–55. Внешний вид *Acantholycosa irinae* sp.n. (48–49), *A. marusiki* sp.n. (50–51, 54), *Sibirocosa arsenyevi* sp.n. (52–53) и нога I *A. marusiki* sp.n. (55): 48, 50, 52 — самец, дорзально; 51 — самец, вентрально; 49, 53–54 — самка, дорзально; 55 – нога I самца. Масштаб: 2 мм.

churica (cf. Figs 19, 20 and 43, 44). The basal part of conductor near the embolic base is pointed (*vs*. rounded in *S. manchurica*) (cf. Figs 19 and 44). The females of *S. arsenyevi* sp.n. can easily be distinguished from those of *S. manchurica* by the smaller visor formed by fused apical pockets and the trapezoid-shaped fovea (*vs*. rounded) (cf. Figs 28–30 and 47).

DISTRIBUTION. Known from the type locality only (Map).

DESCRIPTION. Male (holotype). Carapace 3.93 (3.93–4.05) long, 3.10 (3.10–3.25) wide. Total length 7.20 (7.20–7.40). Carapace dark brown, with a barely visible median band. Carapace and femora covered with tiny scales which at certain angles look metallic greenish. Lateral stripes absent. Eye field black. Abdomen dorsally dark grey, with dark brown cardiac mark and series of grey spots; laterally dark grey; ventrally dark grey, with two rows of irregular yellow patches. Chelicerae dark grey, with yellowish inner edges. Maxillae yellowish grey, labium dark grey, with a yellow edge. Sternum black, without stripes and spots. Leg measurements (holotype): I 11.96 (2.85 + 1.33 + 3.15 + 3.12 + 1.51); II 12.21 (3.12 + 1.40 + 3.07 + 3.16 + 1.46); III ? (3.24 + 1.26 + 2.60, Mt and Ta missing); IV 15.69 (3.87 + 1.27 + 3.49 + 5.13 + 1.93). Spination of leg I: Fe 3d, 2p, 2r; Pa 2d, 1p, 1r; Ti 2d, 1p, 1r, 5-5; Mt 3p, 3r, 2-2v. Femora black, with light brown patches and semi-rings. Patellae light brown. Tibiae, metatarsi and tarsi of legs I and II yellow, and light brown in legs III, IV. Palp as shown in Figs 5–6, 11–12, 19–21. Cymbium with two claws. Tegular apophysis (*Ta*) slightly flattened in its upper part. Conductor (*Co*) large. Terminal

Table. Species of the *Acantholycosa*-complex known from the Sikhote-Alin Mt. Range and their geographic distribution.
Таблица. Виды из *Acantholycosa*-комплекса, известные с хребта Сихотэ-Алинь и их географическое распространение.

Species	Collecting localities	Distribution
Acantholycosa aborigenica Zyuzin et Marusik, 1988	Southern Sikhote-Alin Mts., Kamenistaya Sopka Mt. (43°42.049'N, 132°9.612'E), Oblachnaya Mt. (43°41.671'N, 134°11.990'E)	From Central Aimag in Mongolia to the upper reaches of Kolyma River and Sikhote-Alin Mts. [Marusik *et al*., 2004]
Acantholycosa azarkinae Marusik et Omelko, 2011	Southern Sikhote-Alin Mts., Sestra Mt. (43°31.870'N, 134°2.824'E)	Endemic [Marusik, Omelko, 2011]
Acantholycosa irinae sp.n.	Southern Sikhote-Alin Mts., Ol'khovaya Mt. (43°20.432'N, 133°39.441'E)	Endemic [present data]
Acantholycosa lignaria (Clerck, 1758)	Southern Sikhote-Alin Mts., Oblachnaya Mt., Ussuri Reserve (43°41.671'N, 134°11.990'E)	Trans-Palaearctic: from Western Europe to Sakhalin and Kamchatka [Marusik *et al.*, 2000]
Acantholycosa marusiki sp.n.	Southern Sikhote-Alin Mts., Snezhnaya Mt. (43°44.064'N, 134°25.804'E)	Endemic [present data]
Acantholycosa norvegica (Thorell, 1872)	Southern Sikhote-Alin Mts., Oblachnaya Mt. (43°41.671'N, 134°11.990'E)	Trans-Palaearctic: from Norway and Central Europe to the Upper Kolyma and Sikhote-Alin Mts. [Marusik *et al.*, 2004; Marusik, Omelko, 2011]
Acantholycosa oligerae Marusik, Azarkina et Koponen, 2004	Southern Sikhote-Alin Mts., Lazo Reserve (43°6.650'N, 133°55.241'N)	Endemic [Marusik *et al*., 2004]
Acantholycosa sundukovi Marusik, Azarkina et Koponen, 2004	Southern Sikhote-Alin Mts., Lazo Reserve (43°6.650'N, 133°55.241'N)	Endemic [Marusik *et al*., 2004]
Acantholycosa valeriae Omelko, Komisarenko et Marusik, 2016	Southern Sikhote-Alin Mts., Falaza (=Litovka) Mt. (43°6.208'N, 132°46.950'E)	Endemic [Omelko *et al*., 2016]
Acantholycosa zonsteini Marusik et Omelko, 2017	Northern Sikhote-Alin Mts., near Slavyanka Village (49°27.113'N, 136°49.339'E)	Endemic [Marusik, Omelko, 2017]
Gulocosa eskovi Marusik, Omelko et Koponen, 2015	Central Sikhote-Alin Mts., Ko Mt. (47°6.433'N, 136°33.133'E)	Endemic [Marusik *et al*., 2015]
Sibirocosa arsenyevi sp.n.	Southern Sikhote-Alin Mts., Snezhnaya Mt. (43°44.064'N, 134°25.804'E)	Endemic [present data]
Sibirocosa koponeni Omelko et Marusik, 2013	Central Sikhote-Alin Mts., Ozernoe Plateau (45°51.089'N, 136°39.587'E)	Endemic [Omelko, Marusik, 2013]
Sibirocosa manchurica Marusik, Azarkina et Koponen, 2004	Southern Sikhote-Alin Mts., Oblachnaya Mt. (43°41.671'N, 134°11.990'E)	Endemic [Marusik *et al*., 2004; Omelko, Marusik, 2013]

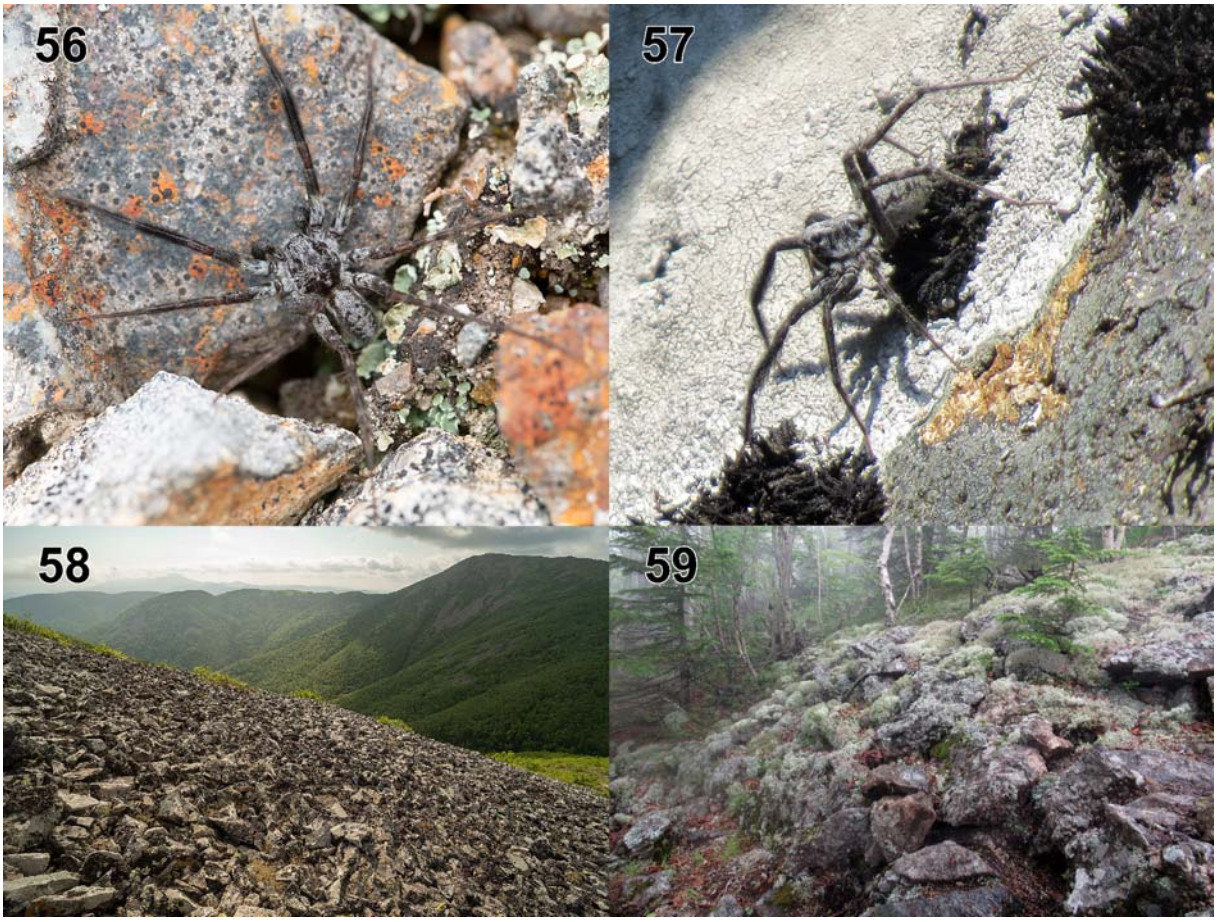
apophysis (*Te*) large, sharply pointed. Embolus wide, strongly bent.

Female (paratypes). Carapace 3.49–3.76 long, 2.79–2.82 wide. Total length 7.40–7.66. Coloration as in the male, but lighter. Leg measurements: I 10.73 (2.89 + 1.35 + 2.73 + 2.51 + 1.25); II 8.13 (2.99 + 1.34 + 2.53 + 2.52 + 1.27); III 10.85 (2.80 + 1.27 + 2.34 + 3.05 + 1.39); IV 15.40 (3.77 + 1.44 + 3.31 + 4.95 + 1.93). Spination of leg I: Fe 3d, 2p, 2r; Ti 1p, 2r, 5-5v; Mt 3p, 3r, 2-2v. All leg segments dark brown with light patches and rings. Epigyne as shown in Figs 28–30. Fovea (*Fo*) very deep, trapezoid, with a large visor formed by fused apical pockets. Septum well-developed. Receptacles (*Re*) long, almost reaching the upper edge of fovea.

COMMENTS. See notes above, under 'Comments' of *A. marusiki* sp.n.

Discussion

With the discovery of three new species described above, the number of species belonging to the *Acantholycosa*-complex known from the southern part of the Russian Far East (Sikhote-Alin Mt. Range) has increased to 14. This figure includes members of the following genera: *Acantholycosa* (seven endemic species from 10 recorded from this region), *Gulocosa* (an endemic species and genus) and *Sibirocosa* (three endemic species) (see Table). Therefore, although the spider diversity of the *Acantholycosa*-complex in the Sikhote-Alin Mts. is about twice lower than that of the Altai (South Siberia), it has the same degree of endemism. It should be noted that almost all species of the *Acantholycosa*-complex in the Sikhote-Alin Mt. Range were collected from the extreme south of this region (Table). This is due to inaccessibility of the central and northern Sikhote-Alin which has almost no roads. However, even in the south of the Sikhote-Alin Mts. there are many high peaks with screes which are suitable for members of the *Acantholycosa*-complex but their spider faunas remain unexplored. For this reason, we sus-



Figs 56–59. Male of *Acantholycosa marusiki* sp.n. in nature (56–57) and habitat of *A. marusiki* sp.n. and *Sibirocosa arsenyevi* sp.n. at Snezhnaya Mt. (58) and of *A. irinae* sp.n. at Ol'khovaya Mt. (59).

Рис. 56–59. Самец *Acantholycosa marusiki* sp.n. в природе (56–57) и местообитание *A. marusiki* sp.n. и *Sibirocosa arsenyevi* sp.n. на горе Снежная (58) и *A. irinae* sp.n. на горе Ольховая (59).

pect that there will be more discoveries of new species and even genera from the *Acantholycosa*-complex in the Sikhote-Alin Mt. Range.

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