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A survey of East Palaearctic Lycosidae (Aranei). II. Genus *Acantholycosa* F. Dahl, 1908 and related new genera

Обзор восточно-палеарктических пауков-волков (Aranei: Lycosidae). II. Род *Acantholycosa* F. Dahl, 1908 и близкие таксоны

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КЛЮЧЕВЫЕ СЛОВА: пауки, Aranei, Lycosidae, *Acantholycosa*, восточная Палеарктика, ривизия, новые виды, новые рода, новые комбинации, новая синонимия.

ABSTRACT: A survey of the spider genus *Acantholycosa* (type species *Lycosa sudetica* L. Koch, 1875 = *A. norvegica*) in Asia reveals that it is represented in East Palaearctic by 24 species (26 in Holarctic). Seventeen new species of *Acantholycosa* are described: *A. altaiensis* sp.n. (♂♀), *A. dudkoromani* sp.n. (♂♀), *A. dudkorum* sp.n. (♀), *A. katunensis* sp.n. (♂), *A. khakassica* sp.n. (♂), *A. kurchumensis* sp.n. (♀), *A. levinae* sp.n. (♂♀), *A. logunovi* sp.n. (♂♀), *A. mordkovitchi* sp.n. (♂♀), *A. paraplumalis* sp.n. (♂♀), *A. petrophila* sp.n. (♂), *A. plumalis* sp.n. (♂♀), *A. sayanensis* sp.n. (♂), *A. spinembolus* sp.n. (♂), *A. zinchenkoi* sp.n. (♂♀) (all from Altai and adjacent Russia), *A. oligerae* sp.n. (♂♀) and *A. sundukovi* sp.n. (♂) (both from Maritime Prov. of Russia). Seven other species occurring in Asia are illustrated: *A. aborigenica* Zyuzin & Marusik, 1988, *A. azheganovae* (Lobanova, 1978) comb.n. ex. *Alopecosa*, *A. azyuzini* Marusik et al., 1996, *A. baltoroi* (Caporiacco, 1935), *A. lignaria* (Clerck, 1757), *A. norvegica* (Thorell, 1872) and *A. sterneri* (Marusik, 1993). It was found that some species attributed to *Acantholycosa* are, in fact, not closely related to the generotype, *A. norvegica*, and therefore two new genera are described for Asian species: *Mongolicosa* gen.n. with 6 species: *M. pseudoferruginea* (Schenkel, 1936) comb.n. ex. *Pardosa, M. buryatica* sp.n. (♂♀) (Buryatia), *M. glupovi* sp.n. (♂♀, type species, Altai and adjacent Russia), *M. gobiensis* sp.n. (♀, South Gobi Aimak), *M. mongolensis* sp.n. (♂♀, Central Mongolia), *M. songi* sp.n. (♀, Mongolia and probably Xinjiang), and *Sibirocosa* gen.n. with five species: *S. sibirica* (Kulczyński, 1908) comb.n. and *S. subsolana* (Kulczyński, 1907) comb.n. both ex. *Acantholycosa*, *S. alpina* sp.n. (♀, S. Kazakhstan), *S. kolymensis* sp.n. (♂♀, type species, Kolyma River upper flow), *S. manchurica* sp.n. (♂♀, Maritime Prov.). Two new synonyms have been found: *Acantholycosa altaica* Savelyeva, 1972 syn.n. = *A. lignaria* (Clerck, 1757) and *Acantholycosa triangulata* Yu & Song, 1988 syn.n. = *Mongolicosa pseudoferruginea* (Schenkel, 1936). In addition one more genus *Pyrenecosa* gen.n. was described for three species distributed in SW Europe, namely *P. pyrenaea* (Simon, 1876) comb.n., *P. rupicola* (Dufour, 1821) comb.n. (type species), and *P. spinosa* (Denis, 1938) comb.n. all ex *Acantholycosa.* The male of *S. subsolana* (Kulczyński, 1907) is described here for the first time.

РЕЗЮМЕ: Изучение пауков рода *Acantholycosa* (типовой вид *Lycosa sudetica* L. Koch, 1875) в Азии позволило выявить 24 вида (26 видов в Голарктике). Описано 17 новых видов рода *Acantholycosa*: *A. altaiensis* sp.n. (♂♀), *A. dudkoromani* sp.n. (♂♀), *A. dudkorum* sp.n. (♀), *A. katunensis* sp.n. (♂), *A. khakassica* sp.n. (♂), *A. kurchumensis* sp.n. (♀), *A. levinae* sp.n. (♂♀), *A. logunovi* sp.n. (♂♀), *A. mordkovitchi* sp.n. (♂♀), *A. paraplumalis* sp.n. (♂♀), *A. petrophila* sp.n. (♂), *A. plumalis* sp.n. (♂♀), *A. sayanensis* sp.n. (♂), *A. spinembolus* sp.n. (♂), *A. zinchenkoi* sp.n. (♂♀) (все из Алтая и прилежащих районов), *A. oligerae* sp.n. (♂♀) и *A. sundukovi* sp.n. (♂) (оба из Лазовского заповедника, Приморья). Семь других видов обитающих в Азии проиллюстрированы: *A. aborigenica* Zyuzin & Marusik, 1988, *A. azheganovae* (Lobanova, 1978) comb.n. ex. *Alopecosa*, *A. azyuzini* Marusik et al., 1996, *A. baltoroi* (Caporiacco, 1935), *A. lignaria* (Clerck, 1757), *A. norvegica* (Thorell, 1872) и *A. sterneri* (Marusik, 1993). В ходе исследований было обнаружено что часть видов относимых ранее к *Acantholycosa,* имеют мало общего с типовым

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видом рода,*A. norvegica*, и поэтому для них описаны два новых рода: *Mongolicosa* gen.n. с 6 видами: *M. pseudoferruginea* (Schenkel, 1936) (СВ Китай) comb.n. ex. *Pardosa, M. buryatica* sp.n. (Бурятия), *M. glupovi* sp.n. (♂♀, типовой вид, Алтай и прилежащие территории), *M. gobiensis* sp.n. (♀, Южно-Гобийский Аймак, Монголия), *M. mongolensis* sp.n. (♂♀, центральная Монголия), *M. songi* sp.n. (♀, Монголия и возможно Синьцзян), и *Sibirocosa* gen.n. с пятью видами: *S. sibirica* (Kulczyński, 1908) comb.n., *S. subsolana* (Kulczyński, 1907) comb.n. оба ex. *Acantholycosa*, *S. alpina* sp.n. (♀, ЮВ Казахстан), *S. kolymensis* sp.n. (♂♀, типовой вид, верховья Колымы), *S. manchurica* sp.n. (♂♀, Приморье). Обнаружено две новые синонимии: *Acatholycosa altaica* Savelyeva, 1972 syn.n. = *A. lignaria* (Clerck, 1757) и *Acatholycosa triangulata* Yu & Song, 1988 syn.n. = *Mongolicosa pseudoferruginea* (Schenkel, 1936). В дополнение описан новый род *Pyrenecosa* gen.n. для трёх видов обитающих в ЮЗ Европе, а именно *P. pyrenaea* (Simon, 1876) comb.n., *P. rupicola* (Dufour, 1821) comb.n. (типовой вид) и *P. spinosa* (Denis, 1938) comb.n. все ex *Acantholycosa.* Впервые описан самец *S. subsolana* (Kulczyński, 1907).

Introduction

The first member of *Acantholycosa* was described by Clerck in 1757 sub *Araneus lignarius.* In the 19th century eight more species belonging to this genus were described from Europe and Siberia. Dahl [1908] was first to observe that three European species had more than three pairs of ventral tibial spines on leg I and he described a new genus for them, *Acantholycosa.* For more than two decades after the transfer of *Lycosa sudetica* L.Koch, 1875*, L. lignaria* and *Pardosa pedestris* Simon, 1876 to *Acantholycosa* by Dahl [1908], these species were the only members of the genus. The first addition to the genus was made by Giltay [1932]. He described *A. nigripalpis*, later transferred to *Pardosa*. Another new species, *A. strandi* Denis, 1938, fell in synonymy with *A. pedestris*. In 1936 Charitonov added three species to this genus (*A. beklemischevi* Charitonov, 1936, *A. fedotovi* Charitonov, 1936, and *A. spasskyi* Charitonov, 1936). Later all these species were found to be a synonyms of *A. norvegica.* After Charitonov, additional species were attributed to *Acantholycosa* by Denis [1950, 1953]. He transferred three species from the mountains of western Europe which had numerous ventral tibial spines (*Pardosa spinosa* Denis, 1938, *P. rupicola* (Dufour, 1821) and *P. pyrenaea* Simon, 1876). In 1955 Rower transferred one more species to this genus (*Pardosa baltoroi* Caporiacco, 1935). Since then another two species were transferred to *Acantholycosa* by Zyuzin [1979]. He included in this genus two former *Pardosa* species [*subsolana* (Kulczyński, 1907) and *sibirica* (Kulczyński, 1908)] known from Siberia. After that five more species were added to this taxon as a new (*Acantholycosa aborigenica* Zyuzin & Marusik, 1988*, A. triangulata* Yu & Song, 1988 and *A. altaica* Marusik et al., 1996) or transferred from *Pardosa* (*sterneri* Marusik, 1993 and *solituda* Levi & Levi, 1951) by Kronestedt & Marusik [2002].

Although Wunderlich [1984] synonymised *Acantholycosa* with *Pardosa* C. L. Koch, 1847, this act was not accepted by subsequent workers [see Zyuzin & Marusik, 1988; Buchar & Thaler, 1993]. The reasons for synonymisation were presence of more than 3 pairs of ventral tibial spines in several *Pardosa,* and similarity of copulatory organs. The problem in differentiating *Pardosa* and *Acantholycosa* (cf. Wunderlich, 1984) lies to our mind not in *Acantholycosa* itself, but in the concept of *Pardosa* which seems not to be a monophyletic group. For example some of the species earlier attributed to *Pardosa* (*fidelis* (O. Pickard-Cambridge, 1872), *quadrifera* (Gravely, 1924) now belong to *Wadicosa* Zyuzin, 1985, a member of a separate subfamily Wadicosinae.

According to the latest catalogue [Platnick, 2002] the spider genus *Acantholycosa* includes 13 species and one subspecies. All species in the catalogue are known only from Eurasia. Counting two more species assigned to this genus by Kronestedt and Marusik [2002], *Acantholycosa* encompass 15 species and one subspecies. New transfers (*A. solituda*) extend the known range of the genus to the Nearctic, and therefore the genus has Holarctic distribution.

This project was begun with the goal of describing three new species collected in Altai, but intensive collecting efforts by entomologists from ISEA in the East Kazakhstan Area, Altai, West Sayan Mt. Range and adjacent areas, and special search of the collections of several museums and private collections reveals the very high diversity of the genus in Siberia and the Russian Far East. We therefore decided to survey all of the species known from the eastern Palaearctic, and especially northern Asia.

Methods

The material treated here came to us bit by bit over a period of years. The various species were illustrated at different times and therefore style of the figures are not identical throughout the paper. Illustrations were made using both reflected and transmitted light microscope with drawing "devices". Microphotographs were made with SEM Jeol JSM-5200 in the Zoological Museum, University of Turku. All measurements are given in millimeters. A few words are abbreviated as follows: d — dorsal, p — prolateral, pv — proventral, r — retrolateral, rv — retroventral, v — ventral.

There were several difficulties in using morphological terms used for parts of the bulbus, because some of them are functional (eg. conductor), some indicate relations to certain sclerite (tegular apophysis) and some are "topological" (terminal apophysis). There appears to be no controversy in the use of the following terms in homological sense: embolus, subtegulum, tegulum, tegular apophysis and palea. There are certain doubts about the use of conductor and terminal apophysis. It appears that different authors sometimes use different terms (conductor or terminal apophysis) for homological

characters. In some cases such usage is not controversial (terminal apophysis may play role of conductor (in some sense all sclerites guide the embolus). It is worth mentioning that in *Lycosa* and in many *Alopecosa sensu lato* the tegular apophysis (furrow on the inner side) works as a functional conductor (cf. Zyuzin & Logunov, 2000 and personal data). Another problem in applying the term terminal apophysis lies in the fact that the upper part of bulbus (=terminal part) may have several apophyses (=outgrowths). Some of these can be associated with lower part of the palea (="terminal part", epiconductor) and lie below the palea, while some of the "terminal apophyses" belong (lie on) to the palea. The latter apophyses may emerge from the lower part of palea, and others originate in the terminal part of palea (all *Acantholycosa, Pardosa tesquorum*-group). In some groups of *Pardosa* the palea has outgrowth originating from its prolateral part (=median portion of the "terminal part" of the bulbus) — *Pardosa nigra*-group. Many *Pardosa* groups have kind of ridge on the palea (strongly sclerotised parts) which we do not refer to as apophyses.

To be consistent and exclude misunderstanding we do not use the functional term conductor in this paper, but use the term **terminal apophysis** for a sclerite emerging below the palea, and **paleal apophysis** (**outgrowth**) for a sclerite emerging from the upper part of palea (all *Acantholycosa*) or from the mid part of the bulbus if the palea is reduced (*Sibirocosa* gen.n.).

Names of the largest administrative units in Russia and Kazakhstan (areas and provinces) and other states (aimaks in Mongolia and provinces in China) are given in bold font. **Altai** — admistrative unit of Russia (Altai Republic), earlier this unit was split into Altai Province and Gorno-Altai Autonomous Area. Most of the material treated herein came from the Gorno-Altai Area.

Abbreviations used for museums: IBPN — Institute for Biological Problems of the North, Magadan, Russia; ISEA — Institute for Systematic and Ecology of Animals, Novosibirsk, Russia; IZB — Institute of Zoology, Beijing, China; JWC — Jörg Wunderlich, personal collection, later possibly in Senckenberg Museum, Germany; MMUM — Manchester Museum, University of Manchester, Great Britain; NRS — Naturhistoriska Risksmuseet, Stockholm, Sweden; YMUT — Yu. M. Marusik's temporary collection in Turku, Finland; ZMMU — Zoological Museum, Moscow State University, Russia; ZMUT — Zoological Museum, University of Turku, Finland; ZISP — Zoological Institute, St.-Petersburg, Russia.

Collectors' names are also abbreviated: AD — Andrei Yu. Dudko; AT — Andrei V. Tanasevitch; DEL — Dmitry E. Lomakin; DL — Dmitry V. Logunov; DR — D.V. Ryzhkov; GA — Galina N. Azarkina; KE — Kirill Yu. Eskov; NL — Nadezhda V. Levina; PL — Pekka T. Lehtinen; RD — Roman Yu. Dudko; SK — Seppo Koponen; YM — Yuri M. Marusik.

Survey of taxa

Acantholycosa F. Dahl, 1908

Type species *Lycosa sudetica* L. Koch, 1875 (now treated as *Acantholycosa norvegica sudetica*)

DIAGNOSIS. Members of this genus can be easily recognized by a combination of several characters in the males:1) terminal apophysis long with spine-like ending, 2) palea modified, with laminar or claw-like outgrowth, 3) tibia I with 4, 5 or 6 pairs of ventral spines, 4) tegular apophysis with reduced apical arm (smaller than basal one, except in two species) and 5) spine or triangle shaped outgrowth in the basal part of embolus (half of species).

Most females of this genus can be recognized by 1) 4 to 6 pairs of ventral spines on tibia I, 2) high (elongate) epigyne subdivided into foveal (basal) part and upper flat parts (exception — *baltoroi*-group, 3) apical pockets fused or almost fused (not separated by septum), standing far from fovea, 4) long receptacula.

DESCRIPTION. Total length 6.0–10.8. From moderately light colored (*norvegica*) to almost black. Most species have no clear pattern. Legs relatively long: carapace length/femur I ratio vary in males from 0.83 (*levinae* sp.n.) to 1.17 (*baltoroi*), and in females from 0.98 (*zinchenkoi* sp.n.) to 1.26 (*mordkovitchi* sp.n.). A survey of diagnostically important characters is given below.

Survey of taxonomic characters

Somatic characters

Spination of leg I. Th e number and position of spines on different joints of leg I differs from species to species. Males and females in general have similar spination. One species, *A. oligerae* sp.n., has sexual dimorphism in spination of the femur. The female of this species has one retrolateral spine, while all other females and males have 2 such spines. Some difference between species occur in spination of the patella. Number of lateral spines on it can be 0, 0p-1r or 1p-1r. The largest differences between species was found in the number of ventral tibial spines which vary from 4 pairs (*baltoroi, lignaria*) to 6 pairs (*altaiensis* sp.n., *oligerae* sp.n. and *sayanensis* sp.n.). The number of lateral and ventral spines on the metatarsus also varies. The number of prolateral spines varies from 1 to 2 (*baltoroi*, *sundukovi* sp.n., *oligerae* sp.n.). Only *A. oligerae* sp.n. has two retrolateral spines (1 in all other species). *A. oligerae* is also unique in the number of ventral metatarsal spines: 3-3v, while other species have 2-2v.

Pubescence. Pubescence can be used as a key character for species discrimination in three species. Males of *A. sterneri* have a thick cotton-like pubescence of curled hairs on legs I and II, two other species *A. plumalis* sp.n. and *A. paraplumalis* sp.n. have long but sparse hairs on leg I (Figs. 37, 43).

Color pattern. Almost all of the species have no pattern at all or an indistinct pattern, while *A. norvegica* and *A. logunovi* sp.n. have distinct *Pardosa*-like patterns, with a light median band, and lateral light stripes. Males are usually darker than females. It seems that color pattern can not be used in species differentiation.

Copulatory organs

Male palp:

Embolus. Embolus modified in comparison to *Pardosa s.str.* and to most of *Pardosa s. lato*

1) Opening of embolus in most of species lies in the part proximal to the bulb (=external part, Figs. 10, 21, 62, 102, 106, 112, 116, etc.).

2) Embolus wide, widened in the terminal half in most of the species (Figs. 1, 10, 12, 15, 21, 45, 46, etc.)

3) Tip of embolus modified in at least four different ways: a) truncate (*norvegica, solituda, oligerae* sp.n.), b) widened in terminal part and subdivided (bifurcate) (*levinae* sp.n., *dudko-*

rum sp.n., *spinembolus* sp.n.), c) sharply curved in direction of the bulb in apical part (*aborigenica, logunovi* sp.n.), d) slightly curved beyond of the bulb (*sayanensis* sp.n.).

4) Basal third of embolus in majority of east Palaearctic species (13 of 21 known by males) has a tooth or spine-like outgrowth lacking in *Pardosa s. lato* at whole. This structure we call a "spine". It has at least four modification: small spine (Figs. 10, 12, 62, 115, 130), big conical spine (*norvegica*) or long outgrowth subdivided on the top (Figs. 100, 102, 14, 106), flat triangle shaped lamina (Figs. 1–3, 30, 38, 143 and others). Related species may differ by this character (cf. *mordkovitchi* sp.n. and *zinchenkoi* sp.n. or *logunovi* sp.n. and *azyuzini*). In two related species outgrowth of embolic base is subdivided (bifurcated) (*khakassica* sp.n. and *petrophila* sp.n.). Shape of embolic spine is useful in several cases for separating sibling species. In *mordkovitchi* sp.n. and *zinchenkoi* sp.n. the presence of small spine enables discrimination of the former species from the later.

5) Embolus in different species and species groups can be simple (more or less straight), convoluted (*oligerae*-group), slightly turned around axis (*baltoroi*-group).

Palea. Palea modified in comparison to *Pardosa s. str.* and to most of *Pardosa s. lato*. There are three rather different conformations of the palea:

1) palea with plate like outgrowth (=laminar) (*aborigenica*, *lignaria*, *oligerae* sp.n., *sundukovi* sp.n., and ?*mordkovitchi* sp.n.)

2) palea bearing claw- or hook-like apophysis originating from the upper edge of palea (cf. Figs. 1, 5, 10, 12, 15, 22, 24 and many others).

3) palea with extended terminal part (Figs. 60, 61, 66) bearing small triangle shaped outgrowth (*baltoroi*-group).

Tegular apophysis. In comparison to *Pardosa s. lato* in which there is considerable variation in the shape of apophysis, most *Acantholycosa* species have a similar type of apophysis with reduced apical arm. Reduction can be absolute (*aborigenica*, *azyuzini*, *dudkorum* sp.n., *sayanensis* sp.n., *levinae* sp.n., *sterneri*, *solituda*, *khakassica* sp.n., *zinchenkoi* sp.n., *lignaria*) or partial (Figs. 1, 10,34,41, 60, 130, 138–139, etc.). Only three species belonging to two different species groups have tegular apophyses with the upper arm larger than down arm (*oligerae* sp.n., *sudukovi* sp.n. and *petrophila* sp.n). In cases were the apical arm is not absolutely reduced it may look like a spine (*norvegica* and *logunovi* sp.n.) or in most cases it is ridge-like (=laminar, keel) (cf *mordkovitchi* sp.n., *baltoroi*, *altaiensis* sp.n., etc.). In *Pardosa s. lato* only several species-groups lack or have strongly reduced apical arms: *glacialis, ricta, nebulosa* and *xerampelina* (name groups after Zyuzin [1979a]).

Terminal apophysis. Homology of this sclerite is unclear. It is possible that this sclerite represents a fused terminal apophysis and conductor. In all species it consists of two parts. One is spine-like or cylindrical with modified tip, the other is laminar. The later one may be partially reduced. Shape of terminal apophysis can be used for discriminating species groups and sibling species. Tip of terminal apophysis has three main modifications: 1) small spine (=needle) (cf. Figs. 3, 9, 16, 31, 105, etc.), 2) strong conical spine- or claw-like outgrowth (cf. Figs.41, 76, 112, 117, 152, etc.) and 3) strong conical or cylindrical outgrowth bifurcate on tip, or truncate (*baltoroi*-group, *mordkovitchi* sp.n., *zinchenkoi* sp.n.)

Cymbium. Cymbium typical for Pardosini. It is uniformly dark colored in all species. Modification and variations can be seen in the number of claws. Most of the species have 1 claw, while a few species (*altaiensis* sp.n., *petrophila* sp.n., *khakassica* sp.n.) may have 2 claws and *baltoroi* has 3 claws.

Epigyne:

Proportions. Epigynes in most cases are much longer (higher) than wide (exception *baltoroi*-group). The upper part of epigyne, between the apical pocket and fovea, is flat in most of the species.

Septum. Epigynes always have a septum longer than wide. In some cases the septum clearly originates from the apical pocket (*solituda*-group, *aborigenica* and some other species). Sometimes the septum can be settled in furrow (*lignaria*, *altaiensis* sp.n.). In *norvegica*, *plumalis* sp.n., *paraplumalis* sp.n. there are no traces of septum in apical third of epigyne. Septum may have basal widening (plate) (most of species) or may lack widening (*kurchumensis* sp.n.).

Fovea. The basal part of the fovea is well developed. However, in several species septal base covers about or almost the whole of fovea (*aborigenica*, *azyuzini*, *logunovi* sp.n., *norvegica*, *oligerae* sp.n., *lignaria*). Fovea and apical pockets separated by flat upper part of epigyne.

Apical pocket. Apical (=anterior) pockets present. In all species except for *solituda*-group two pockets are fused to some extent. Width of apical pocket varies from very wide (as wide as basal part of septum) to rather narrow. Few species like: *altaiensis* sp.n., *plumalis* sp.n., *paraplumalis* sp.n. and *oligerae* sp.n. have an undivided pocket. Two species of the *baltoroi*-group have pockets of variable shape but in most cases they are clearly subdivided into two separate parts by septum.

Receptacula. Receptacula long, without loops or sharp turns as in many *Pardosa* species groups. Ducts in some species longer than receptacula proper or subequal in length, while in a few species (*lignaria*, *altaiensis sp.n.*) receptacula proper can be longer than ducts. In many species apical part of receptacula bear "warts".

Infraspecific variation

Shape of male palp seems to be very conservative and no distinct variations have been observed in the bulbus. Epigynes, on the contrary, are variable in shape in all species except *A. lignaria*). Apical pocket, or pockets, may vary in width, and basal part of septum can vary considerably, especially in the *baltoroi*-group [cf. figs. 19–20 in Kronestedt & Marusik, 2002 and Figs. 68–70]. Variation of epigynal septum has caused a long list of synonyms in the most widespread species, *A. norvegica*.

Grouping of species

Grouping of species in this genus is difficult because almost all diagnostic characters have a mosaic distribution. Species with similar embolus or palea may have different embolus or tegular apophysis, and so on. It is easy to diagnose only one species group with more than 2 species, namely the *baltoroi*-group (*baltoroi*, *solituda* Levi & Levi, 1951 (Nearctic), *sterneri* and *levinae* sp.n.). All species of this group have cut-like basal part of palea with triangle shaped outgrowth and thick bifurcating terminal apophysis.

Most of other species can be grouped only provisionally.

It is easy to diagnose five species groups, each containing two-four species, namely *azyuzini*-group (*altaiensis* sp.n., *azyuzini*, *katunensis* sp.n. and *sayanensis* sp.n.), *khakassica*-group (*khakassica* sp.n. and *petrophila* sp.n.), *mordkovitchi*-group (*mordkovitchi* sp.n., *zinchenkoi* sp.n. and possibly *spinembolus* sp.n.), *oligerae*-group (*oligerae* sp.n. and *sun-*

dukovi sp.n.) and *plumalis*-group (*plumalis* sp.n. and *paraplumalis* sp.n.). The *azyuzini*- and *plumalis*-groups can to some extent be united.

While female epigyne in distantly related species can be remarkably similar (cf. *A. norvegica*, *A. aborigenica, A. logunovi* sp.n.), it seems that at least three species can be united into one species-group on the basis of epigynal shape: *dudkorum*-group (*dudkorum* sp.n., *dudkoromani* sp.n. and *kurchumensis* sp.n.). These species have similar shape of fovea, septum, pockets and vulva. Judging from the conformation of male palp in *A. dudkorum* sp.n. (shape of terminal apophysis, curved embolus, paleal outgrowth) can be placed together with the generotype, *A. norvegica*. However females of the latter species and those of the *dudkorum*-group are very different.

Here we treat *A. aborigenica* and *A. lignaria* in one group (*lignaria*-group) on the basis of similarity of paleal modification and type of terminal apophysis. However, their emboli, tegular apophyses and epigynes are different.

Three species occurring in East Palaearctic were remain ungrouped. Two of them, *A. norvegica* and *A. logunovi* sp.n., probably represent groups of their own. The position of *A. azheganovae* remains uncertain because this species is known only from poor figures. Besides the species listed above, there are also 4 species living in Europe. Of them, the placement of *A. pedestris* (Simon, 1876) is unclear. It has a paleal apophysis like *A. altaiensis* sp.n. and *A. katunensis* sp.n., however the terminal apophysis of this species is rather thick and similar to those in *A. azyuzini*. Embolus of *A. pedestris* is in some respects unique: it is most wide in terminal 1/3 (cf. Fig. 272). Three other European species, *A. rupicola* (Dufour, 1821), *A. pyrenaea* (Simon, 1876) and *A. spinosa* (Denis, 1938) are closely related to each other and unrelated to other *Acantholycosa*, while in some respect their male palps resemble these of *Sibirocosa* gen.n. by having very broad terminal apophysis, reduced palea and very high position of embolic base. These species we assign to a new genus *Pyrenecosa* gen.n., the description of which is given below.

RELATIONSHIPS. It seems that *Acantholycosa* is distantly related to other Pardosini with numerous ventral spines on tibia I (*Mongolicosa* gen.n., *Pyrenecosa* gen.n., *Sibirocosa* gen.n.). *Acantholycosa* is similar to several groups of *Pardosa* (*beringiana*-, *ferruginea*-, *nigra*-, *tesquorum*- and some others) in having a wide embolus, modified palea (with large paleal apophysis = terminal apophysis *sensu* Dondale & Redner [1990]). However, the shape of the terminal apophysis in these groups, two armed tegular apophysis and type of epigyne are different from those in the above-mentioned *Pardosa* species groups. Nevertheless, it seems that *Acantholycosa* is derived from one of the *Pardosa s. lato* species groups.

It seems that numerous spines on tibia I evolved several times within *Pardosini*, in species with long legs. Numerous pairs of ventral tibial spines are common in several genera and species groups of *Evippinae* which have long legs.

Survey of species

The *azyuzini*-group: members of this group can be recognized by the following combination of characters: peculiar paleal outgrowth and broad embolus. Two species of this group, *A. altaiensis* sp.n. and *A. sayanensis* sp.n. are closely related. *A. katunensis* sp.n. and *A. azyuzini* are more distant from them and each other.

Acantholycosa altaiensis **sp.n.**
Figs. 1–9, 56, Map 1.

MATERIAL. Holotype ♂ and paratypes 5 ♂♂ 1 ♀ (ISEA), RUSSIA, **Altai**, Charyshskoe Distr., Bashelak Mt. Range, near Zagrikha Mt., 2000 m, ca. 30 km NEE of Sentelek, pitfall traps, 51°15'N, 84°11' E, 29.06.2000 (GA); 1 ♀ (ISEA), **Altai**, Tret'yakovskoe Distr., Tigiretskii Reserve, Glubokaya River, 15 km SW of Mokhnato-Gladkaya Mt., 50°54'N, 82°32' E, 09.06.1999 (DR); 1 ♀ (ISEA), **Altai** Province, Tret'yakovskoe Distr., Tigiretskii Reserve, Mokhnato-Gladkaya Mt., 50°55'N, 82°44' E, 6.06.1999 (DR); 1 ♀ (ISEA), **Altai** Province, Charyshskoe Distr., Tigirek Mt. Range, Uba Pass, kurums, 50°53'N, 83°48' E, 27.07.1999 (GA, DR); 2 ♀♀ (ISEA), **Altai**, Charyshskoe Distr., Tigiretskii Mt. Range, Karalevskii Belok Mt., ca. 1850–2298 m, kurums, 51°00'N, 83°44' E, 20.07.1999 (GA, DR, K.S. Shcherbinin); 2 ♂♂ 1 ♀ (ISEA), **Altai**, Charysh Dist., Bashchelak Mt. range, nearby Zagrikha Mt., 51°15'N 84°11'E, kurum (stony debris), 2000–2300 m, 26.06.2000 (GA & DR); 1 ♀ (ISEA), **Altai**, ca. 5 km SSW of Ust'-Kan, Kutergen River valley, 1300 m, forest, 07.06.1999 (AD & RD).

ETYMOLOGY. The specific name refers to the type locality.

DESCRIPTION. Total length 7.50–8.00(9.00). Carapace: 4.05(3.85) long, 3.40(3.00) wide. Coloration uniformly dark brown. Male. Carapace/femur I length ratio 0.94(1.10), carapace width/femur I ratio 0.79(0.86). Leg I joints: 4.30(3.50) + 2.40(1.60) + 4.80(3.60) + 4.95(3.00) + 2.10(1.40). In both sexes femur I with 3 dorsal, 2 pro- and retrolateral spines. Tibia I with 6 pairs of ventral spines. Cymbium black with 2 claws, other palpal joints brown. Palp as in Figs. 1–7, tegular apophysis with broad laminar apical arm, embolus with large "spine" in basal part, paleal outgrowth claw like. Epigyne as in Figs. 8–9, with fused apical pockets forming rather small joint pocket, apical part of stem imbedded between apical lips, fovea rhomboidal, septal base small.

DIAGNOSIS. By the shape of embolus and palea this species resembles *A. zinchenkoi* sp.n., from which it can be separated by presence of "spine" near base of embolus, and laminar apical arm of tegular apophysis. Females can be separated from the somewhat similar *A. lignaria* by distinct apical part of stem and distinct fovea.

DISTRIBUTION. All material of this species came from Tigiretsky Mt. range in Altai.

Acantholycosa azyuzini Marusik et al., 1996
Figs. 15–18, 24–26. Map 1.

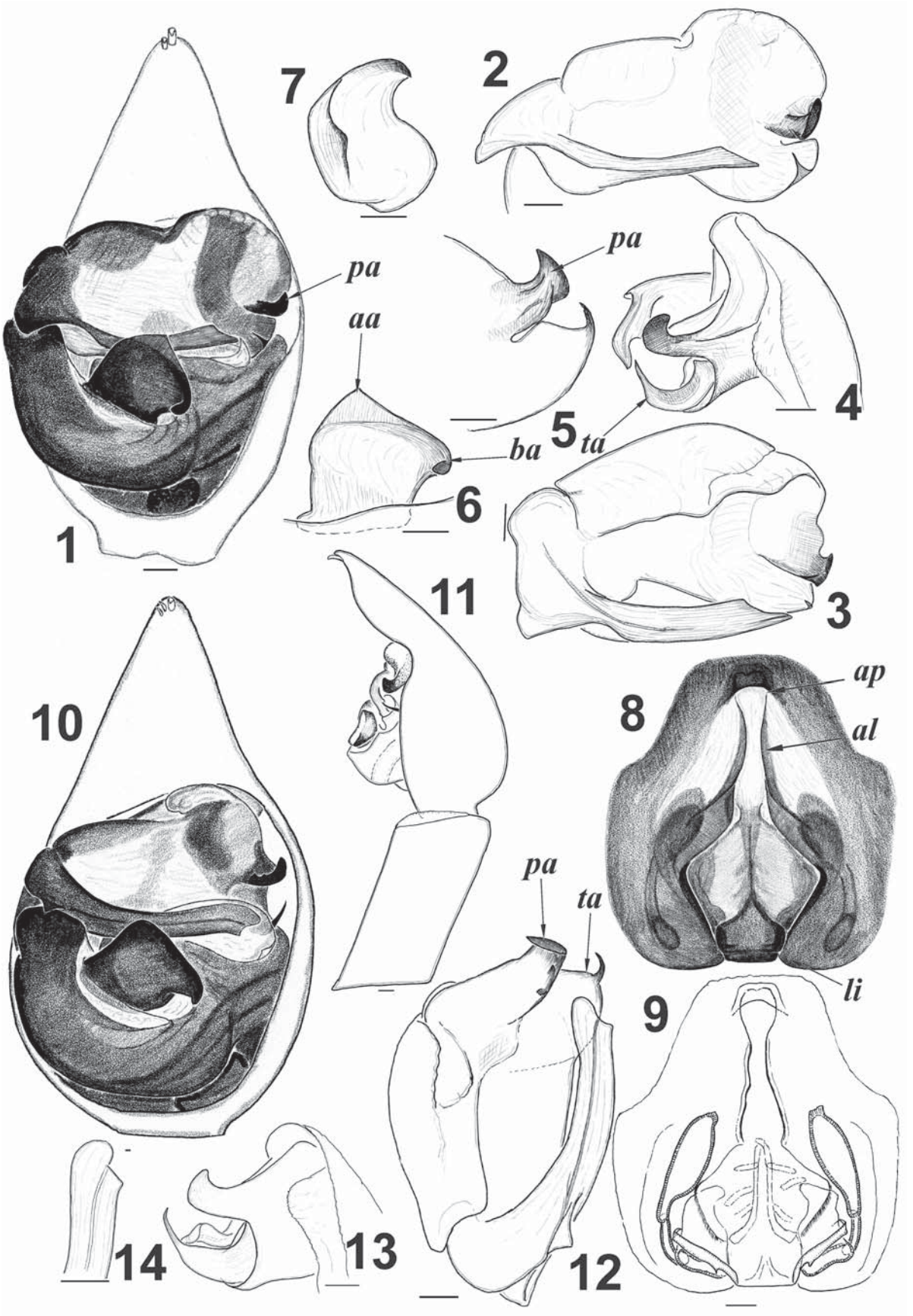
Acantholycosa azyuzini Marusik, Hippa & Koponen, 1996: 22, f. 45–50 (♂♀).

MATERIAL EXAMINED. 1 ♂ (ZMUT, palp in SEM mount), RUSSIA, **Altai**, N macroslope of Katun Mt. Range, 12–15 km S of Mul'ta Village, 2300–2800 m, mountain tundra, 23–24.06.1999 (AD & RD); 1 ♂ 1 ♀ (ISEA) **Altai**, Koksa Distr., 3–4 km of Belukha Mt., alpine meadows, 12–20.07.1977 (S.S. Reshetnikov); 1 ♂ (ISEA), **Altai**, Koksa Distr., 7 km E of Kucherla Lake, 1500 m, kurums, 17.07.1978 (B.P. Zakharov); 1 ♀ (ZMMU), **Altai**, Chiri Lake, 1800–2000 m, 30.07.1997 (AT).

COMMENTS. For description see Marusik et al. [1996]. This species was named after the well known lycosidologist Dr. Alexei A. Zyuzin.

DIAGNOSIS. This species can be separated from other *Acantholycosa* by the shape of tegular apophysis, embolus and outgrowth of palea as well as by the shape of epigynal septum.

DISTRIBUTION. *A. azyuzini* is so far known only from Altai.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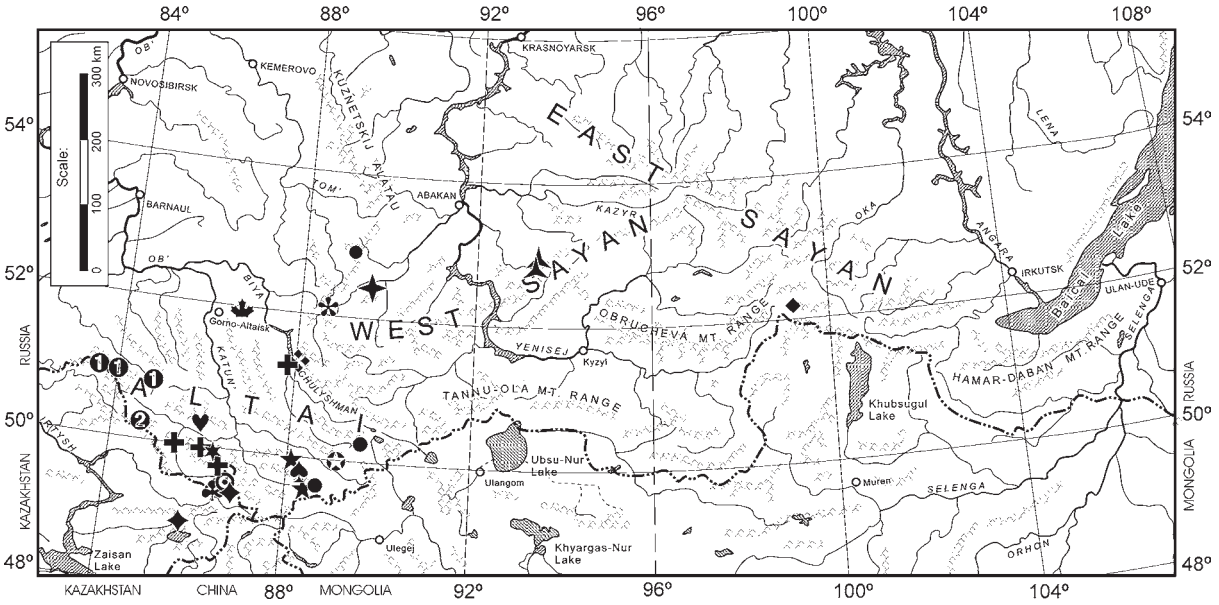


Map 1. Distribution of endemic *Acantholycosa* and *Mongolicosa* gen.n. species in Altai and adjacent areas.

Карта 1. Распространение эндемичных видов *Acantholycosa* и *Mongolicosa* gen.n. на Алтае и прилежащих территориях.

❶ — *A. altaiensis* sp.n., ❷ — *A. spinembolus* sp.n., ✦ — *A. kurchumensis* sp.n., ✚ — *A. azyuzini*, ♣ — *A. zinchenkoi* sp.n., ⊙ — *A. katunensis* sp.n., ♥ — *A. mordkovitchi* sp.n., ✹ — *A. paraplumalis* sp.n., ❖ — *A. plumalis* sp.n., ★ — *A. dudkorum* sp.n., ♠ — *A. dudkoromani* sp.n., ✪ — *A. logunovi* sp.n., ✻ — *A. khakassica* sp.n., ✦ — *A. petrophila* sp.n., ▲ — *A. sayanensis* sp.n., ✶ — *A. levinae* sp.n., • — *M. glupovi* sp.n., ♦ — *M. buryatica* sp.n.

Acantholycosa katunensis **sp.n.**
Figs. 21–23. Map 1.

MATERIAL. Holotype 1♂ (ISEA), RUSSIA, **Altai**, South Altai, south part of Katun Mt. Range, 5 km south-east of Rakhmanovskiye Klyuchi (=Springs), 2100–2500 m, alpine zone, 26.06.1997 (RD & V. Zinchenko).

ETYMOLOGY. The specific name refers to the type locality.

DESCRIPTION. Total length 8.50. Carapace: 4.10 long, 3.40 wide. Carapace length/femur I ratio: 0.96; Carapace width/femur I ratio 0.8. General coloration dark, carapace brown without distinct pattern, abdomen dark gray-brown. Legs from dirty brown to brown-black. Abdomen with dense long hairs. Legs with long but not very dense hairs. Cymbium black, palpal femur-tibia brown. Cymbium with 1 claw. Leg I joints: 4.25 + 1.85 + 4.75 + 4.90 + 1.95. Femur I with 3d, 3 p1 and 1r spines; patella with 2d, 1p and 1r; tibia I with 1p, 1r, 5pv and 4 or 5rv; metatarsus with 1p, 1r and 2-2v. Left palp with broken embolus.

DIAGNOSIS. This species is closely related to *A. sayanensis* sp.n. Two species have almost equal shape of the embolic tip, rather similar tegular, terminal apophyses. However they can be easily distinguished by presence of embolic spine in *A. sayanensis* sp.n. and longer down arm in Altaian species.

COMMENTS. This species may be conspecific with *A. kurchumensis* sp.n. known only from females. However, the likelihood of this is low as the two species belong to different species groups.

DISTRIBUTION. Known only from type locality.

Acantholycosa sayanensis **sp.n.**
Figs. 10–14, Map 1.

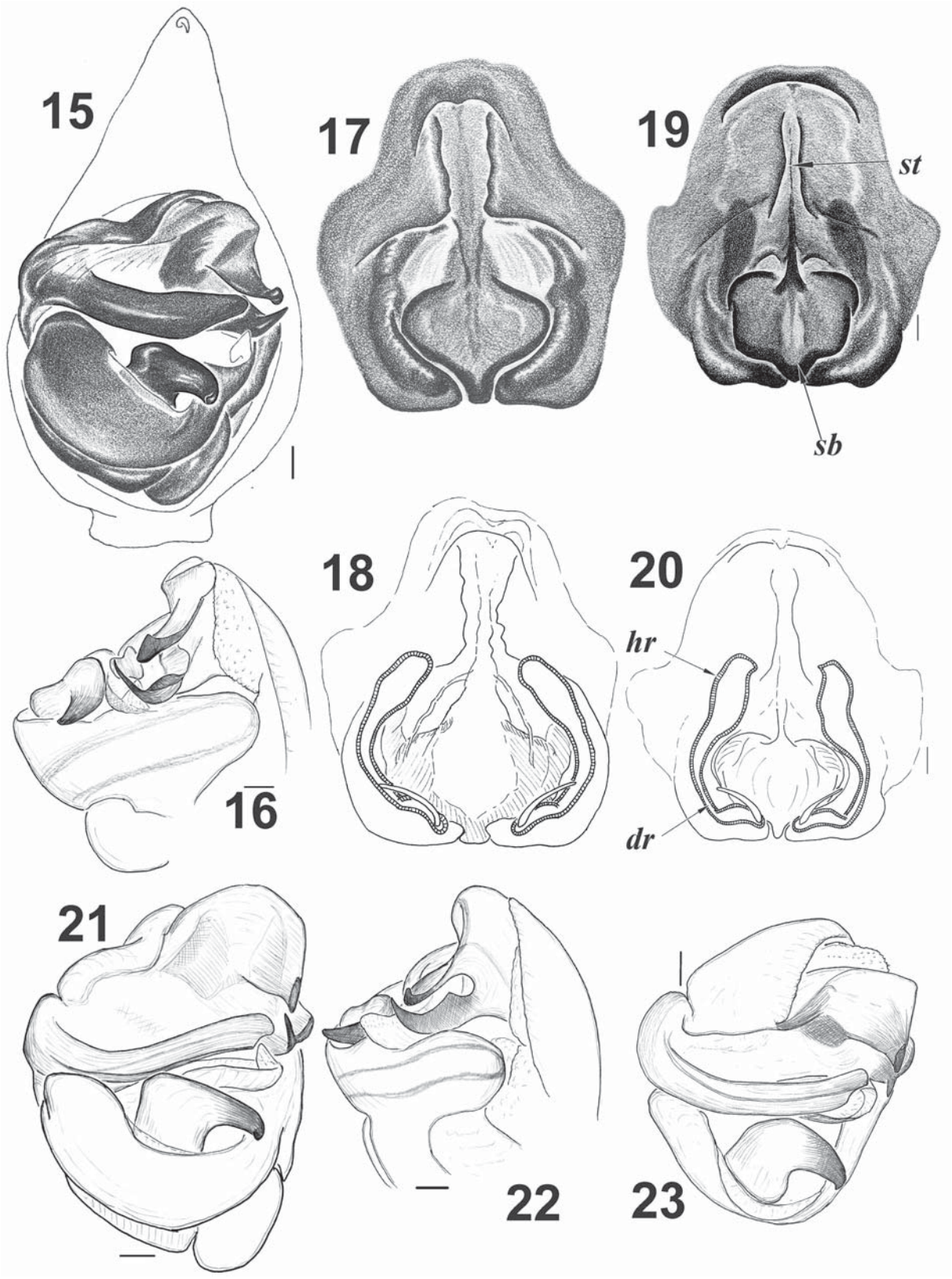
MATERIAL. Holotype ♂ (ISEA), RUSSIA, **Krasnoyarsk** Province, Yermakovski Distr., Western Sayan Mt. Range, Oiski Pass, 35–40 km SW of Oiskoye Lake, 11.07.1990 (N.A. Gladkevich & S.E. Chernyshov). Paratype 1 ♂ (ISEA) **Krasnoyarsk** Province, Yermakovski Distr., Abakan-Kyzyl Hwy 612th km, Oiskoye Lake, 5.07.1989 (D.L. Grodnitskiy).

ETYMOLOGY. The specific name refers to the type locality.

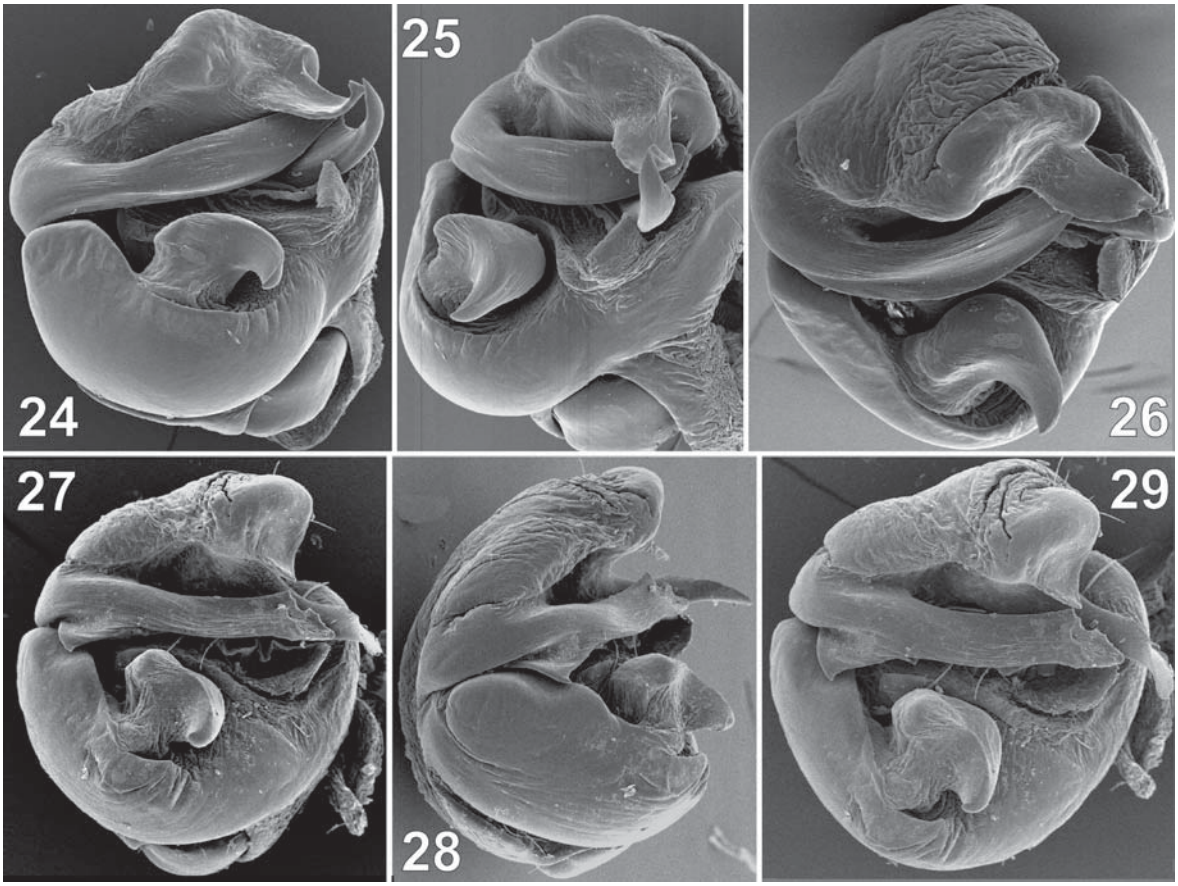
DESCRIPTION. Total length 8.50. Carapace: 4.50 long, 3.50 wide. Carapace length/femur I ratio: 0.9; Carapace width/femur I ratio 0.7. General coloration dark, carapace brown without distinct pattern, abdomen dark gray-brown.

Figs. 1–14. Copulatory organs of *Acantholycosa altaiensis* sp.n. (1–9) and *A. sayanensis* sp.n. (holotype, 10–14). 1, 10 — male palp, ventral view; 2 — terminal part of bulbus, ventral view; 3, 12 — terminal part of bulbus, view from above; 4, 13 — terminal part of bulbus, retrolateral view; 5 — paleal and terminal apophyses, view from above; 6–7 tegular apophysis, ventral view and view from above, respectively; 8–9 — epigyne, ventral and dorsal view, respectively; 11 — male palp, retrolateral view; 14 — tip of embolus, view from above. Scale = 0.1 mm. Abbreviations: *aa* — apical arm, *al* — apical lips, *ap* — apical pocket(s), *ba* — basal arm, *li* — lips, *pa* — paleal apophysis, *ta* — terminal apophysis.

Рис. 1–14. Копулятивные органы *Acantholycosa altaiensis* sp.n. (1–9) и *A. sayanensis* sp.n. (голотип, 10–14). 1, 10 –пальпа самца, вид снизу; 2 — терминальная часть бульбуса, вид снизу; 3, 12 — терминальная часть бульбуса, вид сверху; 4, 13 — терминальная часть бульбуса, вид сбоку-сзади; 5 — отростки палеи и терминальный, вид сверху; 6–7 — тегулярный отросток, вид снизу и вид сверху, соответственно; 8–9 — эпигина, вид снизу и сверху соответственно; 11 — пальпа самца, вид сбоку-сзади; 14 — вершина эмболюса, вид сверху. Масштаб 0,1 мм. Условные обозначения: *aa* — верхняя ветвь, *al* — верхние губы, *ap* — верхний карман, *ba* — нижняя ветвь, *li* — губы, *pa* — отросток палеи, *ta* — терминальный отросток.



Figs. 15–23. Copulatory organs of *Acantholycosa azyuzini* Marusik et al. (15–18), *A. oligerae* sp.n. (19–20) and *A. katunensis* sp.n. (21–23). 15 — male palp, ventral view; 16, 23 — bulbus, retrolateral view; 17, 19 — epigyne, ventral view; 18, 20 — epigyne, dorsal view; 21–22 — bulbus, ventral view and view from above, respectively. Scale = 0.1 mm. Abbreviations: *dr* — ducts of receptacula, *hr* — head of receptacula, *sb* — septal base, *st* — septal stem.



Figs. 24–29. Bulbus of *Acantholycosa azyuzini* Marusik et al. (24–26) *and A. lignaria* (Clerck) (27–29). 24, 27 — ventral view; 25 — retrolateral view; 26, 29 — view from above; 28 — prolateral view.

Рис. 24–29. Бульбус of *Acantholycosa azyuzini* Marusik et al. (24–26) и *A. lignaria* (Clerck) (27–29). 24, 27 — вид снизу; 25 — вид сбоку-сзади; 26, 29 — вид сверху; 28 — вид спереди-сбоку.

Legs from dirty brown to brown-black. Indistinct annulation visible on femora III–IV. Patella I lighter than other joints and patella. Leg I joints: 5.0+1.9+5.25+5.75+2.5. Femur I with 3 dorsal, 3 pro- and 2 retrolateral spines. Tibia I with 6 pairs of ventral spines. Palp as in Figs. 10–14, cymbium black, palpal femur-tibia brown, tip of cymbium with 3 claws, tegular apophysis without apical arm, inner part of embolus longer than external, embolus broad with relatively small spine near base, apical portion of terminal apophysis spine like.

DIAGNOSIS. *A. sayanensis* sp.n. can be easily distinguished from other congeners by the shape of tegular apophysis and tip of embolus in combination with spine near embolic base.

DISTRIBUTION. Known only from Western Sayan.

The *plumalis*-group: members of this group can be easily diagnosed by the combination of: legs covered with sparse but long hairs, large embolic tooth, totally fused apical pockets of epigyne, and —shaped septal base. It is possible that this group might be united in future with the *azyuzini*-group.

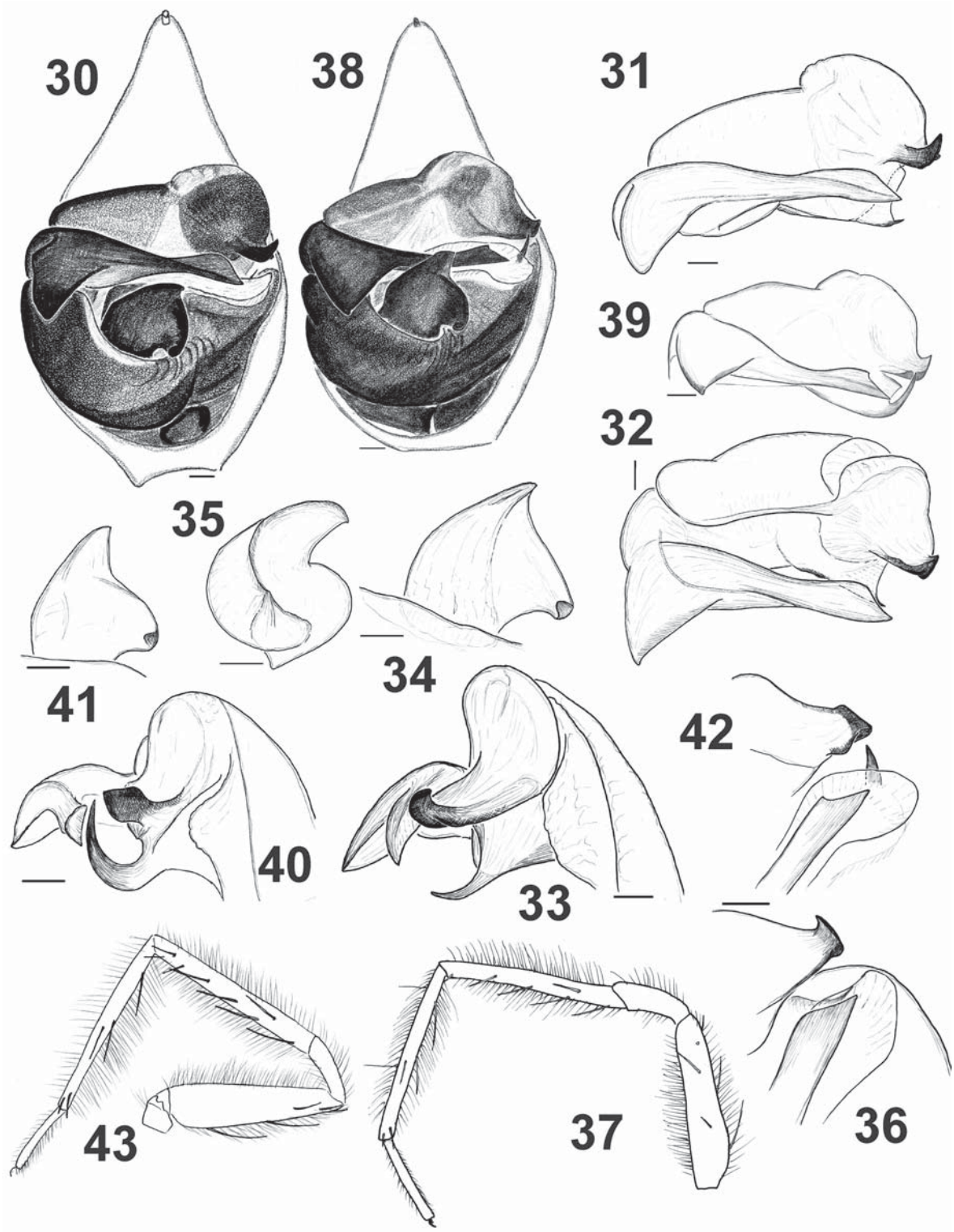
Acantholycosa plumalis **sp.n.**
Figs. 30–37, 44–48. Map 1.

MATERIAL. Holotype♂ (ISEA) and paratypes 2♂♂ (ISEA), RUSSIA, **Altai**, no real label but only "#4 Altai". Paratypes: 1♀ (ISEA), no real label but only "#18 Altai", seems was collected in the same area by the same collector as holotype; 3♀♀ (ZMMU), **Altai**, Teletskoye Lake, Chiri Vil., scree, 30.07.1997 (AT); 1♀ (ZMUT), **Altai**, Teletskoye Lake, Chiri Vil., mountain stony tundra, 30.07.1997 (AT).

ETYMOLOGY. The specific name is an arbitrary combination of letters.

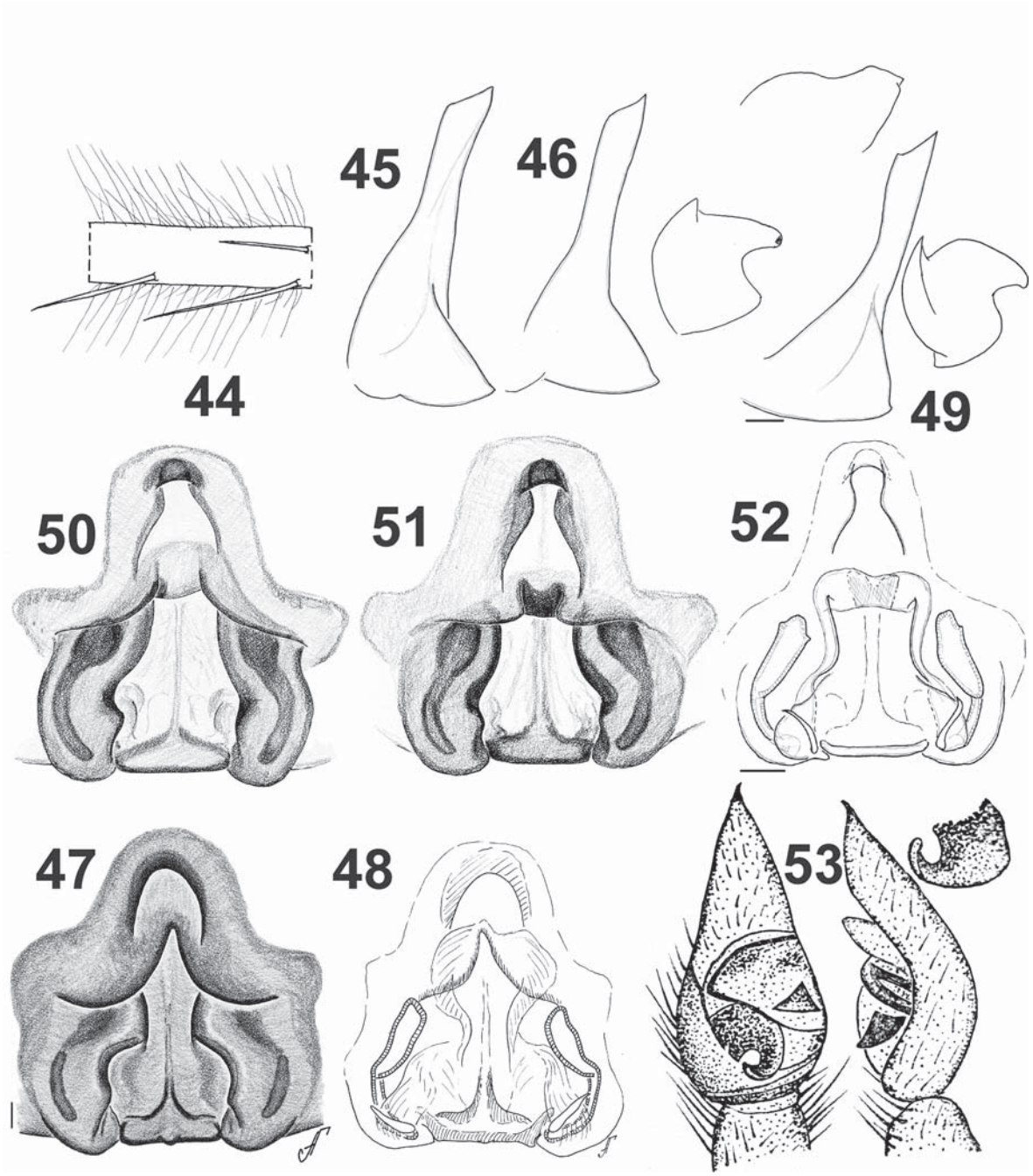
DESCRIPTION. Total length 7.50–8.50(10.80). Carapace: 4.00–4.30(4.25) long, 3.15–3.40(3.50) wide. Coloration dark, pattern almost invisible, but present. Abdomen in male blackish with red-brown heart mark, and 2 rows formed with series of whitish spots. Distinct leg marking absent. Carapace/femur I length ratio 1.02(1.06), carapace width/femur I ratio 0.81–0.83(0.86). Leg I joints: 4.10(4.00) + 1.85 (1.75) + 4.25(3.80) + 4.35(3.50) + 2.00(1.75). Legs (femur–metatarsus) and abdomen covered with relatively long hairs

Рис. 15–23. Копулятивные органы *Acantholycosa azyuzini* Marusik et al. (15–18), *A. oligerae* sp.n. (19–20) и *A. katunensis* sp.n. (21–23). 15 — пальпа самца, вид снизу; 16, 23 — бульбус, вид сбоку-сзади; 17, 19 — эпигина, вид снизу; 18, 20 — эпигина, вид сверху; 21–22 — бульбус, вид снизу и вид сверху, соответственно. Масштаб 0,1 мм. Условные обозначения: *dr* — каналы рецептакул, *hr* — "голова" рецетакул, *sb* — основание септума, *st* — ножка септума.



Figs. 30–43. Diagnostic characters of the males of *Acantholycosa plumalis* sp.n. (30–37) and *A. paraplumalis* sp.n. (38–43). 30, 38 — palp, ventral view; 31, 39 — terminal part of bulbus, ventral view; 32 — terminal part of bulbus, view from above; 33–40 — terminal part of bulbus, retrolateral view; 34, 41 — tegular apophysis, ventral view; 35 — tegular apophysis, view from above; 36, 42 — terminal portion of terminal part of bulbus, view from above; 37, 43 — leg I, showing pubescense and spines. Scale = 0.1 mm.

Рис. 30–43. Диагностические признаки самцов *Acantholycosa plumalis* sp.n. (30–37) и *A. paraplumalis* sp.n. (38–43). 30, 38 — пальпа, вид снизу; 31, 39 — терминальная часть бульбуса, вид снизу; 32 — терминальная часть бульбуса, вид сверху; 33–40 — терминальная часть бульбуса, вид сбоку-сзади; 34, 41 — тегулярный отросток, вид снизу; 35 — тегулярный отросток, вид сверху; 36, 42 — терминальаая часть терминальной части бульбуса, вид сверху; 37, 43 — нога I, показаны опушение и шипы. Масштаб 0,1 мм.



Figs. 44–53. Diagnostic characters of *Acantholycosa plumalis* sp.n. (44–48), *A. paraplumalis* sp.n. (49–52) and original figures of *A. azheganovae* (Lobanova) (53). 44 — part of male's tibia I, showing length of spines and hairs; 45- embolus, view from above: 46 — embolus and tegular apophysis, view from above; 47, 50–51 — epigyne, ventral view; 48, 52 — epigyne, dorsal view; 49 — embolus, tegular and terminal apophyses, view from above. Scale = 0.1 mm.

Рис. 44–53. Диагностические признаки *Acantholycosa plumalis* sp.n. (44–48), *A. paraplumalis* sp.n. (49–52) и оригинальные рисунки *A. azheganovae* (Lobanova) (53). 44 — часть голени I самца, показаны длина волосков и шипов; 45 — эмболюс, вид сверху: 46 — эмболюс и тегулярный отросток, вид сверху; 47, 50–51 — эпигина, вид снизу; 48, 52 — эпигина, вид сверху; 49 — эмболюс, тегулярный и терминальный отростки, вид сверху. Масштаб 0,1 мм.

(Fig. 37). Their maximal length is subequal (=femora diameter, but longer than tibia and metatarsus diameter). Leg I spination in both sexes: 3d, 3p, 2r; patella 0p, 1r; tibia 0d, 1p, 1r, 5-5v or 4-5v; metatarsus 1p, 1r, 2-2v. Male palp uniformly colored. Palp as in Figs. 30–36, tegular apophysis with laminar apical arm sharply pointed, embolus with large "spine", terminal apophysis very small. Epigyne as in Figs. 50–52, apical pockets fused, apical margin of foveaЛ-shaped, base of septum transversal, lips widely separated.

DIAGNOSIS. *A. plumalis* sp.n. can be distinguished from all congeners, except *A. paraplumalis* sp.n., by the following combination of characters: long and rather dense hairs, very

large embolic "spine", small pocket and transversal septal base. From sibling *A. paraplumalis* sp.n., this species can be distinguished by slightly smaller embolic "spine", thinner down arm of tegular apophysis, smaller terminal apophysis and Л-shaped upper margin of fovea.

DISTRIBUTION. Exact type locality is unknown, but it seems that it is environs of Teletskoye Lake.

Acantholycosa paraplumalis **sp.n.**
Figs. 38–43, 49–52, 55. Map 1.

MATERIAL. Holotype ♂ and paratype ♀ (ZMMU), RUSSIA, **Altai**, Choya Dist., Boityrgan Mt., stony mountain tundra, 12.08.2001 (NL). Paratypes: 2 ♂♂ 34 ♀♀ (1 ♀ JWC, 3 ♀♀ MMUM, 4 ♀♀ NRS, 1 ♂ 2 ♀♀ ZMUT, other in ZMMU), Altai, Choya Dist., Boityrgan Mt., forest-tundra and mountain tundra, 04–14.08.2001 (NL).

ETYMOLOGY. The specific name is an arbitrary combination of letters.

DESCRIPTION. Total length 8.00–10.00(10.20–10.80). Carapace: 4.50–4.75(4.75–4.80) long, 3.75–4.00(3.85–4.10) wide. Coloration dark dirty brown, pattern almost invisible, while present. Abdomen in male blackish with red-brown heart mark. Abdomen in both sexes with rather thick and long pubescence. Distinct leg marking absent. Carapace/femur I length ratio 1.06(1.13), carapace width/femur I ratio 0.88 (0.91). Leg I joints: 4.25(4.25) + 1.85(2.00) + 4.45(4.25) + 4.45(3.80) + 1.35(1.70). Leg I spination: 3d, 3p, 0r (3-2-0 in female); patella 1p, 1r (1r in female); tibia 2p (1p), 1r, 5-5v; metatarsus 2p(1p), 1r(1r), 2-2v. Palp uniformly dark colored. Palp as in Figs. 38–42, cymbium with one claw. Males with legs (femur–metatarsus) and abdomen covered with relatively long hairs. Their maximal length is subequal (=femora diameter, but longer than tibia and metatarsus diameter). Females with sparse but long hairs on legs. Tibial hairs are about the size (or even longer) of tibial diameter. Epigyne as in Figs. 47–48, 55, with ∧-shaped upper margin of fovea, apical pockets fused, septum present in fovea only, its stem very thin, basal part of septum small and transverse.

VARIATION. Two males have different density of pubescence on legs, the large paratype male has more dense pubescence.

DIAGNOSIS. This species can be easily separated from all congeners, except for *A. plumalis* sp.n, by the combination of following characters: long and rather dense hairs, very large embolic "spine", small pocket and transversal septal base. From sibling *A. plumalis* sp.n., *A. paraplumalis* sp.n. can be distinguished by slightly larger embolic "spine", wider down arm of tegular apophysis, larger terminal apophysis, smaller apical pocket and more or less horizontal upper margin of fovea.

DISTRIBUTION. Known from a single locality in northern Altai.

The *baltoroi*-group: members of this group can be easily be diagnosed by bifurcate or truncate tip of terminal apophysis, by the presence of small triangle shaped projection (apophysis) of palea, extension of the terminal part of palea, and anchor-shaped septum. Besides the three species known from Palaearctic, there is a fourth representative of this group, *A. solituda* (Levi & Levi, 1951) distributed in the Rocky Mountains of North America.

COMMENTS. It is possible that *baltoroi*-group represents a separate genus. Members of this group have cut-like palea with no well developed paleal apophysis, but only a small spine-like outgrowth.

Acantholycosa baltoroi (Caporiacco, 1935) *sensu* Buchar, 1976
Fig. 60. Map 2.

Pardosa baltoroi Caporiacco, 1935: 233, pl. 5, fig. 17 (♂♀).

Acantholycosa baltoroi Buchar, 1976: 202, fig. 1–3 (♂♀).

A. baltoroi: Chen, Song & Kim, 1998: 72, fig. 13–19 (♂♀), possibly missidentified.

A. baltoroi: Song, Zhu & Chen, 1999: 310, fig. 186A, M (♂♀), possibly missidentified.

MATERIAL EXAMINED. NEPAL: 1 ♂ (University of Innsbruck) Np61-VIIF-417 [det J. Buchar]. CHINA: 1 ♂ (IZB), **Sichuan,** Xiangcheng Co., Sumdo, 29.1°N 100.1°E, 4000 m, 06.06.1982; 2 ♂♂ (IZB), **Xizang**, Rawu (29°4N 96.7°E), 3820 m, 22.06.1980.

DESCRIPTION (specimen from Nepal). Total length long 7.00. Carapace: 3.70 long, 3.00 wide. Carapace/femur I length ratio 1.17, carapace width/femur I length ratio 0.95. General coloration dark. carapace without light pattern. Abdomen with red-brownish heart mark. Legs dark, femora with distinct light rings. Leg I joints: 3.15 + 1.35 + 2.75 + 2.95 + 1.60. Spination of leg I: femur 3d, 3p, 2r; patella 1p 1r; tibia 2p, 2r, 4-4v; metatarsus 2p, 1r, 2-2v. Tibia-metatarsus I and II with poorly distinct pubescence. Palp as in Fig. 60, embolus rather broad, turned in basal part, palea with triangle flat outgrowth, cymbium with 3 claws, darker than femur-tibia.

COMMENTS. Study of three males from Sichuan and Xizang revealed that they are not conspecific with *A. baltoroi sensu* Buchar because they have only one claw on cymbium. It is very probable that Xizang-Sichuan and Jilin (reported by Chinese authors) populations belong to a different species; males have slightly different embolus tip, cymbial size and different color pattern. We are going to return to this problem in the future.

DISTRIBUTION**.** Known so far from Kashmir, Nepal and China.

Acantholycosa levinae **sp.n.**
Figs. 61–65, Map 1.

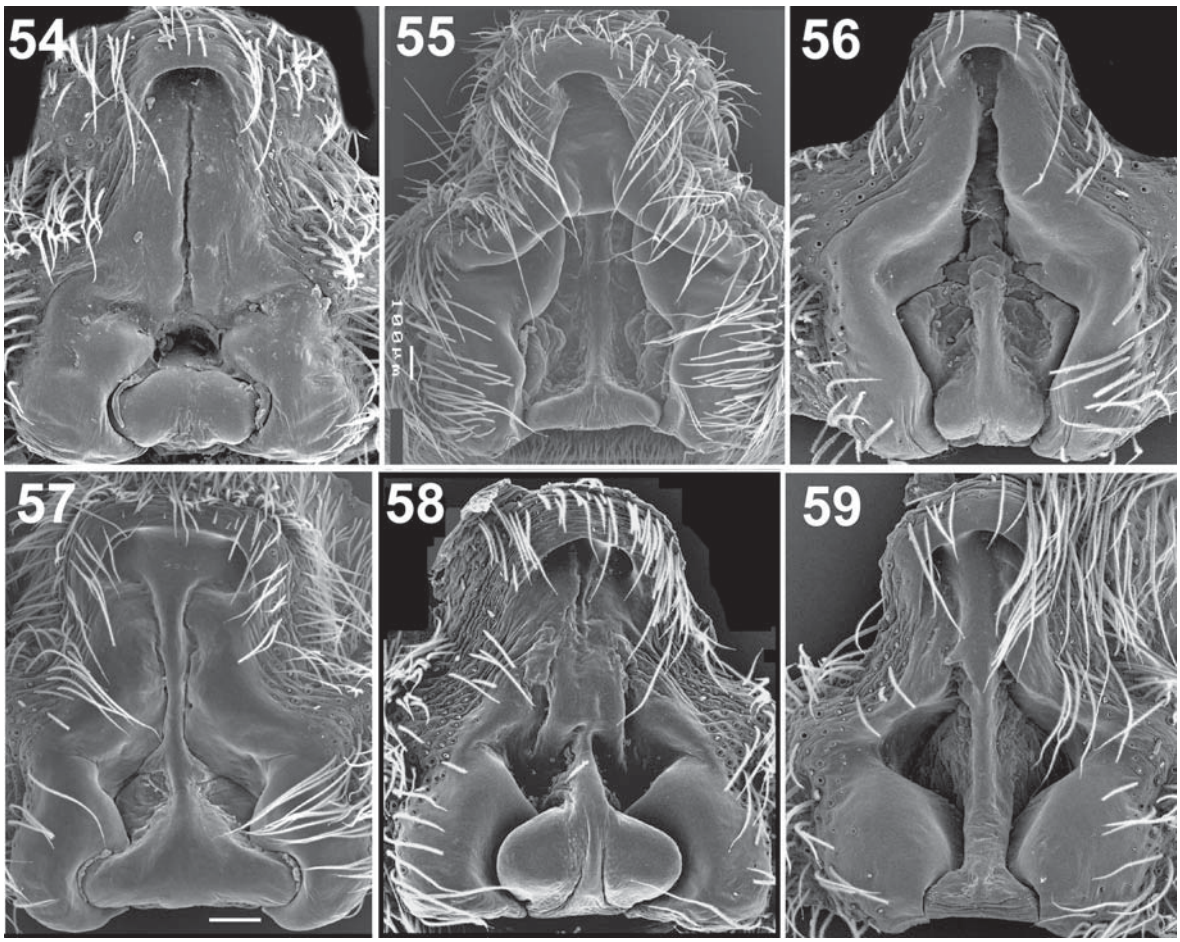
MATERIAL. Holotype ♂ (ZMMU), RUSSIA, **Altai**, Katun' Reserve, kurums, traps, 11.07.2000 (NL). Paratypes 1♂ (ZMMU), **Altai** Mts**.,** Katunski Mt. Range, Katunski Reserve, Sredneye Multinskoye Lake, ca. 30 air-km SE of Ust-Koksa, 1600–2200 m, 30.07–05.08.1994 (S.I. Golovatch & A.B. Ryvkin).

ETYMOLOGY. This species was named after collector of the holotype, Mrs. Nadezhda V. Levina.

DESCRIPTION. Total length 7.60. Carapace: 3.60 long, 2.95 wide. Carapace length/femur I ratio: 0.83, carapace width/femur I ratio 0.69. Carapace dark brown, with almost invisible pattern. Abdomen blackish with light heart mark and pair of band formed with series of light spots. Legs without distinct rings. Tibia-tarsus uniformly brown. Leg I joints: 4.30 + 1.65 + 4.65 + 4.80 + 2.10. Spination of leg I: femur 3d, 2p, 2r; patella 2d; tibia 1p, 5-5v; metatarsus 1p, 1r, 2-2v. Ventral tibial spine very short longest spine tibia diameter ratio 1.67 (in other species > 2.50). Longs very long, metatarsus IV longer than whole body (7.9). Palp as in Figs. 61–65, tegular apophysis with reduced apical arm, embolus wide near base, with relatively small "spine", tip of embolus subdivided into rounded part and embolus proper, palea looks like abrupt, terminal apophysis massive and subdivided like in *A. sterneri.*

DIAGNOSIS. This species can be easily separated from other congeners by the shape of embolus, terminal apophysis and palea.

DISTRIBUTION. Known only from the type locality.



Figs. 54–59. Ventral view of epigyne of *Acantholycosa lignaria* (Clerck) (54, from Finland), *A. paraplumalis* sp.n. (55), *A. altaiensis* sp.n. (56) *A. zinchenkoi* sp.n. (57), *A. mordkovitchi* sp.n. (58) and *A. dudkorum* sp.n. (59). Scale = 0.1 mm.

Рис. 54–59. Эпигина, вид снизу *Acantholycosa lignaria* (Clerck) (54, из Финляндии), *A. paraplumalis* sp.n. (55), *A. altaiensis* sp.n. (56) *A. zinchenkoi* sp.n. (57), *A. mordkovitchi* sp.n. (58) и *A. dudkorum* sp.n. (59). Масштаб 0,1 мм.

Acantholycosa sterneri (Marusik, 1993)
Figs. 66–72. Map 2.

Pardosa sterneri Marusik, 1993: 77, fig. 1–3 (♂).
Acantholycosa sp.: Marusik & Logunov, 1995: 116.
Acantholycosa sterneri: Marusik et al., 2000: 76.
A. sterneri: Kronestedt & Marusik, 2002: 67, fig. 2, 7–8, 12–13, 15–18, 21, 25–27, 28

MATERIAL EXAMINED. RUSSIA: 69 ♂♂ 14 ♀♀ 1 juv. (ISEA), **Kemerovo Area**, Gornaya Shoriya, 10 km N of Sheregesh, Pustag Mt., screes, 53°N 88°05'E, 1300–1500 m, 13–26.06.1999 (DEL); 2 ♂♂ (ISEA), **Kemerovo Area**, Gornaya Shoriya, 10 km N of Sheregesh, Pustag Mt., timberline, 53°N 88°05'E, 900 m, 21–27.06.1999 (DEL); 1 ♂ (ISEA), **Krasnoyarsk** Province**,** Yermakovski Dist., Western Sayan Mt Range, Oiski Pass, 35–40 km SW of Oiskoye Lake, 11.07.1990 (N.A. Gladkevich & S.E. Chernyshov); 1 ♂ (ISEA), **Tuva**, Akademika Obrucheva Mt. Range, Dongul-Taiga Mt. Range, 20 km NNE of Kyzyl, 2200–2400 m, mountain tundra, pitfall traps, 07–23.06.2001 (AD & RD, I.I. Lyubechanskiy); 7 ♂♂ 1 ♀ 1 juv (ISEA), T**uva**, Akademika Obrucheva Mt. Range, Khertesh-Taiga Mt. Range, 25 km NNE of Kyzyl, 2200–2400 m, mountain tundra, 19–21.06.2000 (RD & AD, I.I. Lyubechanskiy); 5 ♂♂ 6 ♀♀ 1 juv (ISEA), **Tuva**, Akademika Obrucheva Mt. Range, Dongul-Taiga Mt. Range, 26 km NNE of Kyzyl, 2200–2400 m, tundra, 17–18.06.2001 (RD & AD, I.I. Lyubechanskiy); 1 ♀ (ISEA), Irkutsk, #200; 1 ♂ (ZMUT), **Buryatia**, Svyatoi Nos Peninsula, Upper Burtui River, 53°39'N 108°51'E, 1500 m, 29.06.1996 (J. Kullberg);♂♂ ♀♀ (ISEA),**Chita** Area, Sokhondo Reserve, larch forest and mountain tundra, 1650–1750 m, 1991 (many collectors).

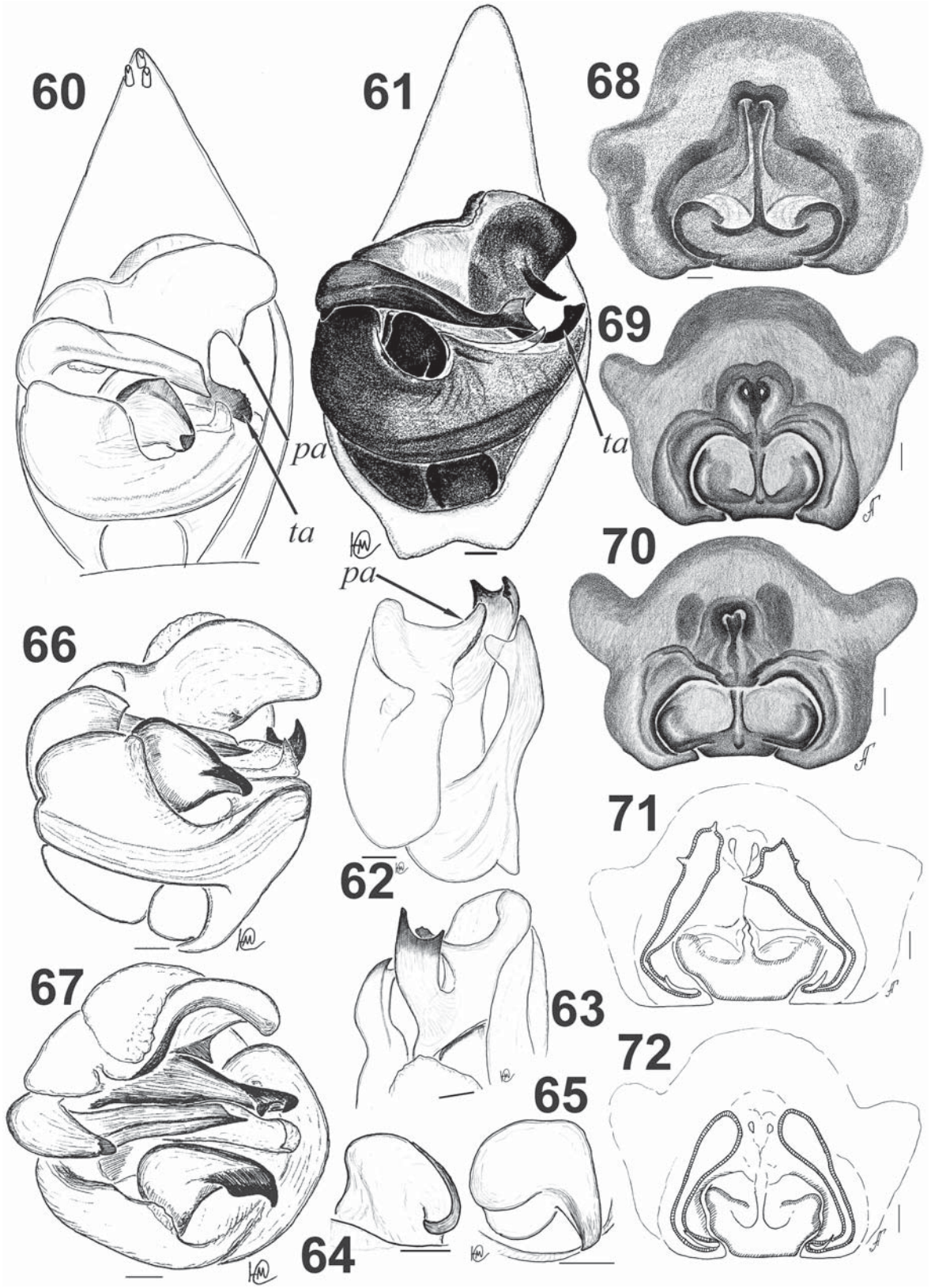
COMMENTS. This species was recently revised Kronestedt and Marusik [2002]. It can be easily separated from all other Palaearctic congeners by thick cotton-like pubescense on legs I and II in males and the anchor-like shape of septum.

DISTRIBUTION. It is distributed along the south Siberia from Kemerovo Area to Chita, and south to Khubsugul Aimak in Mongolia. Record of *A. baltoroi* from Jilin [cf. Song et al., 1999] may refer to *A. sterneri*.

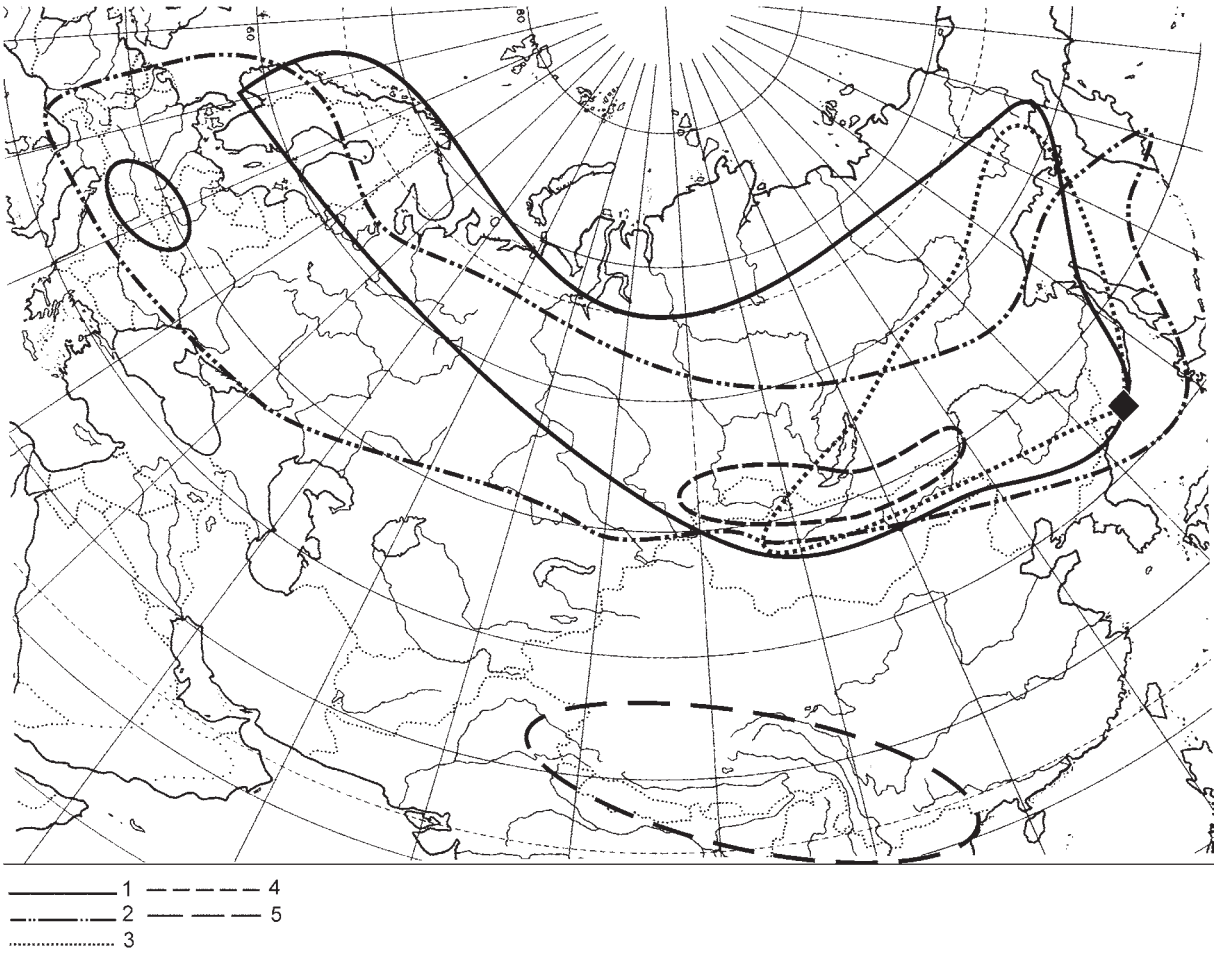
The *dudkorum*-group: members of this group can be diagnosed on the basis of females only: apical pockets deep, septum with subparallel margins, wings distinct. Male of *A. dudkorum* sp.n. has embolus widened on the top.

Acantholycosa dudkorum **sp.n.**
Figs. 59, 73–79, 84–85, Map 1.

MATERIAL. Holotype 1 ♂ and paratypes 2 ♀♀ 1(♂-juv) (ISEA) RUSSIA, **Altai**, 50 km W of Kosh-Agach, ca. 20–25 km W of Bel'tir, Taltura (Chagan-Uzun) River canyon, 2900–3100



Figs. 60–72. Copulatory organs of *Acantholycosa baltoroi* (Caporiacco) (60), *A. levinae* sp.n (61–65) and *A. sterneri* (Marusik) (66–72). 60–61 — пальпа самца, ventral view; 62–63 — terminal portion of bulbus, view from above and from below-retrolaterally, respectively; 64–65 — tegular apophysis, ventral view and view from above, respectively; 66–67 — bulbus, ventral and view from above; 68–70 — variation of epigyne ventral view; 71–72 — variation of vulva. Scale = 0.1 mm.



Map 2. Distribution of widespread and two Far East *Acantholycosa* species.
Карта 2. Ареалы широко распространенных и дальневосточных видов *Acantholycosa*.
1 — *A. norvegica*, 2 — *A. lignaria*, 3 — *A. aborigenica*, 4 —*A. sterneri*, 5 — *A. baltoroi*, ♦ — *A. oligerae* sp.n. & *A. sundukovi* sp.n.

m, mountain stony steppe, 26–28.1999 (V.V. Glupov). Paratypes: 1 ♂ 1 ♀ (ZMUT — palp and epigyne in SEM mount), SE **Altai**, E part of Yuzhno-Chuisky (South Chuya) Mt. Range, 40 km SSW of Kosh-Agach, left tributary of Tarkhata River, 2400–3100 m, 03–04.07.1996 (AD & RD).

ETYMOLOGY. The specific name is a patronym in honor of two brothers Roman Yu. and Andrei Yu. Dudko who collected most of new species treated here.

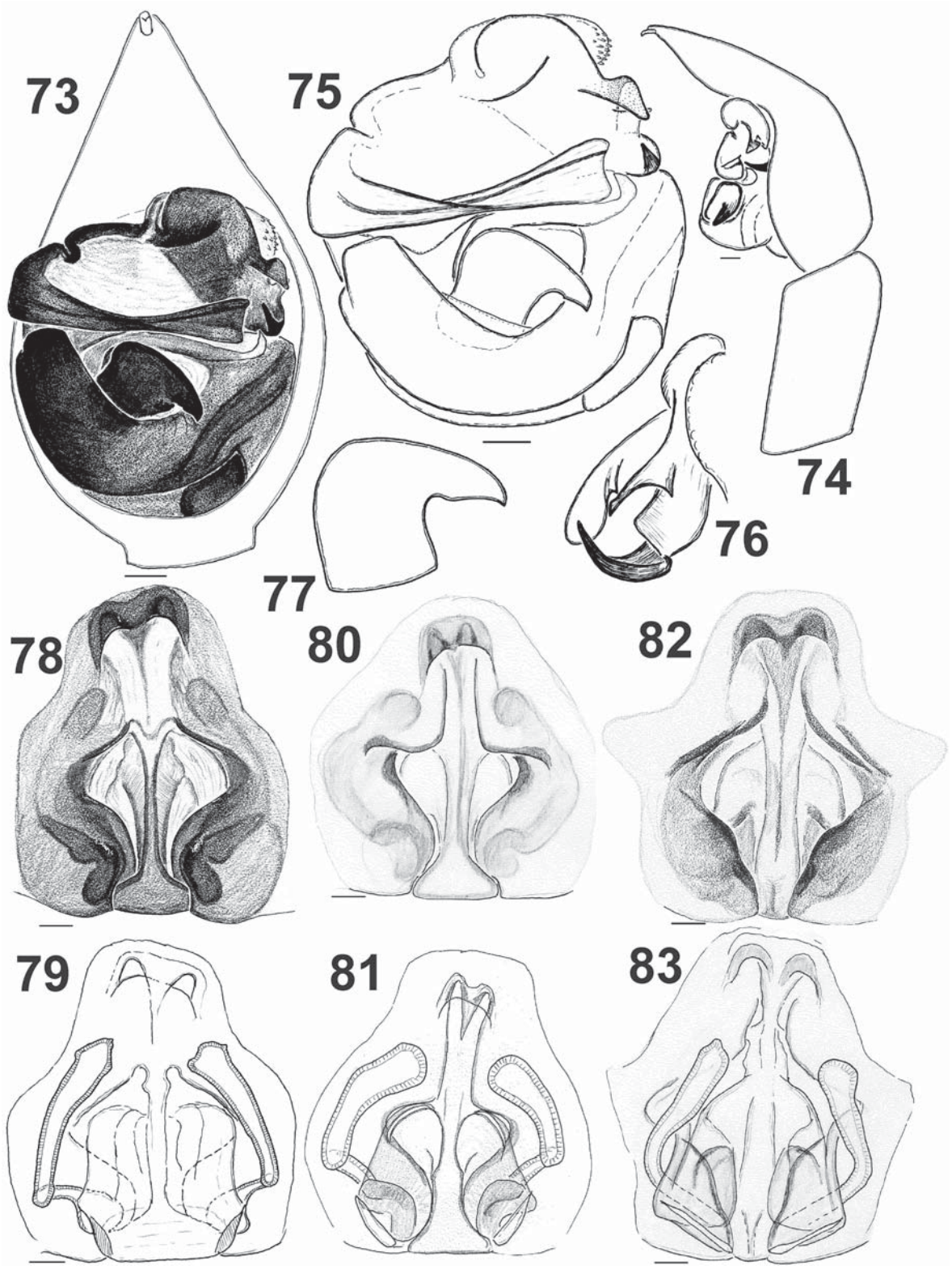
DESCRIPTION. Total length 8.00(9.80). Carapace: 3.60 (3.90) long, 3.00(3.60) wide. General coloration dark brown, cephalic part black, coxae and trochanters with yellow-brown spots Leg I joints in male (female): 3.50(3.50) + 1.40 (1.70) + 3.60(3.50) + 3.60(3.00) + 1.65(1.60). Femur I in male with 3 dorsal, 3 pro- and 2 retrolateral spines, in female 3-2-2 correspondingly. Carapace length/femur I ratio = 1 (1.11), carapace width/femur I ratio = 0.85(0.90). Palp as in Figs. 73–77, tegular apophysis without apical arm, embolus without spine, broad, twisted in mid part, tip widened, paleal outgrowth of peculiar shape. Epigyne as in Figs. 59, 78–79, with about fused apical pockets, joint pocket wide, slightly wider than septal base, fovea rhomboidal, septal base equal in width to widest wart of steam, valves small but distinct, receptacula long, turned near base to 90º.

DIAGNOSIS. Males of *A. dudkorum* sp.n. can be easily separated from other congeners by shape of tegular apophysis, embolus and paleal outgrowth. Females of this species are very similar to those of *A. dudkoromani* sp.n. However they can be distinguished by broader receptacula, smaller apical pockets and thinner fused pocket in *A. dudkoromani* sp.n. The later species has triangle shaped fovea, apical part of stem distinct and settled in furrow.

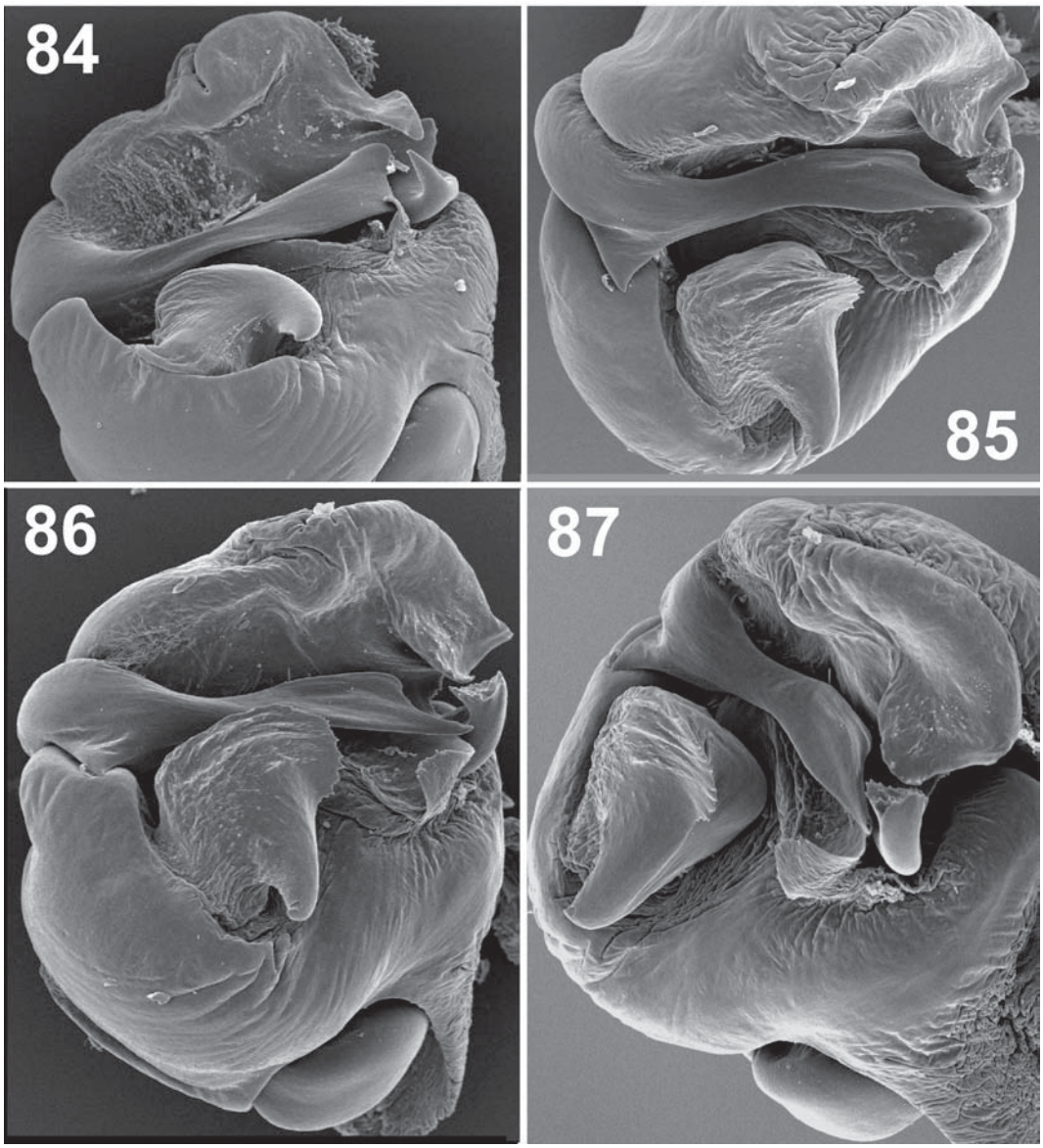
COMMENTS. *A. dudkoromani* sp.n. and *A. dudkorum* sp.n. may belong to the same species. Unfortunately lack of male of the former species and small number of females of both species do not allow us to determine whether we dealing with highly variable females or with stable differences.

DISTRIBUTION. Known only from south-central Altai.

Рис. 60–72. Копулятивные органы *Acantholycosa baltoroi* (Caporiacco) (60), *A. levinae* sp.n (61–65) и *A. sterneri* (Marusik) (66–72). 60–61 — пальпа самца, вид снизу; 62–63 — верхняя часть бульбуса, вид сверху и снизу-ретролатерально, соответственно; 64–65 — тегулярный отросток, вид снизу и вид сверху, соответственно; 66–67 — бульбус, вид снизу и сверху; 68–70 — вариабельность эпигины вид снизу; 71–72 — вариабельность вульвы. Масштаб 0,1 мм.



Figs. 73–83. Copulatory organs of *Acantholycosa dudkorum* sp.n. (73–79), *A. dudkoromani* sp.n. (80–81) and *A. kurchumensis* sp.n. (82–83). 73–74 — male palp, ventral view (73), retrolateral view (74); 75 — bulbus, ventral view; 76 — terminal part of bulbus, retrolateral view; 77 — tegular apophysis, view from above; 78, 80, 82 — epigyne, ventral view; 79, 81, 83 — epigyne, dorsal view. Scale = 0.1 mm.



Figs. 84–87. Bulbus of *Acantholycosa dudkorum* sp.n. (84–85) and *A. mordkovitchi* sp.n. (86–87). 84, 86 — ventral view; 85 — view from above; 87 — retrolateral-apical view.

Рис. 84–87. Бульбус *Acantholycosa dudkorum* sp.n. (84–85) и *A. mordkovitchi* sp.n. (86–87). 84, 86 — вид снизу; 85 — вид сверху; 87 — вид сверху-ретролатерально.

Acantholycosa dudkoromani **sp.n.**
Figs. 80–81, Map 1.

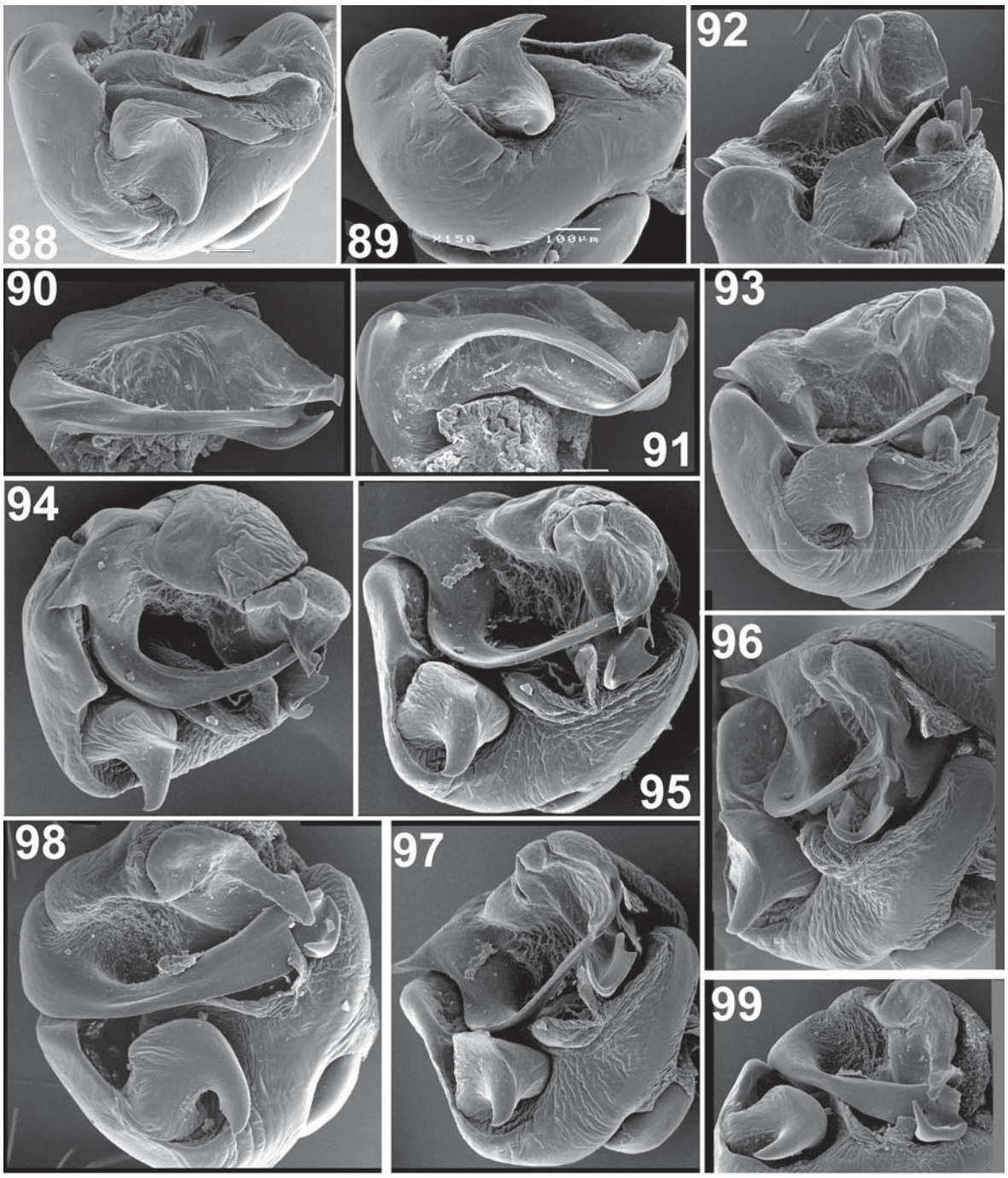
MATERIAL. Holotype 1♀ (ISEA), RUSSIA, SE **Altai**, between Chagan-Burgazy & Tarkhata Rivers, 4 km NNW Chernaya Mt., 2600–3000 m, tundra, 01–02.07.1996 (AD & RD).

ETYMOLOGY. The specific name is a patronym in honor of carabidologist Dr. Roman Yu. Dudko, Novosibirsk who collected most of the new species treated here.

DESCRIPTION. Total length 9.00. Carapace: 3.80 long, 3.25 wide. General coloration dark brown, cephalic part black, coxae and trochanters with yellow-brown spots. Leg I joints: 3.40 + 1.65 + 3.40 + 3.10 + 1.55. Femur I with 3 dorsal 2 pro- and 2 retrolateral. Patella without spines. Tibia I with 5 pairs of ventral spines (apical not counted). Carapace length/femur I ratio = 1.11, carapace width/femur I ratio = 0.96. Epigyne as in Figs. 80–81, with about fused apical pockets, joint slightly thinner than septal base, fovea triangle, apical margin horizontal, septal base triangle, valves not distinct, receptacula long and broad, turned near base by obtuse angle.

DIAGNOSIS. This species can be separated from sibling *A. dudkorum* sp.n. and *A. kurchumensis* sp.n. by horizontal

Рис. 73–83. Копулятивные органы *Acantholycosa dudkorum* sp.n. (73–79), *A. dudkoromani* sp.n. (80–81) и *A. kurchumensis* sp.n. (82–83). 73–74 — пальпа самца, вид снизу (73) и сбоку-сзади (74); 75 — бульбус, вид снизу; 76 — терминальная часть бульбуса, вид сбоку-сзади; 77 — тегулярный отросток, вид сверху; 78, 80, 82 — эпигина, вид снизу; 79, 81, 83 — эпигина, вид сверху. Масштаб 0,1 мм.



Figs. 88–99. Copulatory organs of *Acantholycosa logunovi* sp.n. (88–91), *A. norvegica* (Thorell) (92–97) and *A. dudkorum* sp.n. (98–99). 88–89 — tegulum, view from above and ventral, respectively; 90–91 — terminal portion of bulbus, ventral and view from below, respectively; 92–93 — bulbus, ventral view; 94–95, 98 — bulbus, view from above; 96–97, 99 — bulbus, retrolateral view, various turns.

Рис. 88–99. Копулятивные органы *Acantholycosa logunovi* sp.n. (88–91), *A. norvegica* (Thorell) (92–97) и *A. dudkorum* sp.n. (98–99). 88–89 — тегулюм, вид сверху и снизу, соответственно; 90–91 — терминальная часть бульбуса, вид снизу и сзади, соответственно; 92–93 — бульбус, вид снизу; 94–95, 98 — бульбус, вид сверху; 96–97, 99 — бульбус, вид сбоку-сзади, разные аспекты.

upper margin of fovea, relatively small apical pockets and thick receptacula.

DISTRIBUTION. Known only from type locality.

Acantholycosa kurchumensis **sp.n.**
Figs. 82–83, Map 1.

MATERIAL. Holotype ♀ (ISEA) KAZAKHSTAN, **East-Kazakhstan** Area, Kurchum Mt. range, Kurchum River upper flow, 23.08.1990 (V.K. Zinchenko). Paratypes: 1♀ (ISEA), together with holotype; 2 ♀♀ (JWC), **East-Kazakhstan** Area, outreaches of Katun' Mt. Range, env. of Rakhmanovskiye Klyuchi Vil. [ca. 49.504°N, 86.526°E], August 1986 (I. Kabak).

ETYMOLOGY. The specific name is taken from the type locality.

DESCRIPTION**.** Total length 7.50–7.80. Carapace: 4.90–4.00 long, 3.15–3.25 wide. Carapace/tibia I length ratio 1.03, carapace width/tibia I ratio 0.83. Body and legs covered with long hairs. Coloration dark brown. Dorsal side of patella lighter than other joints. Leg I joints: 3.90 + 1.50 + 3.60 + 3.10 + 1.55. Femur I with 3 dorsal, 3 pro- and 2 retrolateral spines. Patella with 1 retrolateral spine. Tibia I with 5 of proventral and 4 retroventral spines, 1 pro- and 2 retrolateral spines. Epigyne as in Figs. 82–83, with rhomboidal fovea, apical pockets touching but not fused, lips not touching each other, main part of septum with parallel margins, receptacula long, club-shaped.

DIAGNOSIS. Epigyne of this species resembles those of *A. dudkorum* sp.n. and *A. dudkoromani* sp.n., but can be easily separated from them by lacking widened septal base, and having well developed valves (broader than stem).

COMMENTS. This species may be conspecific with *A. katunensis* sp.n. known only from males. However, the likelihood of this is low because the two species belong to different species groups.

DISTRIBUTION. Known only from the type locality.

***The khakassica*-group:** members of this group can be easily diagnosed by bifurcate spine-like outgrowth (=spine) in the base of embolus, claw (~bill) like outgrowth of palea and thin tapering tip of embolus. Shape of other part of embolus (straight, thin, spine like tip) are also diagnostic.

Acantholycosa khakassica **sp.n.**
Figs. 100–103, Map 1.

MATERIAL. Holotype ♂ and 37 ♂♂ paratypes (ISEA), RUSSIA, SW **Khakassia**, Abakan Mt. Range, Choochek Mt. Range, 20 km SSE of Mrassu, talus, 1600−1800 m, 07−19.07.1999 (DEL). Paratypes 37 ♂♂ (ISEA) taken together with the holotype.

ETYMOLOGY. The specific name refers to the type locality.

DESCRIPTION. Total length long 8.50–9.20. Carapace: 3.90–4.20 long, 3.00–3.30 wide. Specimens poorly preserved, coloration poorly indistinct, seems to be brown, with median light band on carapace and submarginal broken stripe, legs with rings. Carapace/femur I length ratio 0.87, carapace width/femur I length ratio 0.67. Leg I joints: 4.60 + 1.75 + 4.85 + 5.00 + 2.15. Spination of leg I: femur 3d, 2p, 2r; patella 0; tibia 2d (almost indistinct), 2p, 1r, 5-5v; metatarsus 1p, 1r, 2-2v. Palp as in Figs. 100–103, cymbium with 1 claw, darker than femur-tibia, palea with simple claw-like outgrowth, base of embolus with subdivided rather long spine-like outgrowth, embolus relatively thin, straight, apical portion — spine-like, terminal apophysis with relatively small with spine like outgrowth, tegular apophysis with totally reduced apical arm, almost triangle shaped.

DIAGNOSIS. *A. khakassica* sp.n. is closely related to *A. petrophila* sp.n. These two species have the same conformation of the embolic base (subdivided spine-like outgrowth), claw-like paleal apophysis, very similar shape of embolus. However they can be very easily distinguished by the shape of tegular apophysis: *A. khakassica* sp.n. has no apical arm and *A. petrophila* sp.n. has very well developed apical arm.

DISTRIBUTION. Known from type locality only.

Acantholycosa petrophila **sp.n.**
Figs. 104–107. Map 1.

MATERIAL. Holotype ♂ and 37 ♂♂ paratypes (ISEA), RUSSIA, **Khakassia**, Western Sayan, 50 km SSW of Tashtyp, central part of Khansyn Mt. Range, scree, 1800−2100 m, 11−24.07.2000 (DEL).

ETYMOLOGY. The specific name indicates that this species like all other congeners lives among stones.

DESCRIPTION. Total length 7.80–8.50 long. Carapace: 3.65–3.80 long, 2.85–3.00 wide. Specimens poorly preserved, coloration indistinct, seems to be dark gray. Carapace/femur I length ratio 0.86, carapace width/femur I length ratio 0.68. Leg I joints: 4.35 + 1.65 + 4.65 + 5.00 + 2.20. Spination of leg I: femur 3d, 2, 2r; patella 1p, 1r; tibia 2d, 1p, 1r, 5-5v; metatarsus 1p, 1r, 2-2v. Palp as in Figs. 104–107, cymbium with 1 claw, palea with simple claw-like outgrowth, base of embolus with subdivided short spine-like outgrowth, embolus relatively thin, straight, apical portion — spine-like, terminal apophysis with relatively small with spine like outgrowth, tegular apophysis with long apical arm (longer than basal)

DIAGNOSIS. *A. petrophila* sp.n. can be easily distinguished from all other congeners by having unique combination of two characters: long well developed apical arm of tegular apophysis and bifurcate spine-like outgrowth in the base of embolus.

DISTRIBUTION. Known only from type locality.

The *lignaria*-group: members of this group can be diagnosed by males only. They have a plate-like (=laminar) paleal apophysis, strong terminal apophysis and reduced apical arm of the tegular apophysis.

Acantholycosa lignaria (Clerck, 1757)
Figs. 27–29, 54, 115–121, Map 1.

Araneus lignarius Clerck, 1757: 90, pl. 4, fig. 4 (♂♀).

Lycosa borealis Sundevall, 1833a: 180 (D♀).

Acantholycosa lignaria: Holm, 1947: 37, pl. 8, fig. 82–83, pl. 10, fig. 47 (♂♀).

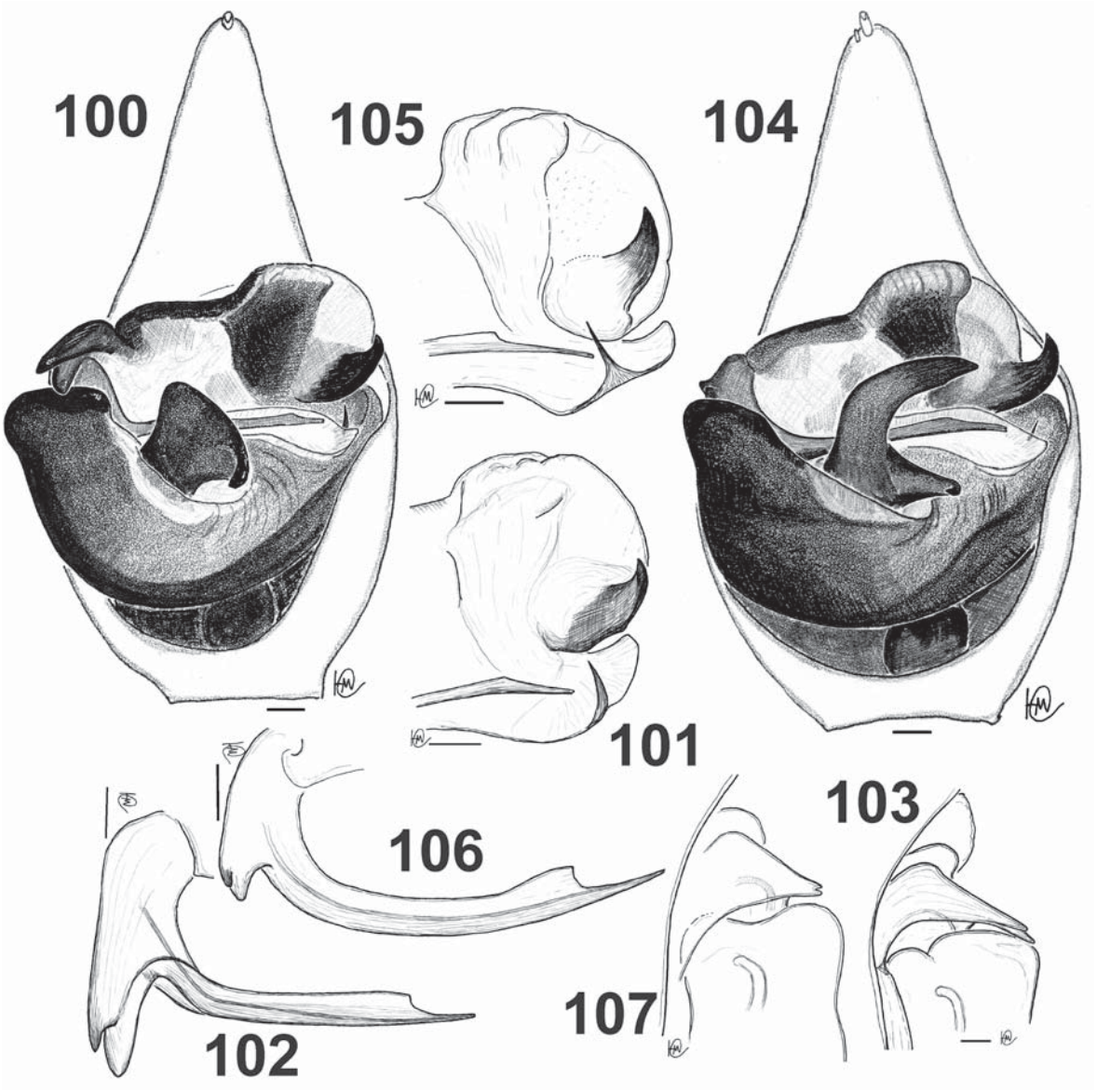
A. lignaria: Fuhn & Niculescu-Burlacu, 1971: 60, fig. 24a–e (♂♀).

A. altaica Savelyeva, 1972: 454, fig. 1a–b (♀). **Syn.n.** (types lost).

A. lignaria: Zyuzin & Marusik, 1988: 1085, fig. 7 (♂).

A. lignaria: Heimer & Nentwig, 1991: 310, fig. 830 (♂♀).

MATERIAL EXAMINED. FINLAND: 2 ♂♂ 3 ♀♀ (SEM, ZMUT), Humppila Rautakallio, 28.06.1968 (J. Joki); 1 ♂ (ZMUT), Kumlinge, Enklinge (670: 15), Sphagnum, 20.6.−14.8.1971 (PL & R. Mannila); 1 ♀ (ZMUT), Turku, Kärsämäki (671: 23), stony bed, 2.7.1972 (I. Oksala); ♀ (ZMUT), Masku, Kareva (672:23), pine forest, June 1968 (SK); ♂♂ ♀♀ (ZMUT), Nummi-Pusula, Salomaa (672: 33), 25.09.1969−05.07.1970 (PL); ♀ (ZMUT), Somero Koisthuhta (674: 30), 21.05.1972 (H. Hippa & R. Mannila); 1♂ 1♀ (ZMUT), Oravainen, Slagsfältet (702: 26), stony bed & lichens, 03.06.−22.7.1972 (PL); ♂♂ ♀♀ (ZMUT), Lieksa, Pielisjärvi, Mätäsvaara (737: 56), 15.06.1967 (PL); ♀

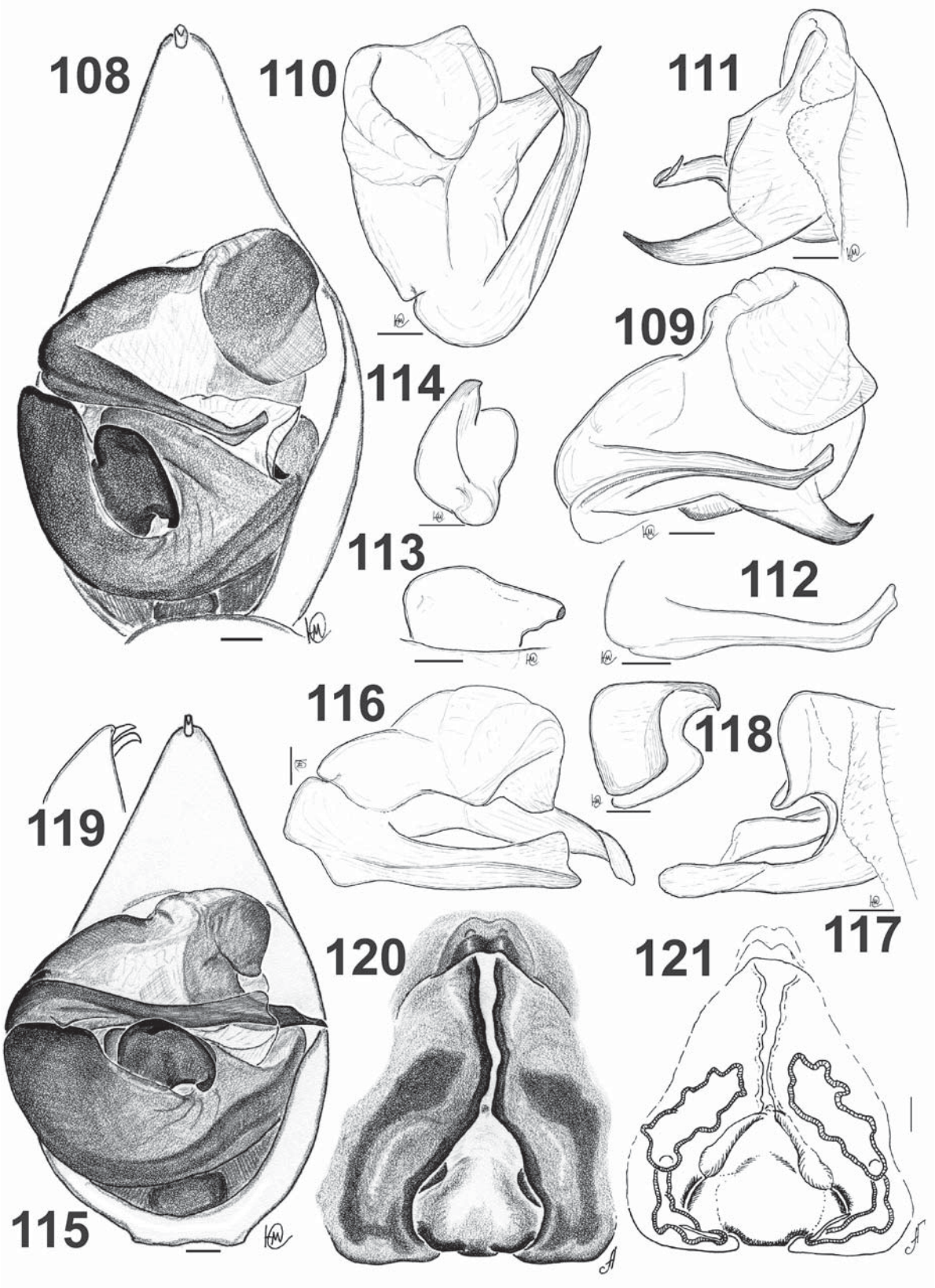


Figs. 100–107. Copulatory organs of *Acantholycosa khakassica* sp.n. (100–103) and *A. petrophila* sp.n. (104–107). 100, 104 — пальпа самца, ventral view; 101, 105 — terminal portion of terminal part of bulbus, ventral view; 102, 106 — embolus, view from above; 103, 107 — embolic spine, prolateral view. Scale = 0.1 mm.

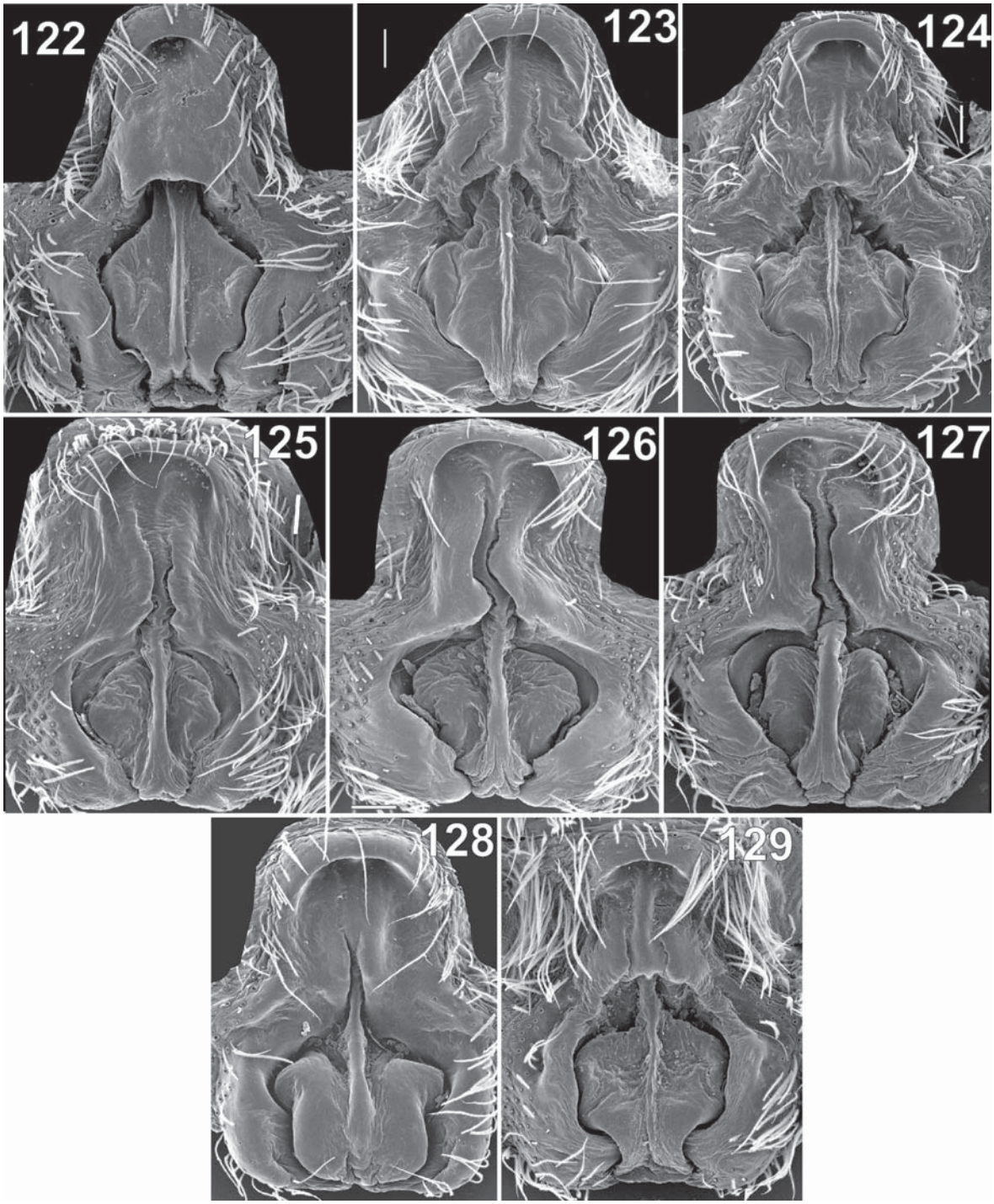
Рис. 100–107. Копулятивные органы *Acantholycosa khakassica* sp.n. (100–103) и *A. petrophila* sp.n. (104–107). 100, 104 — пальпа самца, вид снизу; 101, 105 — терминальная часть терминальная области бульбуса, вид снизу; 102, 106 — эмболюс, вид сверху; 103, 107 — зубец эмболюса, вид сбоку-спереди. Масштаб 0,1 мм.

(ZMUT), Posio, Maaninkavaara (737: 56), 12.08.1959 (PL). RUSSIA: 1 ♀ (ISEA), **Altai**, Charyshskoe Distr., Bashelak Mt. Range, valley of Belaya River, meadow, 14 km SEE of Sentelek, 51°10'N, 83°56'E, 05.07.2000 (GA); 1 ♀ (ISEA), **Altai**, Cherga, 27.07.1998 (I.I. Volonikhina); 1 ♀ (ISEA), **Altai**, Charyshskoe Distr., Tigirek Mt. Range, near Korolevskii Belok Mt., Abramovskii Belok Mt., boggy meadow, ca. 1800 m, 50°59'N, 83°47' E, 23.07.1999 (GA); 1 ♀ (ISEA), **Kemerovo** Area, Gornaya Shoriya, 12 km NNE of Sheregesh, Bol. Unzas River basin, 53°N, 88°05'E, 500–700 m, 07–27.06.1999 (DEL); 2 ♀♀ (ISEA), SW **Khakassia**, Bol. Abakan River valley, Konsu River down flow, 20 km SE of Mrassu, 750 m, 26.07.–11.08.1999 (DEL); 1 ♀ (ISEA), **Krasnoyarsk** Province, Yermakovski Distr., Abakan-Kyzyl Hwy, 1000–1200 m, 5.09.1988 (D.L. Grodnitskiy); 1 ♀ (ISEA), **Krasnoyarsk** Province, Bol'shemurtinskii Distr., Yukseevo, right bank of Yenisei River, 10.09.1988 (A.V. Gurav, S.M. Loshev); 1 ♂ (ZMMU), **Krasnoyarsk** Province, middle Yenisei, Peredvinsk Vil., 57°N 93,5°E, 06.1995 (L.B. Rybalov); 1 ♀ (ZISP), **Irkutsk**

Рис. 108–121. Копулятивные органы *Acantholycosa aborigenica* Zyuzin & Marusik (108–114) и *A. lignaria* (Clerck) (115–121). 108, 115 — пальпа самца, вид снизу; 109 — терминальная часть бульбуса, вид снизу; 111, 117 — терминальная часть бульбуса, вид сбоку-сзади; 110, 116 — терминальная часть бульбуса, вид сверху; 113 — тегулярный отросток, вид сверху; 114, 118 — тегулярный отросток, вид снизу; 119 — вершина цимбиума, вид спереди-сбоку; 120–21 — эпигина вид снизу и сверху, соответственно. Масштаб 0,1 мм.



Figs. 108–121. Copulatory organs of *Acantholycosa aborigenica* Zyuzin & Marusik (108–114) and *A. lignaria* (Clerck) (115–121). 108, 115 — пальпа самца, ventral view; 109 — terminal part of bulbus, ventral view; 111, 117 — terminal part of bulbus, retrolateral view; 110, 116 — terminal part of bulbus, view from above; 113 — tegular apophysis, view from above; 114, 118 — tegular apophysis, ventral view; 119 — tip of cymbium, prolateral view; 120–121 — epigyne ventral and dorsal view, respectively. Scale = 0.1 mm.



Figs. 122–129. Ventral view of epigyne of *A. norvegica* (Thorell) (122–124), *Acantholycosa aborigenica* Zyuzin & Marusik (125–127), *A. oligerae* sp.n. (128) and *A. logunovi* sp.n. (129). 122 — specimen from Finland, 123–124 — specimens from Khakassia; 125–127 — specimens from Kolyma (type locality), Chita Area and Maritime Prov., respectively. Scale = 0.1 mm.

Рис. 122–129. Вид снизу эпигины *A. norvegica* (Thorell) (122–124), *Acantholycosa aborigenica* Zyuzin & Marusik (125–127), *A. oligerae* sp.n. (128) и *A. logunovi* sp.n. (129). 122 –самка из Финляндии, 123–124 — самки из Хакассии; 125–127 — самки из Колымы (топотип), Читинской обл. и Приморья, соответственно. Масштаб 0,1 мм.

Area, Chivyrkui, 14.06.1917 (expedition of Zoological Museum to Baikal); 1 ♂ (ISEA), **Amur** Area, near Obluchie, 8.06–20.07. 1999 (V.V. Dubatolov); 1 ♂ (IBPN), **Maritime** Province**,** Ussuri Reserve, Komarovo-Zapovednoye, 43°38'N, 132°21'E, 21–27.05. 1999 (Yu. Sundukov).

NOTE. Types of *Acantholycosa altaica* (holotype and paratype female from East Kazakhstan Area) were lost during the shipment [Ovtcharenko, personal communication]. However judging from illustrations, description, habitat (conifer-

ous forest), spination (4 pairs of ventral tibial spines) it is safe to conclude that this species is a junior synonym of *A. lignaria*.

COMMENTS. This species is well known, therefore we provide only figures and comments. From all other congeners this species can be easily separated by the shape of laminar outgrowth of palea, characteristic shape of embolus and fovea. Unlike other *Acantholycosa* this species is not associated with stony habitats. In Fennoscandia it is usually found at open sunny sites in dry, light conifer forests; often on trunks of fallen trees, under loose bark, and sometimes under stones [Palmgren, 1939; Holm, 1947; personal data].

DISTRIBUTION. This species has a trans-Palaearctic range and occurs from western Europe to Sakhalin and Kamchatka [Marusik et al., 2000]. Its northern border of distribution lies in middle Lapland, north Ural and it is known from southern parts of Siberia.

Acantholycosa aborigenica Zyuzin & Marusik, 1988
Figs. 108–114, 125–127, 147–151. Map 2.

Acantholycosa aborigenica Zyuzin & Marusik, 1988: 1083, fig. 1–6 (♂♀).

MATERIAL EXAMINED. RUSSIA: ♂♂ ♀♀ (IBPN, NRS), NE Siberia, **Magadan** Area, upper Kolyma River flow (ca 62°N, 149°30'E), Aborigen Field Station, screes on south exposed slopes, 600−800 m, Summer 1985 (YM); 1♀ (MMUM), **Magadan** Area, ca 30 km W of Magadan, Solyonoye Lake near seashore, scree, 16.08.2002 (DL); 1♀ (ZMUT, epigyne in SEM mount), **Maritime** Province S part, Oblachnaya Mt., 43°34'N, 134°12'E, 1500 m, 3.08.1988 (YM).

COMMENTS. The specific name is referring to the Field Station where type series was collected and the highest mountain in Magadan Area.

DIAGNOSIS. Males of this species can be separated from the majority of congeners the presence of a laminar paleal apophysis. From species with laminar paleal outgrowth they can be distinguished by thin embolus with tip turned up. Females of *A. aborigenica* have very wide apical pocket (as wide as base of septum).

DISTRIBUTION. This species is restricted to the eastern part of Asia and known from Central Aimak in Mongolia to the upper reaches of the Kolyma River and Sikhote-Alin Mt Range. It seems that *A. aborigenica* together with *A. norvegica* are the only representatives of the genus in northern Siberia, and cross the 60° parallel of latitude. The northernmost record of this species is from the foothills of the Aborigen Mt. (ca 62°N).

The *mordkovitchi*-group: can be diagnosed by thick terminal apophysis with truncate tip and tegular apophysis with terminal part (apical arm?) extended retrolaterally over basal arm. *A. spinembolus* sp.n. is placed here with some uncertainty. The palea in all three species attributed to this group are rather different.

Acantholycosa mordkovitchi **sp.n.**
Figs. 58, 86–87, 130–134. Map 1.

MATERIAL. Holotype ♂ and paratypes 2 ♀♀ (ISEA, SEM mount of palp and epigyne in ZMUT), RUSSIA, **Altai**, S macroslope of Terektinsky Mt. Range, upper reaches of Kastakhta River, 2000−2400 m, mountain tundra, 18−20.06.1999 (AD & RD).

ETYMOLOGY. The specific name is a patronym in honor of the famous zoologist, Prof. Vyacheslav G. Mordkovitch, Novosibirsk, who made significant contributions to the study of south Siberian arthropods and the steppe ecosystems in Siberia and who significantly promoted arachnological studies in the Siberian Zoological Museum.

DESCRIPTION. Total length 8.00 (9.50). Carapace: 3.60(4.00–4.25) long, 2.90(3.25–3.30) wide. General coloration dark gray-brown, except pale yellow venter of coxae, yellowish venter of femora, palpal femur-tibia yellow-brown, lighter than brown-black cymbium. Female darker than male. Leg I joints: 4.25(2.75) + 1.75(1.75) + 4.50(3.85) + 4.80(3.35) + 2.15(2.15). Femur I with 3 dorsal, 2 prolateral (in apical 1/3) and 2 retrolateral spines. Tibia I with 5 pairs of ventral spines. Coxae and venter of femora might be light due to poor preservation. Carapace/femur I ratio: 0.94(1.26). Palp as in Figs. 86–87, 130–131, tegular apophysis with laminar apical arm, embolus broad with spine near base, tip of embolus sharply pointed, palea with laminar outgrowth. Epigyne as in Figs. 58, 132–134 with wide apical pocket (small pockets fused), rhomboidal fovea, rounded base of septum, receptacula first turned down and then upward.

DIAGNOSIS. This species well differs from all other congeners except for *A. zinchenkoi* sp.n. Males of these species can be distinguished by lack of embolic spine in *A. zinchenkoi* sp.n., absence of laminar apical arm of tegular apophysis and claw like outgrowth. Females of the two species can be easily separated by the shape of apical half of the stem: wide in *A. mordkovitchi* sp.n. and narrow in *A. zinchenkoi* sp.n.

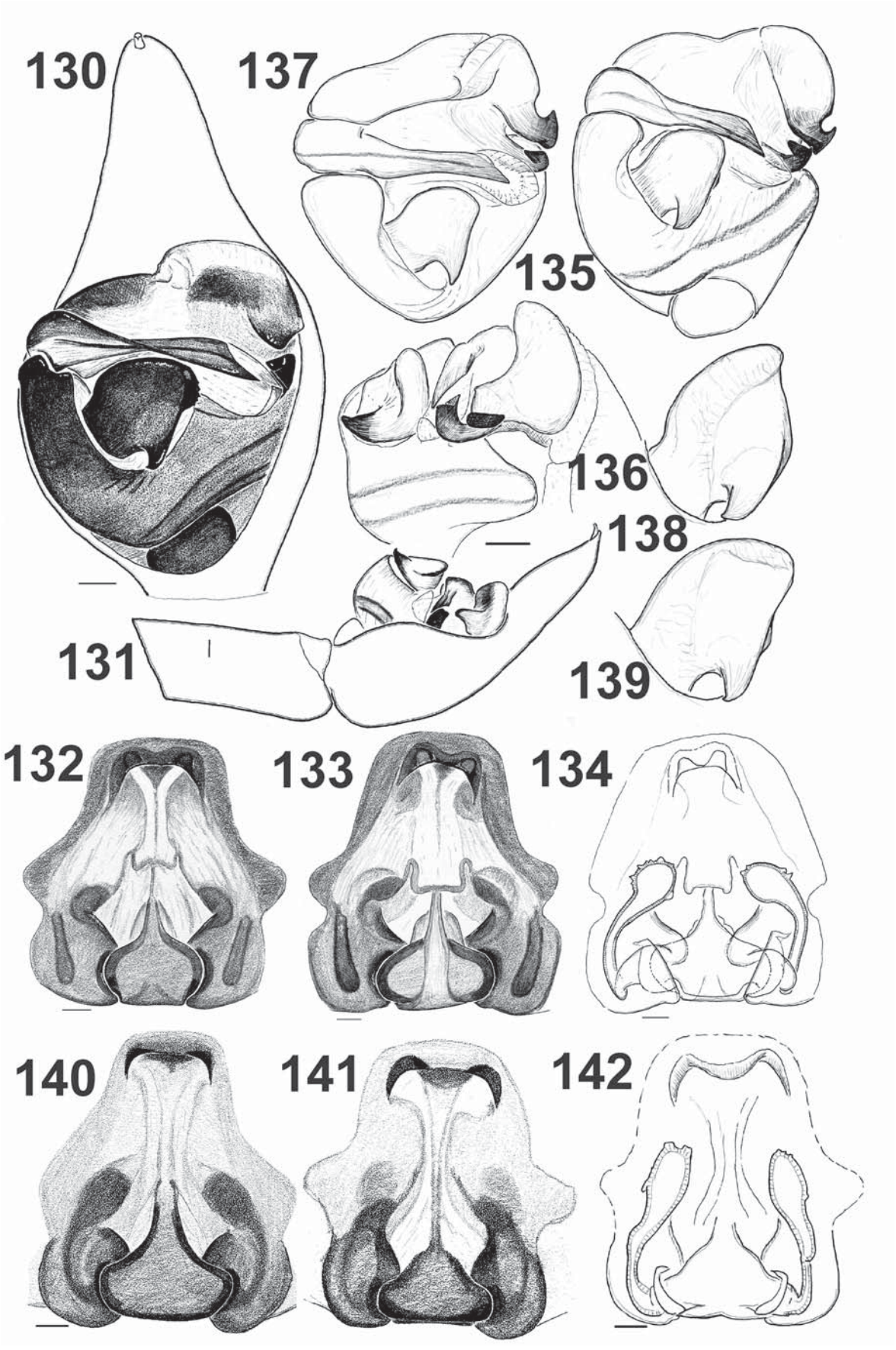
DISTRIBUTION. Known only from type locality.

Acantholycosa zinchenkoi **sp.n.**
Figs. 57, 135–142. Map 1.

MATERIAL. Holotype 1♂ and paratypes 2♀♀ (ISEA, epigyne in SEM mount in ZMUT), RUSSIA, **Altai**, South Altai, south part of Katun Mt. Range, north of Rakhmanovskiye Klyuchi (=Springs), 2100−2500 m, alpine zone, 26.06.1997 (RD & V. Zinchenko). Paratypes: 1 ♂ (ZMMU), **Altai**, South Altai, south part of Katun Mt. Range, 5 km south-east of Rakhmanovskiye Klyuchi (=Springs), 2100−2500 m, alpine zone, 28.06.1997 (RD & V. Zinchenko); 1 ♀ (JWC), **East-Kazakhstan** Area, outreaches of Katun' Mt. range, env. of Rakhmanovskiye Klyuchi Vil. [ca. 49.504°N, 86.526°E], August 1986 (I. Kabak).

ETYMOLOGY. The specific name is a patronym in honor of the collector of the holotype, V. Zinchenko, Novosibirsk.

DESCRIPTION. Total length 7.50–7.80(8.50–10.00). Carapace: 3.75–4.05(3.90-4.00) long, 3.00–3.25(3.40–3.50) wide. Carapace length/femur I ratio 0.88(0.98), carapace width/femur I ratio 0.71(0.85). Coloration dark, pattern absent. Abdomen in male blackish with red-brown heart mark. Females lighter than male. Abdomen covered by dense and long hairs. One male and two females due to poor method of collecting covered with fine dirt. Clean male has distinct differences in color of the abdomen venter and dorsum. Venter is brown, much lighter than dorsum. Distinct leg marking absent. Legs with sparse but long hairs. Femora in male distinctly darker than other joints. Leg I joints: 4.25(4.00) + 1.75(1.75) + 4.40(3.85) + 4.70(3.65) + 2.00(1.65). Femur I with 3d, 2p and 1r in male and 3d, 2p, 0r in female, tibia I with 1d, 1p, 1r, 6pv and 4-5rv in male and 5 pairs of ventral spines in female, metatarsus with 2-2v, 1p and 1r. Palp uniformly colored, as in Figs. 135–139, shape of tegular apophysis slightly vary, distinct apical arm lacking, embolus without spine. Epigyne as in Figs.57, 140–142, with fused apical pockets, joint pocket very wide, fovea small, septal base triangle shaped.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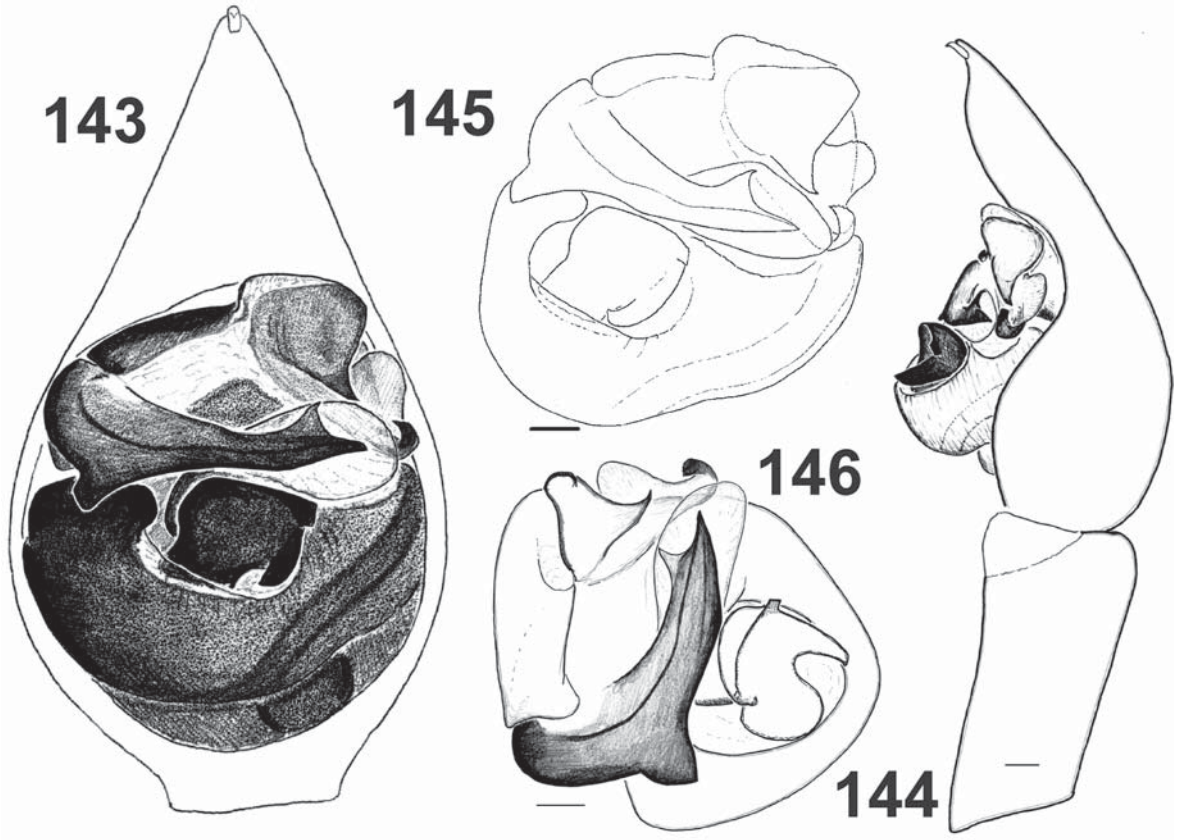


Figs. 143–146. Male palp of *Acantholycosa spinembolus* sp.n. 143–144 — ventral and retrolateral view respectively; 145 — bulbus, view from above and retrolaterally; 146 — bulbus, view from above. Scale = 0.1 mm.

Рис. 143–146. Пальпа самца of *Acantholycosa spinembolus* sp.n. 143–144 — вид снизу и сбоку-сзади соответственно; 145 — бульбус, вид сверху и ретролатерально; 146 — бульбус, вид сверху. Масштаб 0,1 мм.

DIAGNOSIS. This species well differs from all other congeners except for *A. mordkovitchi* sp.n. by the shape of tegular apophysis and epigynal septum. For differences between these two related species see diagnosis of *A. mordkovitchi* sp.n.

DISTRIBUTION. Known only from SW part of Altai Mts.

Acantholycosa spinembolus **sp.n.**
Figs. 143–146. Map 1.

MATERIAL. Holotype ♂ (ISEA) RUSSIA, **Altai**, Kholzun Mt. Range, upper reaches of left tributary of Bannaya River, 1300-1600 m, forest, pitfall traps, 12–14.06.1999 (AD & RD). Paratype: 1 ♂ (ZMMU), **Altai**, Kholzun Mt. Range, upper reaches of left tributary of Bannaya River, 2000–2250 m, mountain tundra, 13–14.06.1999 (AD & RD).

ETYMOLOGY. The specific name is an arbitrary combination of letters.

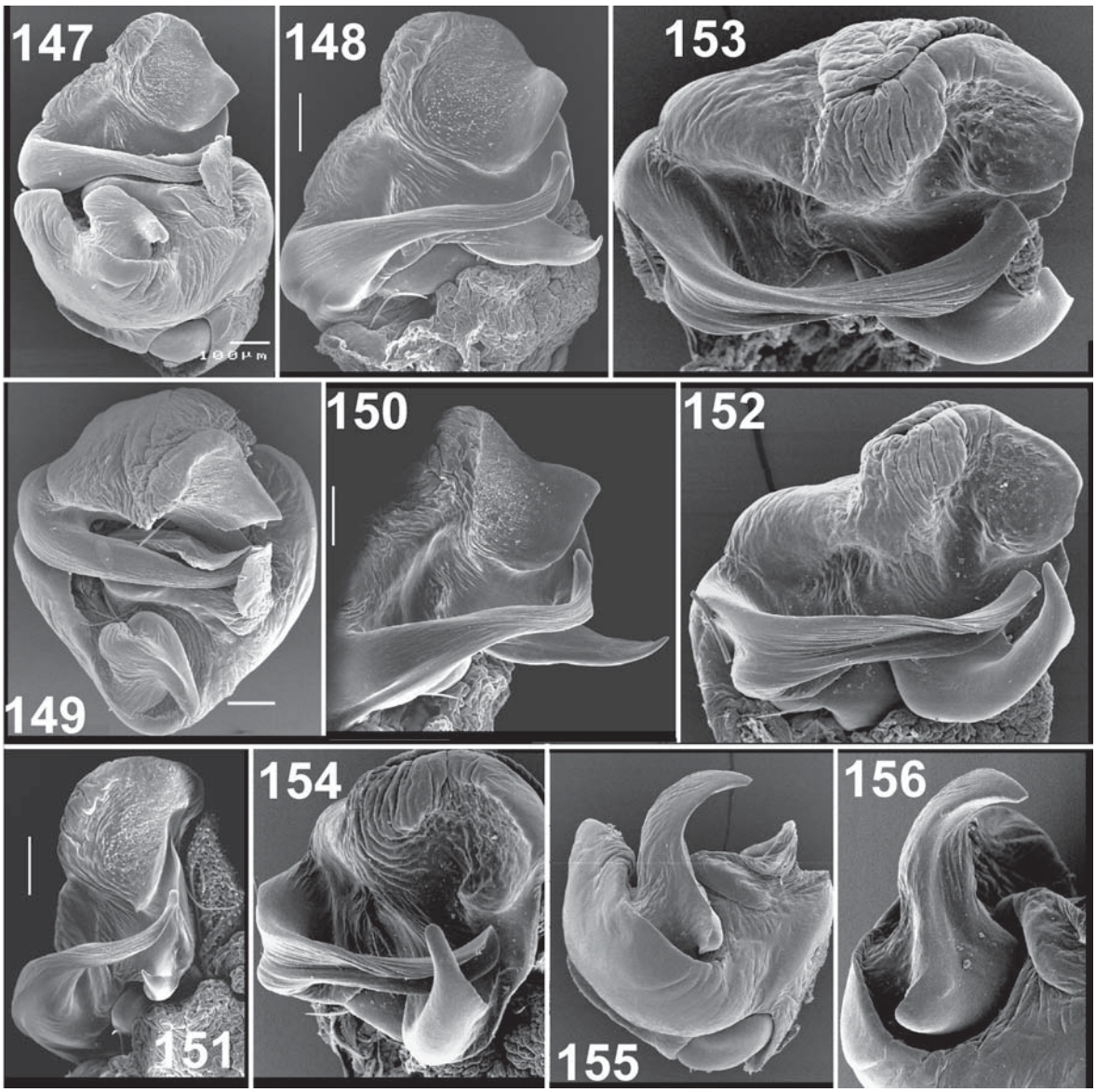
DESCRIPTION. Total length 7.00–7.50. Carapace: 3.55 long, 2.85 wide. Darkly colored, carapace and abdomen without pattern, legs with distinct annulation in light specimen and poorly visible in dark male, palps brown except cymbium (apical half or whole joint — black). Carapace length/tibia I ratio 1.0, carapace width/femur I ratio 0.8. Leg I joints: 3.55 + 1.50 + 3.90 + 3.85 + 1.75. Femur I with 3 dorsal, 2 pro- and 2 retrolateral spines, Tibia I with 5 pairs of ventral spines. Palp as in Figs. 143–146, tegular apophysis two arms, while apical is partly reduced, embolus very wide with massive triangle shape outgrowth ("spine") near base, tip of embolus subdivided into two sharply pointed parts, outgrowth of palea sharply pointed.

DIAGNOSIS. This species can be easily separated from all other congeners by shape of embolus tip and base and by peculiar shape of tegular apophysis and outgrowth of palea.

DISTRIBUTION. Known from Bannaya River basin of Kholzun Mt. Range in Altai.

Figs. 130–142. Copulatory organs of *Acantholycosa mordkovitchi* sp.n. (130–134) and *A. zinchenkoi* sp.n. (135–142). 130–131 — пальпа самца, ventral and retrolateral view, respectively; 132–133, 140–141 — epigyne, ventral view; 134, 142 — epigyne, dorsal view; 135–137 — bulbus, ventral, retrolateral views and view from above; 138–139 — tegular apophysis, ventral view, holotype and paratype male, respectively. Scale = 0.1 mm.

Рис. 130–142. Копулятивные органы *Acantholycosa mordkovitchi* sp.n. (130–134) и *A. zinchenkoi* sp.n. (135–142). 130–131 — пальпа самца, вид снизу и сбоку-сзади, соответственно; 132–133, 140–141 — эпигина, вид снизу; 134, 142 — эпигина, вид сверху; 135–137 — бульбус, вид снизу, сбоку-сзади и вид сверху, соответственно; 138–139 — тегулярный отросток, вид снизу, голотип и паратип соответственно. Масштаб 0,1 мм.



Figs. 147–156. Male palp of *Acantholycosa aborigenica* Zyuzin & Marusik (147–151) and *A. oligerae* sp.n. (152–156). 147 — bulbus, ventral view; 148, 152 — terminal part of bulbus, ventral view; 149 — bulbus, view from above; 150 — terminal part of bulbus, prolateral view; 151, 154 — terminal part of bulbus, retrolateral view; 155–156 — tegular apophysis, ventral and retrolateral view. Scale = 0.1 mm.

Рис. 147–156. Пальпа самца of *Acantholycosa aborigenica* Zyuzin & Marusik (147–151) и *A. oligerae* sp.n. (152–156). 147 — бульбус, вид снизу; 148, 152 — терминальная часть бульбуса, вид снизу; 149 — бульбус, вид сверху; 150 — терминальная часть бульбуса, вид сбоку-спереди; 151, 154 — терминальная часть бульбуса, вид сбоку-сзади; 155–156 — тегулярный отросток, вид снизу и сбоку-сзади. Масштаб 0,1 мм.

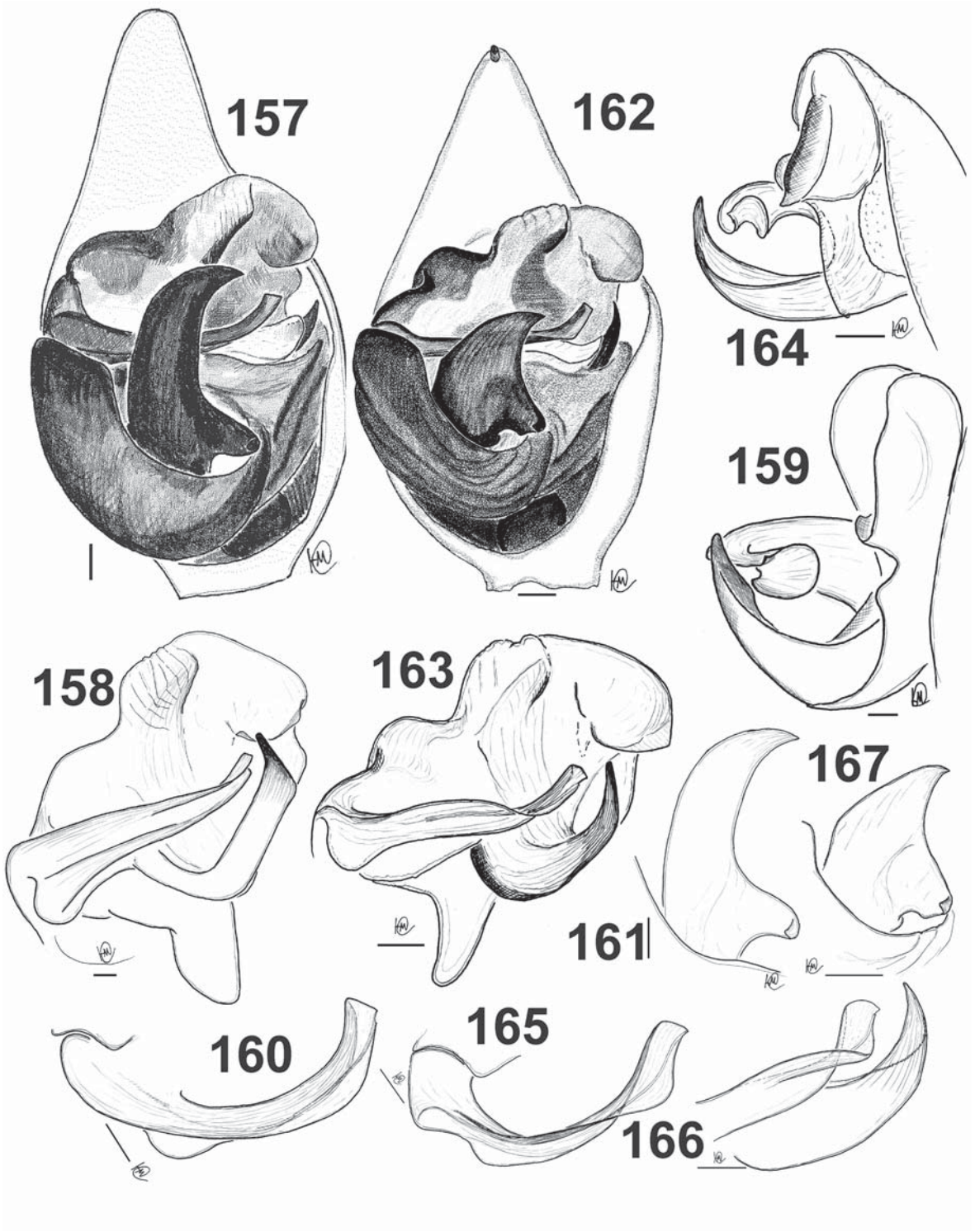
The *oligerae*-group: members of this group can be easily diagnosed by combination of 1) well developed apical arm of the tegular apophysis, 2) plate like (laminar) paleal apophysis and 3) convoluted tip of embolus.

Acantholycosa oligerae **sp.n.**
Figs. 19–20, 128, 152–161. Map 2.

MATERIAL. Holotype ♂ and paratype 2 ♀♀ (ZMMU) RUSSIA, **Maritime** Province**,** Lazo Reserve, Sukhoi Klyuch site, edge of stony debris on slope, 22.06.1981 (T.I. Oliger). Paratypes: 1 ♂ 2 ♀♀ (ZMUT, epigyne and palp in SEM mount), collected together with holotype; 3♂♂ 1♀ (1♂ NRS, 2♂♂ 1♀ ZMMU), same locality, pitfall traps, oak forest, S exposed slope, 25.06.1981 (T.I. Oliger); 1 ♂ (ZMMU), same locality, mixed forest, N exposed slope, 23.06.1981 (T.I. Oliger); 1 ♂ (JWC) same locality, opening in valley forest, 19.06.1981 (T.I. Oliger).

ETYMOLOGY. The specific name is a patronym in honor of the collector of the holotype, our colleague Dr. Tatyana I. Oliger.

DESCRIPTION. Total length 7.50–7.72(8.60–10.00). Carapace: 3.90–4.00(4.30–4.35) long, 3.00–3.10(3.20–3.30) wide. Coloration brown, with pattern, carapace with light median and, and broken submarginal stripes. Females without distinct pattern on abdomen, males with dark brown sides and



Figs. 157–167. Male palp of *Acantholycosa oligerae* sp.n. (157–161) and *A. sundukovi* sp.n. (162–167). 157, 162 — palp, ventral view; 158, 163 — terminal part of bulbus, ventral view; 159–164 — terminal part of bulbus, view from below-retrolaterally; 160, 165 — embolus, view from above; 161, 167 — tegular apophysis, ventral view; 166 — tip of embolus and terminal apophysis, prolateral-from below view. Scale = 0.1 mm.

Рис. 157–167. Пальпа самца of *Acantholycosa oligerae* sp.n. (157–161) и *A. sundukovi* sp.n. (162–167). 157, 162 — пальпа, вид снизу; 158, 163 — терминальная часть бульбуса, вид снизу; 159–164 — терминальная часть бульбуса, вид снизу-ретролатерально; 160, 165 — эмболюс,вид сверху; 161, 167 — тегулярный отросток, вид снизу; 166 — вершина эмболюса и терминальный отросток, вид снизу-пролатерально. Масштаб 0,1 мм.

wide light median band. Legs with rings. Male. Carapace/femur I length ratio 1.04, carapace width/femur I length ratio 0.81. Leg I joints: 3.85 + 1.45 + 4.00 + 3.75 + 1.90. Spination of leg I: femur I 3d, 2p 2r, patella 1p, 1r; tibia 2d, 1p, 1r, 6-6v; metatarsus 2p, 2r, 3-3v. Palp as in Figs. 152-161, cymbium with 2 claws, palea with plate-like apophysis, embolus broad and turned, apical part convoluted, terminal apophysis with massive claw like outgrowth, tegular apophysis with long apical arm. Palpal tibia and 2/3 of cymbium covered with dense black hairs.

Female. Carapace/femur I length ratio 1.18, carapace width/femur I length ratio 0.89. Leg I joints: 3.70 + 1.65 + 3.75 + 3.35 + 1.55. Spination of leg I: femur 3d, 2p, 1r; tibia 2d (very thin, like hairs), 1p, 1r, 5-5v; metatarsus 2p, 1r, 2-2v. Epigyne as in Figs. 19–20, 128, with very broad apical pocket (wider (or subequal) than septal base, septal base almost rectangular.

DIAGNOSIS. *A. oligerae* sp.n. closely related to another Far Eastern congener *A. sundukovi* sp.n. These two species can be easily distinguished by the shape of tegular apophysis (apical arm twice longer than basal one in *A. oligerae* sp.n. and arms subequal in *A. sundukovi* sp.n) and by the shape of embolus. Females of this species resemble those of *A. norvegica*, *A. aborigenica* and *A. logunovi* sp.n., but can be distinguished by very wide apical pocket and almost rectangular shape of septal base.

DISTRIBUTION. Known from a single locality in Maritime Province.

Acantholycosa sundukovi **sp.n.**
Figs. 162–167. Map 2.

MATERIAL. Holotype ♂ (ZMMU), RUSSIA, **Maritime** Province, Lazo Reserve, Amerika kordon, 43°16'N, 134°03'E, 14–17.05.1999 (Yu. Sundukov).

ETYMOLOGY. The specific name is a patronym in honor of the collector of the holotype, carabidologist Yuri Sundukov (Lazo Reserve, Maritime Province).

DESCRIPTION**.** Specimen poorly preserved. Total length 6.00. Carapace: 3.25 long, 2.40 wide. Carapace length /tibia I ratio 1.02, carapace width/tibia I ratio 0.75. Carapace width possibly was changed due to poor reservation. Leg I joints: 3.20 + 1.25 + 3.35 + 3.15 + 1.50. Leg I spination: femur 3d, 3p, 2r; patella with 1p and 1r; tibia 2d, 1p, 1r, 5-5v, metatarsus 2p, 1r, 2-2v. Palp as in Figs. 162–167, cymbium with 1 claw, palea with plate-like apophysis, embolus broad and turned, apical part partly convoluted, terminal apophysis with massive claw like outgrowth, tegular apophysis with apical arm longer than basal.

DIAGNOSIS. It can be easily distinguished from its sibling species *A. oligerae* sp.n. by subequal arms of the tegular apophysis, and smaller size.

DISTRIBUTION. Known from the type locality only.

"Ungrouped" species

Acantholycosa azheganovae Lobanova, 1978 **comb.n.**
Fig. 53.

Alopecosa azheganovi Lobanova, 1978: 6, fig. 1a–в (♂).

Tarentula azheganovae: Mikhailov, 1997 (corrected ending to feminine).

Alopecosa azheganovae: Platnick, 2002.

COMMENTS. It is clear from figures provided by Lobanova [1978] that her species belongs to *Acantholycosa*. While in her paper it was said that holotype was deposited in the Biological Institute, Novosibirsk (= Siberian Zoological Museum), this spider (either holotype or 3 paratypes) was not found in the collection. It seems that *A. azheganovae* is missing among recently collected material studied by us. Unfortunately figures given by Lobanova [1978] do not allow us to recognize most related species. According to original description it is very small species (carapace 2.4–2.6 long) (all *Acantholycosa* and *Mongolicosa* gen.n. known for us have carapace longer than 3 mm), and judging from size it could belong to *Sibirocosa* gen.n.

Acantholycosa norvegica (Thorell, 1872)
Figs. 92–97, 122–124, 168–172, 181–182. Map 2.

Lycosa norvegica Thorell, 1872: 296 (♀).

Lycosa sudetica L. Koch, 1875: 12, pl. 1, fig. 8 (♀).

Pardosa atalanta L. Koch, 1879: 105, pl. 3, fig. 18 (♀).

Pardosa raboti Simon, 1887f: 458 (♀).

Lycosa foveata Odenwall, 1901: 260, fig. 7 (♀).

Acantholycosa beklemischevi Charitonov, 1936: 27, fig. 1–4 (♂♀).

A. fedotovi Charitonov, 1936: 31, fig. 6-8 (♀).

A. spasskyi Charitonov, 1936: 35 (♀, for specimens of Kulczyński, 1916, believed misidentified).

A. norvegica: Holm, 1947: 38, fig. 4a, 15–16, pl. 8, fig. 84–85 (♂♀).

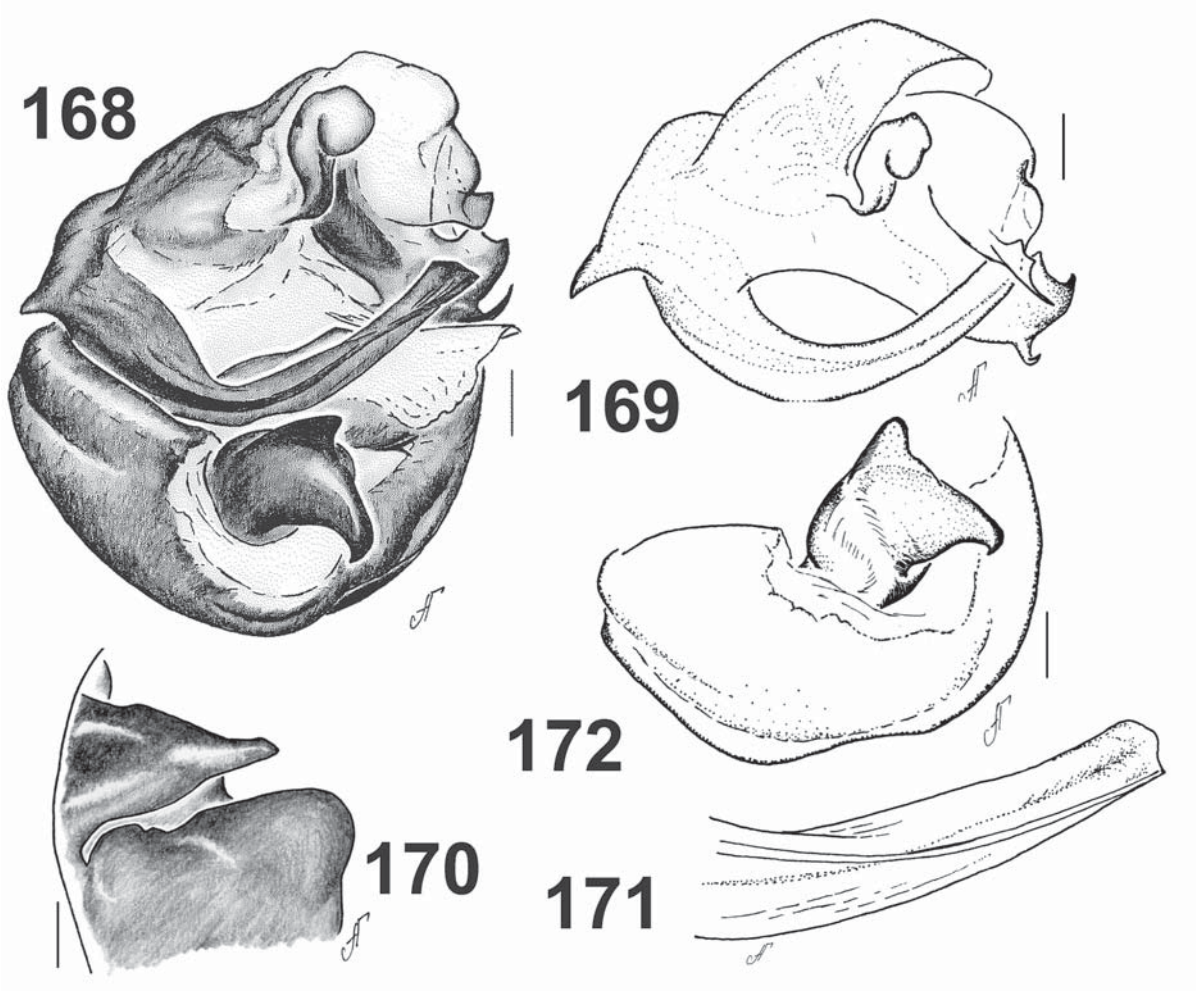
A. n. sudetica: Buchar, 1963: 200, fig. 1A–C, 2A–I (♂♀, reduced to subspecies).

A. norvegica: Buchar, 1966: 1, fig. 4A–C (♂♀).

A. norvegica: Holm, 1973: 99 (Synonymized *P. atalanta*).

A. norvegica: Buchar & Thaler, 1993: 339 (T♂♀ from *Pardosa*).

MATERIAL EXAMINED. FINLAND: 1 ♀ (SEM, ZMUT), Enontekiö, Saana 1020 m, 19.07.1960 (PL); ♀ (ZMUT), Utsjoki, Kevo, Jesnalvaara (774: 49), 320 m, low alpine heath,11.06.-19.09.1971 (SK);♂ (ZMUT), same locality, (774: 49), 320 m, low alpine heath, 26.06.–12.09.1972 (SK); 1 ♂ 1 ♀ (ZMUT), same locality, (774: 49), 320 m, low alpine heath, 05.06.–05.09.1973 (SK). RUSSIA: 1 ♂ 3 ♀♀ (ZMUT), **Komi,** Polar Ural, Krasnyi Kamen', slope & plateau, 06.07.1994 (J. Jalava); 7 ♂♂ (ISEA), **Altai**, Charyshskoe Distr., Bashelak Mt. Range, ca. 30 km NEE of Sentelek, near Zagrikha, 1700 m, thin forest near timberline, pitfall traps, 51°15'N, 84°11' E, 27–30.06.2000 (GA); 2 ♂♂ 1 ♀ (ISEA), **Altai**, Charyshskoe Distr., Bashelak Mt. Range, ca. 30 km NEE of Sentelek, right bank of Zagrikha River, Zagrenok River mouth, 1000 m, pitfall traps, 51°13'N, 84°12' E, 23.06.–2.07.2000 (GA, M.V. Burmistrov); 8 ♂♂ (ISEA), **Altai**, S macroslope of Terektinskii Mt. Range, Kastakhta River, 1400–1600 m, forest, 17–21.06.1999 (AD & RD); 2 ♀♀ (ISEA), **Altai**, Charyshskoe Distr., Korgon Mt. Range, right bank of Kumir [Kairukun-Suu] River, 10 km oup from mauth, ca. 1200 m, 50°56'N, 84°15'E, 30.07.–08.08.1998 (GA, A.Yu. Chuikova); 1 ♀ (ISEA), **Altai**, Teletskoe Lake, forest on the Mountain, ground, 12.07.2001 (A.V. Romashenko); ?1♀ (ISEA), Western Altai Reserve, Koksuisky Mt. range, Chernaya Uba River upper reaches, 01–07.07.1995 (V.K. Zinchenko); 4 ♂♂ (ISEA), **Kemerovo** Area, Gornaya Shoriya, 10 km N of Sheregesh, Pustag Mt., timberline, 53°N 88°05'E, 900 m, 21–27.06.1999 (DEL); 1♂ (ISEA), **Kemerovo** Area, Gornaya Shoriya, 12 km NNE of Sheregesh, Bol. Unzas River basin, 53°N 88°05'E, 500–700 m, 07–27.06.1999 (DEL); 1 ♂ 5 ♀♀ (ISEA), **Khakasia**, Shirinskii Distr., 1 km S of Kommunar, mountain forest-tundra, 23.07.1990 (DL); 24♀♀ (ISEA) Western **Khakasia**, Abakan Mt. Range, 60 km WNW of Tashtyp, Bol. Kol'taiga Mt., scree, 1400–1800 m, 16–25.06.2000 (DEL); 1 ♂ (IBPN), RUSSIA, **Tuva** SE part, Kargy River middle flow, 50°35'N 97°05'E, 1300 m, 02–04.07.1996 (YM); 1 ♀ (IBPN), RUSSIA, **Tuva** SE part, Kargy River middle flow, 50°31'N 97°03'E, 1400 m, 28–30.06.1996 (YM); 1 ♀ (ISEA), SE **Tuva**, East Tannu-Ola Mt Range, ~ 18–20 km NW of Khol'-Oozhu Vill., 50°48'N 94°18'E, 2100 m, 17.06.1995 (DL); 2 ♂♂ (ISEA), **Tuva**, Tes-Khem Dist., ca 15 km NW of Khol'-Oozhu Vill., 50°47'N, 94°19'E,



Figs. 168–172. Male palp of *Acantholycosa norvegica* (Thorell). 168 — bulbus, ventral view; 169 — terminal portion of bulbus, view from above; 170 — embolic spine, prolateral view; 171 — terminal portion of embolus; 172 — tegular apophysis, ventral view. Scale = 0.1 mm.

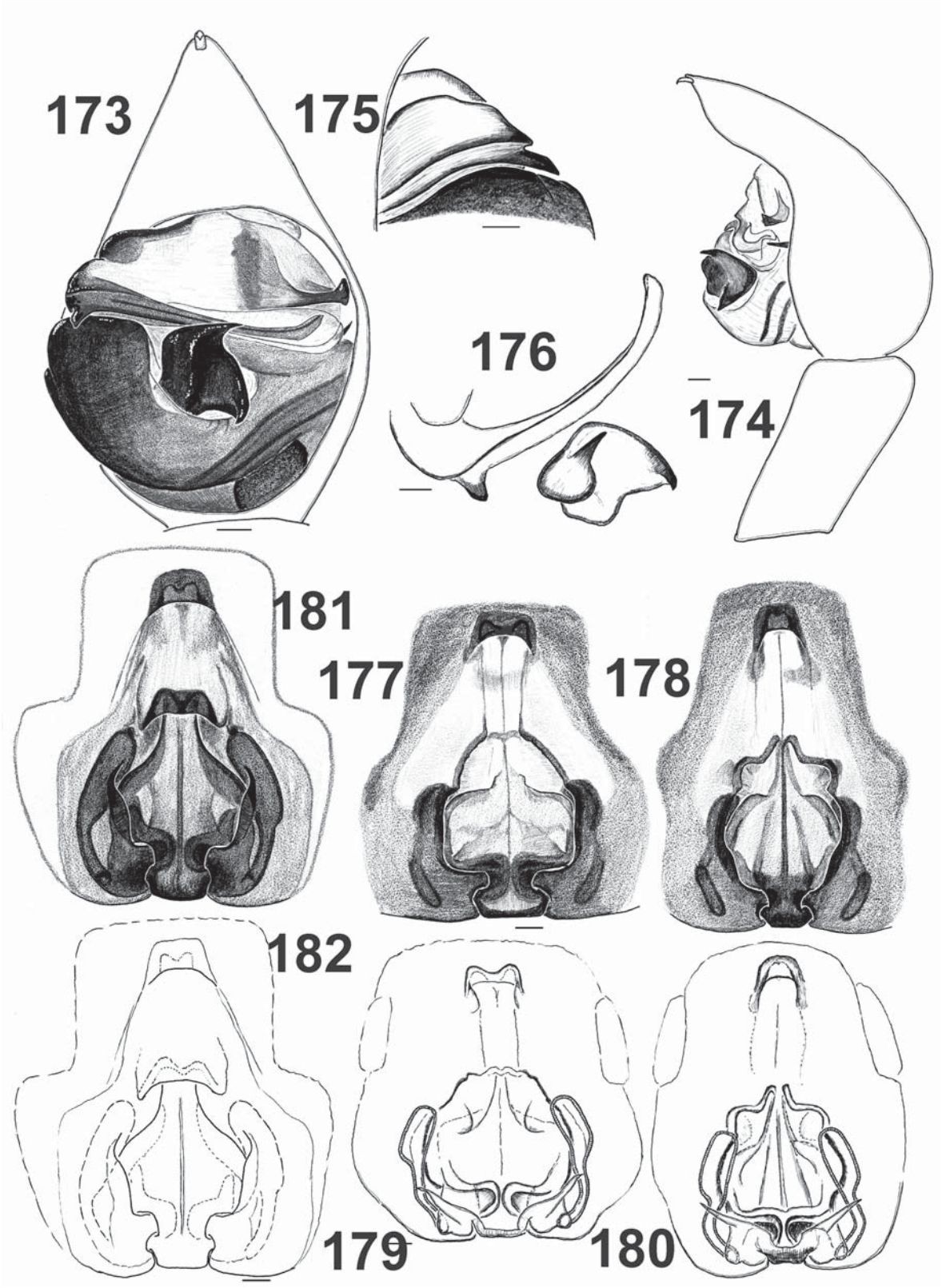
Рис. 168–172. Пальпа самца *Acantholycosa norvegica* (Thorell). 168 — бульбус, вид снизу; 169 — терминальная область бульбуса, вид сверху; 170 — зубчик эмболюса, вид сбоку-спереди; 171 — вершинная часть эмболюса; 172 — тегулярный отросток, вид снизу. Масштаб 0,1 мм.

kurum, 1650 m, 08–16.06.1995 (DL); 1 ♀ (ISEA), **Krasnoyarsk** Province, West Sayany, Oiski Mt. Range, Oiski Pass, 1750 m, 22.06.1995 (DL); 3 ♂♂ (ISEA), **Krasnoyarsk** Province, Ermakovskii Distr., 8–10 km S of Oiskoe Lake, ca. 1400 m, kurum with moss, 27–28.06.1990 (DL); 1 ♂ (ISEA), **Krasnoyarsk** Province, West Sayany, Oiski Mt. Range, S macroslope , ca 11 km S of Oiskoye Lake, Buiba River Valley, 52°47'N, 93°18'E, 1200–1300 m, 20–21.06.1995 (DL); 1 ♀ (ISEA), **Krasnoyarsk** Province, Bolshe-Murtinskiy Dist., Verkhnyaya Kazanka River bank, 22.05. 1990 (M.V. Gulov). 1 ♂ (SEM-sample, ZMUT), **Chita** Area, Sokhondo Reserve, Verknyi Bukukun, mountain tundra, 25.06.1991 (B.P. Zakharov); ♂♂ ♀♀ (IBPN), NE Siberia, **Magadan** Area, upper Kolyma River flow (ca 62°N, 149°30'E), "Aborigen" Field Station, south facing gravely slope, 800 m, Summer 1995 (YM); 2 ♂♂ 3 ♀♀ (IBPN), **Magadan** Area, Koni Peninsula, Khindzha River middle flow, ca 59°N, 151.8°E, 200 m, 11–24.06.1988 (S. Pleshchenko).

DESCRIPTION: For a detail description see Charitonov [1936], Holm [1947], Buchar [1963, 1966] and Fuhn & Niculescu-Burlacu [1971].

Brief description. Total length 6.00–8.00 (7.50–10.00). Carapace: 3.40–4.20 (3.60–4.60) long. Carapace/femur I ratio in ♀ — 1.1, carapace width/femur I ratio 0.86. Leg I joints in ♀ from Saana (Finland): 4.00 + 1.85 + 4.15 + 3.75 + 2.05. Tibia I & II in both sexes with 5 pairs of ventral spines. Femur I with 3 dorsal, 2 pro- and 2 retrolateral spines, patella with pair of lateral spies. Epigyne as in Figs. 122–124,181–182, very variable in shape, apical pockets fused, width of fused pockets vary. Male from Kevo has slightly larger palp than specimens from Altai, especially tibia-cymbium, but no distinct differences except for slight differences in apical portion of tegular apophysis. Palp as in Figs. 92–97, 168–172, palea subdivided in two part, internal part small and rounded, embolus with large spine-like outgrowth in basal part, tegular apophysis with small apical arm developed into keel ended by sharply pointed tip.

DIAGNOSIS. Females of this species are almost indistinguishable from these of *A. logunovi* sp.n., however males of these two species are very different. Palea of *A. norvegica* has unique globular outgrowth, lacking in all other congeners. Its embolus tip and shape of terminal apophysis are peculiar. Males of *A. norvegica* can be easily separated from congeners by subdivided palea, internal part of which is rounded.



Figs. 173–182. Copulatory organs of *Acantholycosa logunovi* sp.n. (173–180) and *A. norvegica* (Thorell) (181–182). 173–174 — пальпа самца, ventral and retrolateral view, respectively; 175 — embolic spine, prolateral view; 176 — embolus and tegular apophysis, view from above; 177–178, 181 — epigyne, ventral view; 179–180, 182 — epigyne, dorsal view. Scale = 0.1 mm.

COMMENTS. This species has an almost continuous range (cf Map 2), except for an isolated population in Central Europe, treated as a separate subspecies (cf. Platnick, 2002). Although clear morphological differences between the two subspecies were not found it is safer to treat two forms as separate subspecies because the two populations are clearly isolated.

DISTRIBUTION. This species has widest range among the genus, and occurs from Norway and Central Europe to the upper Kolyma and Magadan (Map 2). Southernmost records of this species lie somewhere in northern Mongolia (exact locality of Mongolian specimens is unknown).

Acantholycosa logunovi **sp.n.**
Figs. 88–91, 129, 173–180. Map 1.

MATERIAL. Holotype ♂ and paratypes 1 ♂ 3 ♀♀ (ISEA) 1 ♂ 1 ♀ (ZMUT palp and epigyne in SEM mount), RUSSIA, **Altai**, 50 km W of Kosh-Agach, ca. 20–25 km W of Bel'tir, Taltura (Chagan-Uzun) River canyon, 2200–2300 m, stony debris on the upper border of *Larix* forest, 25–30.06.1999 (DL). Paratypes: 1 ♂ (ZMMU), **Altai**, ca. 50 km W of Kosh-Agach, ca. 20–25 km W of Bel'tir, Taltura (Chagan-Uzun) River canyon, 2100–2200 m, mountain stony steppe, 25–30.06.1999 (DL); 1 ♀ (ZMMU), RUSSIA, **Altai**, Chiri Lake, 1800–2000 m, 30.07.1997 (AT).

ETYMOLOGY. The specific name is a patronym in honor of the collector of the holotype, our friend and colleague Dr. Dmitry V. Logunov (Manchester, UK), who provided many specimens for this study.

DESCRIPTION**.** Total length 6.80–7.50 (7.50–9.50). Carapace: 3.60–3.75(4.00–4.10) long, 2.85–2.95(3.25–3.30) wide. Male. Carapace/tibia I length ratio 1.00, carapace width/tibia I ratio 0.79–0.82. Body covered with whitish adpressed hairs. Coloration dark brown. Patella, tarsi, palpal femora-tibia light brown. Light specimen with slightly visible annulation on femora and tibia. Leg I joints: 3.75 + 1.60 + 4.00 + 4.00 + 1.85. Femur I with 3 dorsal, 3 pro- and 2 retrolateral spines. Tibia I with 5 pairs of ventral spines. Palp as in Figs. 88–91, 173–176, tegular apophysis with spine shaped apical arm and rather short down arm, embolus with relatively small "spine" in basal part, embolus relatively thin, turned in apical part.

Female. General coloration brown. Carapace and abdomen with distinct pattern. Carapace with light median band and pair of submarginal broken bands. Legs with annulation and spots. Coxae pale yellow. Leg I joints: 3.85 + 1.75 + 3.85 + 3.45 + 1.75. Femur with 3 dorsal, 2 pro- and 2 retrolateral spines. Tibia I with 5 pairs of ventral spines. Epigyne as in Figs. 177–180, apical pockets fused, joint pocket thinner than septal base, projection of lips subdivide septal base, septal base variable in size.

DIAGNOSIS. Males of this species can be easily separated from all other congeners by spine-shaped apical arm of tegular apophysis and thin embolus. Females of *A. logunovi* sp.n. are almost indistinguishable from those of *A. norvegica.* Length of receptacula in new species is less than between receptacula tips and apical pocket (receptacula slightly longer that distance between them and pocket in *A. norvegica*).

COMMENTS. We have some doubts as to whether the paratype females are conspecific with the holotype. However three males (including the holotype) were collected together with paratype females at the same scree [Logunov, personal communication]. Paratype female from Chiri Lake may belong to *A. norvegica.*

DISTRIBUTION. Known only from Altai.

Mongolicosa gen.n.

Type species: *Mongolicosa glupovi* sp.n.

ETYMOLOGY. The generic name is derived from "Mongolia" and "-cosa" a common ending of lycosid genera.

DIAGNOSIS. Males of this genus can be easily distinguished from all other Pardosini and Lycosidae as a whole by their extremely wide embolus (wider than tegular apophysis) fused with palea and terminal apophysis. From Pardosini with numerous ventral tibial spines (*Acantholycosa, Sibirocosa* gen.n.) males can easily recognized by unmodified palea (no outgrowths) and females by large and deep rhomboidal fovea, thin septal stem and triangle shaped septal base. All species known so far in this genus have four pairs of ventral spines at leg I. The same type of spination is known in *A. baltoroi* and *Sibirocosa alpina* sp.n.

DESCRIPTION. Total length 6.00–9.20. Dark colored, without clear pattern. Legs relatively short (carapace length/femur I ratio 1.08–1.32, carapace width/femur I ratio varies from 0.89–1.00). Both sexes have almost the same spination of leg I: femur 3d, 2p and 2r; patella 2d, 1p and 1r (0-0 in female); tibia 1p 1r, 4-4v (without apical); metatarsus 1p, 1r and 2-2v (males of *M. mongolensis* sp.n. have 2p). Legs in comparison to *Acantholycosa* and *Sibirocosa* gen.n. relatively short (carapace length/femur I ratio 1.08–1.32). Palp with rather long tegulum (cf. Figs. 188, 192), extremely wide (wider than tegular apophysis) embolus fused with palea and terminal apophysis; palea unmodified; tegular apophysis with two arms. Epigyne with large rhomboidal fovea, thin stem and triangle septal base.

Diagnostic characters are concentrated in male palp and female epigyne.

RELATIONSHIPS. By some features*Mongolicosa* gen.n. species resemble those of *Sibiricosa* gen.n. in the extreme width of the embolus, and the shape of epigyne (touching lips, triangle shaped septal base). However, all other parts of palp and epigyne are entirely different. It is unclear what genus among Pardosini is most closely related to *Mongolicosa* gen.n.

DISTRIBUTION. Known from Altai to western Buryatia, and from Xinjiang to South Gobi Aimak. Only two species are known from more than one locality, *M. glupovi* sp.n. and *M. pseudoferruginea,* their ranges extended into about 450 km.

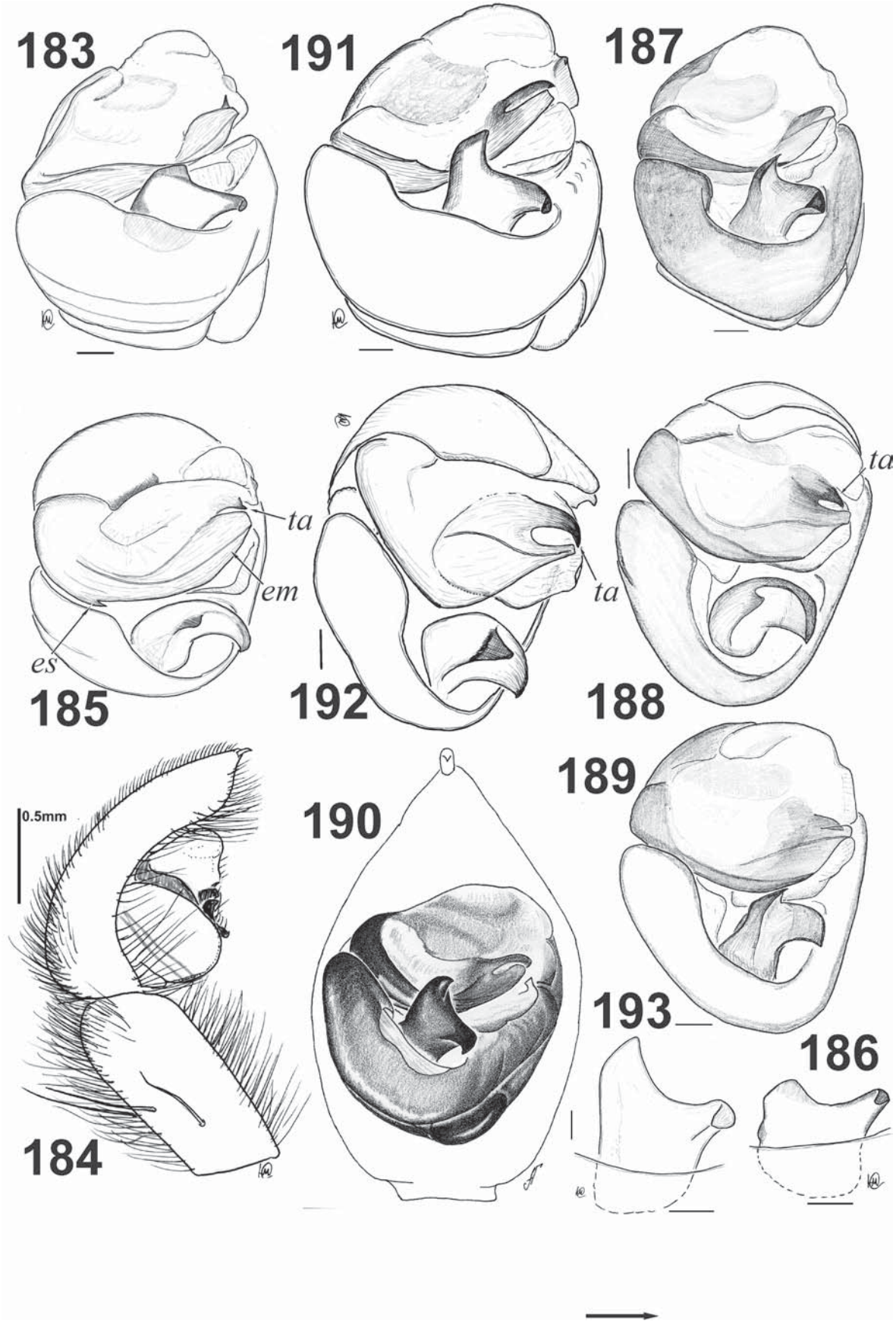
SPECIES GROUPS. Before this study, males of this taxon were unknown. Half of species of this genus are known from females only. On the basis of the epigynal shape it is easy to split the genus into two groups: *pseudoferruginea*-group (lips touching) and *gobiensis*-group (untouched lips).

The *pseudoferruginea*-group: Members of this group can be diagnosed by touching lips of epigyne.

Mongolicosa buryatica **sp.n.**
Figs. 187–189, 194–195, 213–214. Map 1.

MATERIAL. Holotype ♂ and paratype ♀ (ISEA), RUSSIA, **Buryatia,** Eastern Sayan Mt. Range, Okinski Dist., 55 km SW of Orlik Vil., Munku-Sasan Mt., 52°13'N, 99°10'E, 2200–2700 m, tundra, 27–29.06.2002 (RD & AD).

Рис. 173–182. Копулятивные органы *Acantholycosa logunovi* sp.n. (173–180) и *A. norvegica* (Thorell) (181–182). 173–174 — пальпа самца, вид снизу и сбоку-сзади, соответственно; 175 — зубчик эмболюса, вид сбоку-спереди; 176 — эмболюс и тегулярный отросток, вид сверху; 177–178, 181 — эпигина, вид снизу; 179–180, 182 — эпигина, вид сверху. Масштаб 0,1 мм.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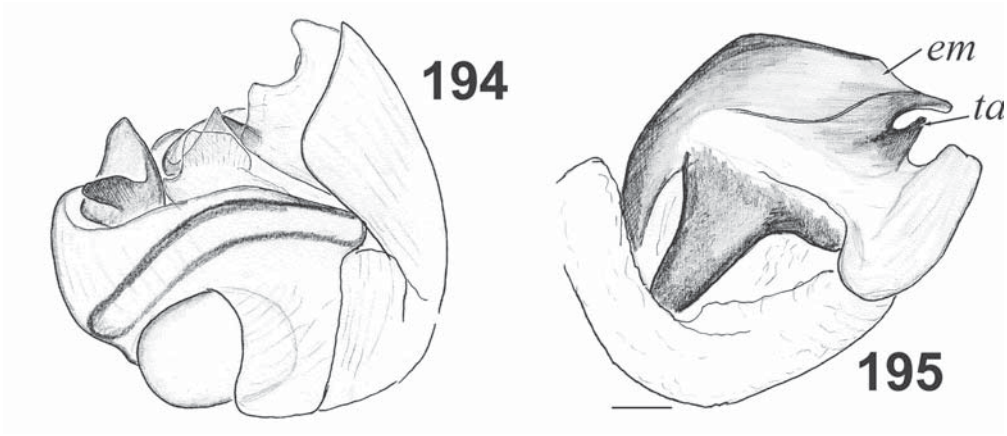


Figs. 194–195. Bulbus of *Mongolicosa buryatica* sp.n. 194 — retrolateral view; 195 — terminal part of bulbus, view from below. Scale = 0.1 mm. Abbreviations: : *em* — embolus, *ta* — terminal apophysis.

Рис. 194–195. Бульбус *Mongolicosa buryatica* sp.n. 194 — вид сбоку-сзади; 195 — терминальная часть бульбуса, вид снизу. Масштаб 0,1 мм. Условные обозначения: *em* — эмболюс, *ta* — терминальный отросток.

ETYMOLOGY. The specific name refers to the type locality.

DESCRIPTION. Total length 7.20 (9.00). Carapace: 3.90 (3.60) long, 2.90 (2.75) wide. Carapace length/femur I ratio: 1.20 (1.16). Carapace width/femur I ratio 0.89 in both sexes. General coloration dark brown without clear pattern, females almost uniformly dark-brown, with slightly lighter patellae and coxae. Males darker than females, with red-brownish median band and heart mark. Dorsal sides of legs darker than venters. Body and legs covered with long hairs especially dense on abdomen. Male more densely covered with hairs than female. Leg I joints: 3.25(3.10) + 1.50(1.40) + 3.35(2.70) + 3.15(2.65) + 1.65(1.35). Femur I in ♂♀ with 3 dorsal, 2 pro- and 2 retrolateral spines. Patella with 1 pro- and 1 retrolateral spines and 2 distinct dorsal macrosetae. Tibia I with 4 pairs of ventral spines, 1 pro- and 1 retrolateral spines, and 2 dorsal macrosetae. Metatarsus with 2 pairs of lateral and 2 pairs of ventral spines.

Palp as in Figs. 187–189, 194–195, cymbium with 2 claws, bulbus distinctly longer than wide (cf Fig. 188),terminal apophysis short and not extending embolus, basal part of embolus without spine, tegular apophysis with lamellate upper arm and rather broad down arm. Epigyne as in Figs. 213–214, without distinct apical pockets (or if to count apical parts as pockets they are not fused), septal steam gradually widened, septum not reaching epigastral furrow (lips jointed), fovea pear-shaped, longer than wide, lips of epigyne slightly wider than septal base.

DIAGNOSIS. It can be separated from sibling *M. mongolensis* sp.n. by shorter terminal apophysis not extending beyond embolus, wider tip of embolus and shape of epigyne. Receptacula in *M. buryatic*a sp.n. relatively longer, distinct apical pockets and furrows aside the stem are absent.

DISTRIBUTION. Known from the type locality only in Buryatia (Map 1).

Mongolicosa glupovi **sp.n.**

Fig. 183–186, 196–202, 208–212. Map 1.

Acantholycosa triangulata Yu & Song, 1988: Logunov et al., 1998: 47 (missidentification).

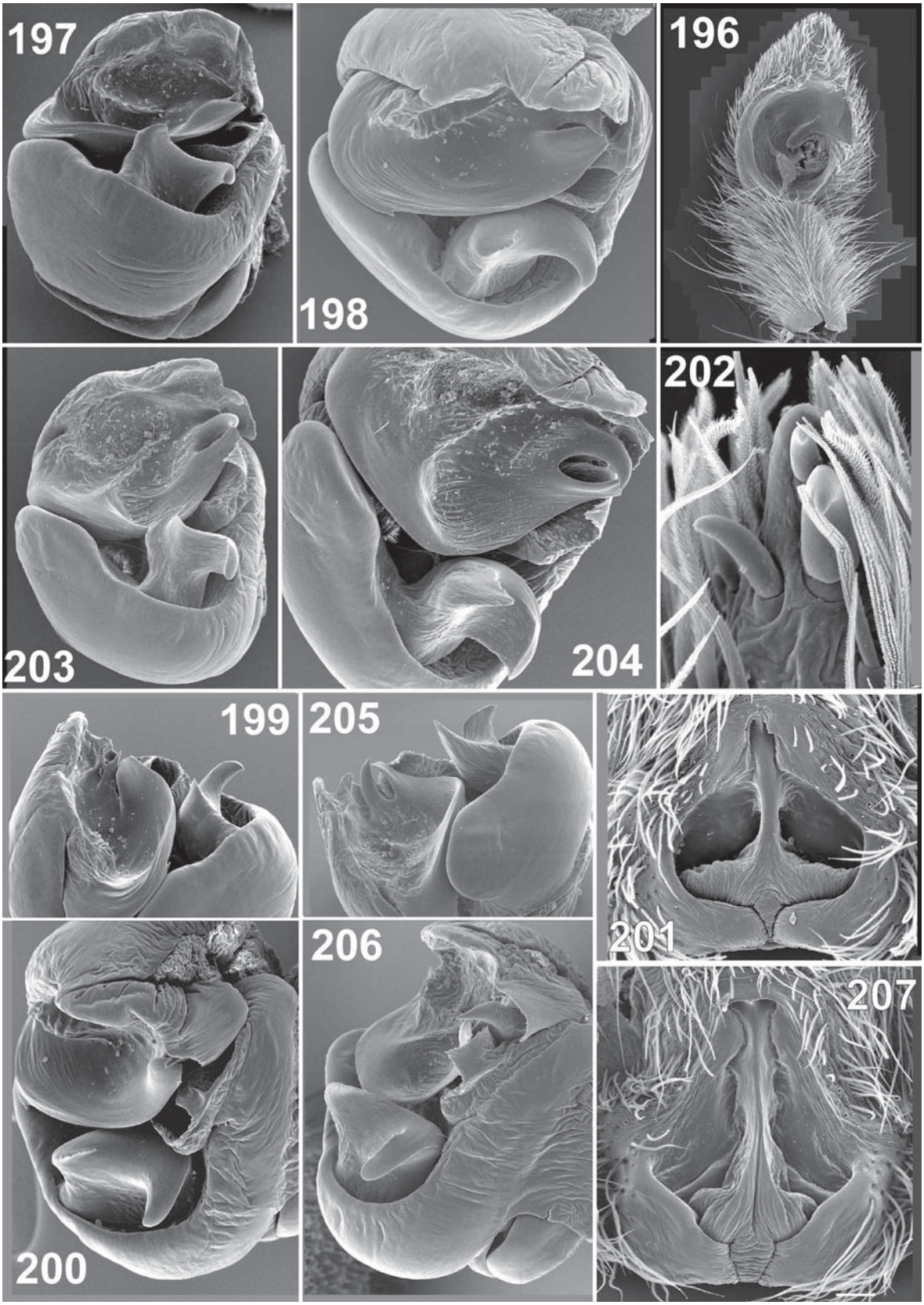
? *A. triangulata*: Marusik et al., 2000: 76 (missidentification).

MATERIAL. Holotype ♂ and paratypes 6 ♂♂ 6 ♀♀ (ISEA) and 1 ♂ 1 ♀ (ZMUT, palp and epigyne in SEM mount), RUSSIA, **Altai**, 40–45 km E of Kosh-Agach, 20 km E of Kokorya Vill., Sailyungem massif, 2600–2800 m, mountain moss-dryas tundra, 24–25.06.1999 (DL). Paratypes: 1 ♂ 2 ♀♀ (MMUM), 2 ♂♂ (ISEA), **Altai**, 40–45 km E of Kosh-Agach, 20–25 km NE of Kokorya Vill., Sailyugem massif, 2500–3000 m, mountain stony steppe, 24–25.06.1999 (V.V. Glupov); 1 ♀ (ISEA), SE **Altai**, area of Chagan-Burgazy & Tarkhata Rivers, 4 km NNW Chernaya Mt, 2600–3000 m, tundra, 1–2.07.1996 (AD & RD); 1 ♀ (ZMMU), **Altai,** SW part, Chikhacheva Mt. Range, 3 km SE of Chernaya Mt., 2500–2800 m, tundra, 10–11.07.1996 (AD & RD); 1 ♂ 4 ♀♀ (ISEA) **Tuva,** ca 30–35 km SW of Mugur-Aksy, Mugur River upper reaches, 3100–3300 m, mountain stony tundra, 23.07.1993 (DL); 6♂♂ (ZMMU), RUSSIA, Western **Khakassia**, Abakan Mt. Range, 60 km WNW of Tashtyp, Bol. Kol'taiga Mt., scree, 1400–1800 m, 16–25.06.2000 (DEL).

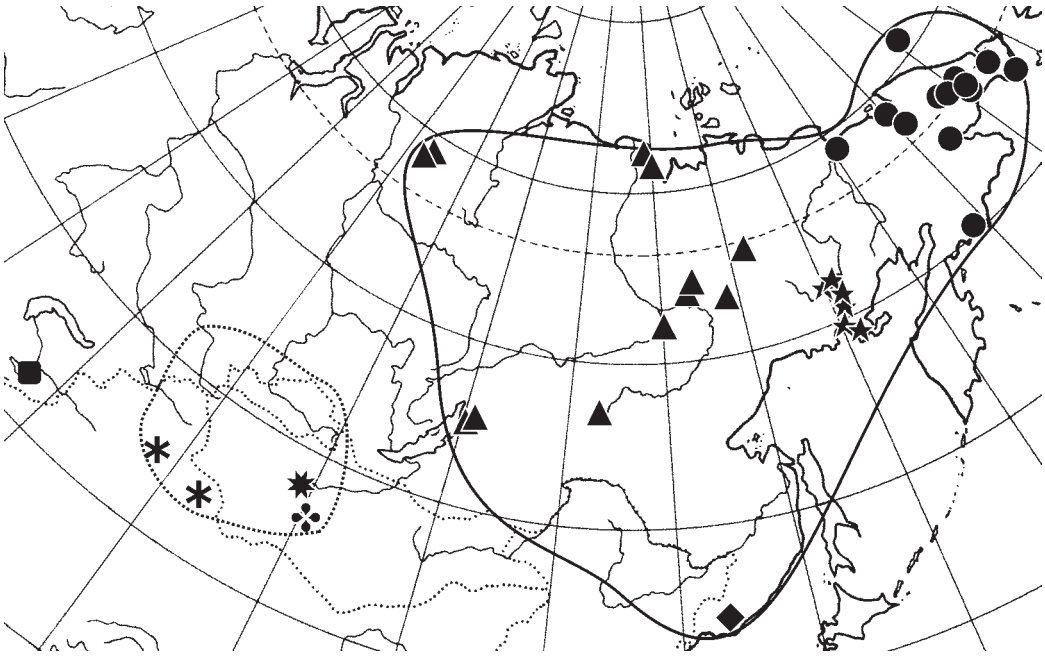
ETYMOLOGY. The specific name is a patronym in honor of the collector of some paratypes Dr. Viktor C. Glupov (Novosibirsk), who organized the arachnological field trip to the mountain Altai in 1999.

Figs. 183–193. Male palp of *Mongolicosa glupovi* sp.n (183–186), *M. buryatica* sp.n. (187–189) and *M. mongolensis* sp.n. (190–193). 183, 187, 191 — bulbus, ventral view; 184 — palp, prolateral view; 185, 188–189, 192 bulbus, view from above; 186, 193 — tegular apophysis, ventral view; 190 — palp, ventral view. Scale = 0.1 mm. Abbreviations: *em* — embolus, *es* — embolic spine, *ta* — terminal apophysis.

Рис. 183–193. Пальпа самца *Mongolicosa glupovi* sp.n (183–186), *M. buryatica* sp.n. (187–189) и *M. mongolensis* sp.n. (190–193). 183, 187, 191 — бульбус, вид снизу; 184 — пальпа, вид сбоку-спереди; 185, 188–189, 192 бульбус, вид сверху; 186, 193 — тегулярный отросток, вид снизу; 190 — пальпа, вид снизу. Масштаб = 0.1 мм. Условные обозначения: *em* — эмболюс, *es* — шипик эмболюса, *ta* — терминальный отросток.



Figs. 196–207. Copulatory organs of *Mongolicosa glupovi* sp.n (196–202) and *M. mongolensis* sp.n. (203–207). 196 — tibia and cymbium with removed bulbus; 197, 203 — bulbus, ventral view; 198, 204 — bulbus, view from above; 199, 205 — bulbus, prolateral view; 200, 206 — bulbus, retrolateral view; 202 — tip of cymbium showing 3 claws; 201, 207 — epigyne, ventral view.



Map 3. Distribution of *Mongolicosa* gen.n. (...) and *Sibirocosa* gen.n. (—) species (range of *Sibirocosa* gen.n. shown without *S. alpina* sp.n. that may belong to different genus).

Карта 3. Распространение видов и родов *Mongolicosa* gen.n. (...) и *Sibirocosa* gen.n. (—) (ареал *Sibirocosa* gen.n. показан без *S. alpina* sp.n., которая возможно принадлежит к другому роду).

✤ — *M. songi* sp.n., ✱ — *M. pseudoferruginea*, ✷ — *S. mongolensis* sp.n., ● — *S. subsolana*, ■ — *S. alpina* sp.n., ▲ — *S. sibirica*, ★ — *S. kolymensis* sp.n.

DESCRIPTION. Total length 6.00–7.00 (7.50–9.20). Carapace: 3.40–3.50(3.50–3.75) long, 2.65–2.75(2.80–3.10) wide. Carapace length/femur I ratio: 1.23–1.32(1.21–1.27). Carapace width/femur I ratio 0.95–1.00 in males and 1.00 in females. General coloration dark, females almost uniformly dark-brown, with slightly lighter patellae and coxae. Males darker than females, while tibia-tarsi lighter (dark-yellow) than femora and body. Coxae in both sexes with basal dark-yellow — light-brown spots. Palpal cymbium and tibia black, darker than femur-patella, covered with thick erected black hairs. Patella proventrally with whitish hairs. Leg I joints: 2.75(3.10)+1.25(1.60)+2.75(3.25)+2.65(2.85)+1.60(1.50). Femur I in ♂♀ with 3 dorsal, 2 pro- and 2 retrolateral spines. Tibia I with 4 pairs of ventral spines, one female has on one leg 5 prolateral and 4 retrolateral spines, while other leg has 4-4. Patella I with 2d, 1p, 1r spines in male, and 2d & 1r (or 0r). Palp as in Figs. 183–186, 196–200, 202, tegular apophysis with long and relatively thin down arm and small apical one, embolus with a spine in basal part, tip of embolus broad, terminal apophysis small, spine like, in view from above bulbus length and width about subequal. Epigyne as in Figs. 201, 208–212, septum shape variable as well as those of receptacula, apical pockets closely separated, septal base as wide as fovea, in most of females septum not reaching epigastral furrow (lips touching each other), or may reach by tip only, fovea wider than long.

DIAGNOSIS. Males of this species can be easily distinguished from other congeners by having spine-like outgrowth in the basal part of embolus and small apical arm of tegular apophysis. Compared to their congeners, males of *M glupovi* sp.n. have thinnest down arm of tegular apophysis and broadest tip of embolus. Females of this species can be distinguished by the wide septal base extended over whole width of fovea (cf. Figs. 201, 208–210).

DISTRIBUTION. It seems that this species has the widest range among congeners and occurs from south-western Altai to S. Khakassia and SW Tuva (Map 1).

Mongolicosa mongolensis **sp.n.**
Figs. 190–193, 203–207, 215–217. Map 3.

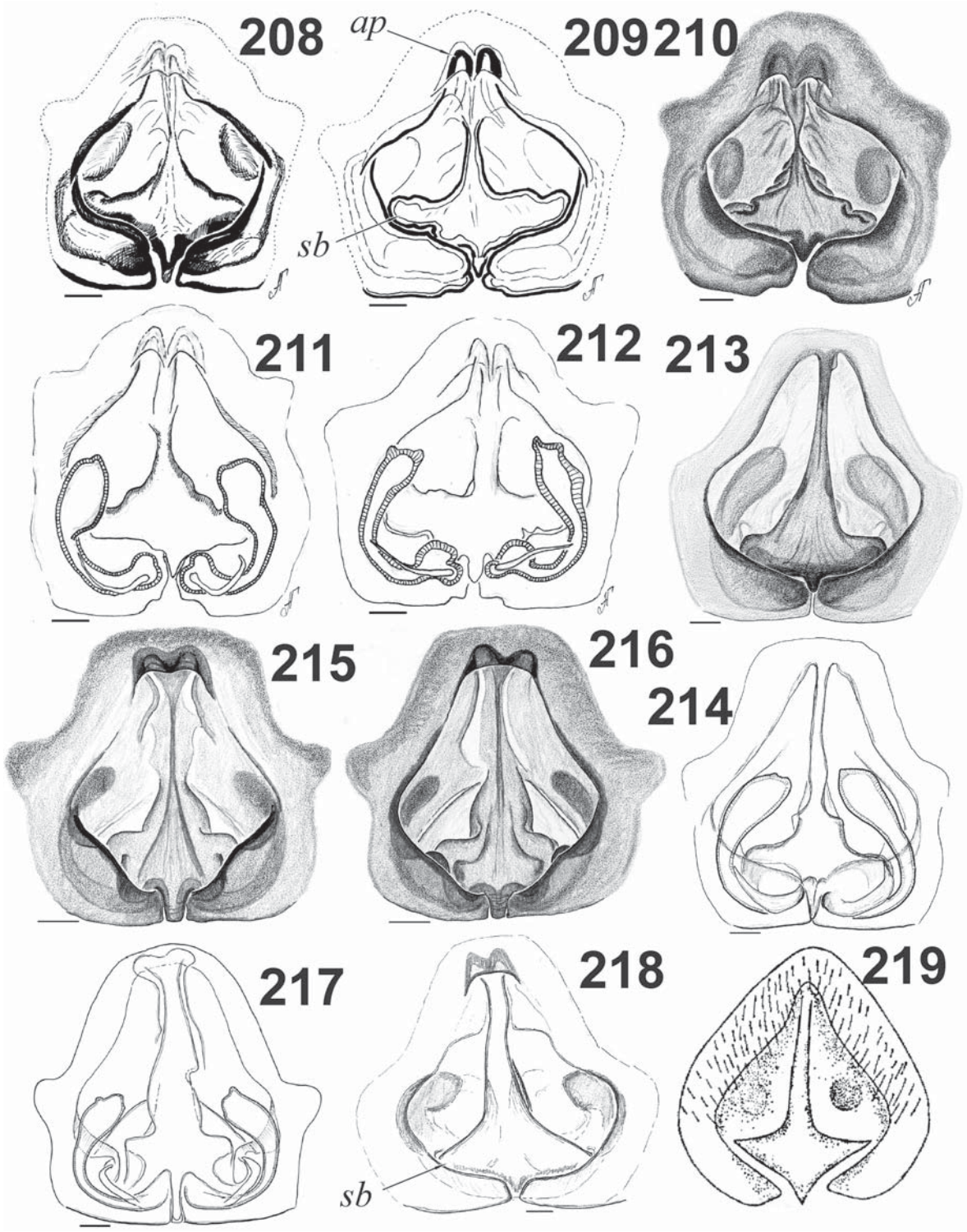
Acantholycosa triangulata?: Marusik & Logunov, 1998: 245 (in part).

MATERIAL. Holotype ♂ and paratype ♀ (ZMMU), MONGOLIA, **Bayankhongor** Aimak, Gurvanbulag Somon., Khokh-Nuur (Lake), 47°32'N, 98°32'E, 2600 m, 7–10.06.1997 (YM). Paratypes 5 ♂♂ 5 ♀♀ 1 juv. (ZMMU, JWC, NRS, ZMUT), same locality and date.

ETYMOLOGY. The specific name is an arbitrary combination of letters derived from the type locality.

DESCRIPTION. Total length 6.75–7.35(7.75–8.00). Carapace: 3.50–3.60(3.50–3.90) long, 2.65–3.00(2.85–3.00) wide. Carapace length/femur I ratio: 1.2(1.16), carapace width/femur I ratio 1.0(0.9). Coloration dark brown. Pattern poorly visible, carapace with lighter median band and broken submarginal stripe. Abdomen with red-brownish heart mark.

Рис. 196–207. Копулятивные органы *Mongolicosa glupovi* sp.n (196–202) и *M. mongolensis* sp.n. (203–207). 196 — голень и цимбиум, бульбус удалён; 197, 203 — бульбус, вид снизу; 198, 204 — бульбус, вид сверху; 199, 205 — бульбус, вид сбоку-спереди; 200, 206 — бульбус, вид сбоку-сзади; 202 — вершина цимбиума, показаны 3 коготка; 201, 207 — эпигина, вид снизу.



Figs. 208–219. Epigyne of *Mongolicosa glupovi* sp.n (208–212), *M. buryatica* sp.n. (213–214), *M. mongolensis* sp.n. (215–217) and *M. pseudoferruginea* (Schenkel) (218–219). 208–210, 213, 215–216, 218–219 — ventral view; 211–212, 214, 217 — dorsal view. 219 — figure of holotype of *Acantholycosa triangulata* from original description (Yu & Song, 1988). Scale = 0.1 mm. Abbreviations: *ap* — apical pocket, *sb* — septal base.

Рис. 208–219. Эпигина *Mongolicosa glupovi* sp.n (208–212), *M. buryatica* sp.n. (213–214), *M. mongolensis* sp.n. (215–217) и *M. pseudoferruginea* (Schenkel) (218–219). 208–210, 213, 215–216, 218–219 — вид снизу; 211–212, 214, 217 — вид сверху. 219 — рисунок из оригинального описания (голотипа) *Acantholycosa triangulata* (Yu & Song, 1988). Масштаб 0,1 мм. Условные обозначения: *ap* — верхний карман, *sb* — основание септума.

Legs with bands and stripes. Tarsus-tibia of leg III–IV uniformly dark colored. Male. Leg I joints: 3.0 + 1.35 + 2.95 + 2.59 + 1.45. Spination of leg I: femur 3d, 2p, 2r; patella 2d, 1p, 1r; tibia 2d, 1p, 1r, 4-3(4)v, metatarsus 2p, 1r, 2-2v. Palp as in Figs. 190–193, 203–206, bulbus distinctly longer than wide (cf Fig. 192), cymbium and patella covered with dense erected black hairs, patella with whitish hairs on prolateral side, terminal apophysis relatively long and extends embolus, basal part of embolus without spine, tegular apophysis with lamellate upper arm and rather broad down arm. Female. Leg I joints: 3.35 + 1.30 + 3.15 + 2.75 + 1.50. Spination of leg I: femur as in male, patella 2d; tibia 2d, 1p, 1r, 4-4v; metatarsus 1p, 1r, 2-2v. Epigyne as in Figs. 207, 215–217, apical pockets fused, septal steam has subequal width along whole course, septal tip reaching epigastral furrow (lips not jointed), fovea rhomboidal, longer than wide, distal part of lips thinner than septal base, apical pocket about 1.5 thinner than septal base.

DIAGNOSIS. From sibling *M. buryatica* sp.n. can be separated by longer terminal apophysis extending the embolus, thinner tip of embolus and shape of epigyne. Receptacula in *M. mongolensis* sp.n. relatively longer, it has distinct apical pockets and wider apical part of stem.

DISTRIBUTION. Known from the type locality only.

Mongolicosa pseudoferruginea (Schenkel, 1936) **comb.n.**

Fig. 218–219. Map 3.

Pardosa pseudoferruginea Schenkel, 1936: 295, fig. 102 (♀). Holotype ♀ in NRS, examined.

Acantholycosa triangulata Yu & Song, 1988: 241, fig. 28–30 (♀). Holotype not examined. **Syn.n.**

MATERIAL. Holotype♀ from Urumchi (=Ürümqi) [Xinjiang, China], 07−10.1928 (Sven Hedins Exp. Ctr. Asien, Dr. Hummel), in NRS examined.

DESCRIPTION. Carapace 4.25 long, 3.50 wide. Leg I spination: femur 2p, 1r, tibia 1p & 1r, 4-4v. Abdomen and legs covered with long hairs. Epigyne as in Fig. 218–219, apical pockets fused, steam of septum with almost parallel sides, septal base thinner than fovea, fovea al long as wide, lips not jointed, thinner than septal base, septal base about rhomboidal.

DIAGNOSIS. This species seems to be closest to *M. glupovi* sp.n., from which it can be separated by thinner lips and relatively smaller septal base.

COMMENTS. While holotype of *A. triangulata* from Barkol (Xinjiang, China, 43.6ºN 93.0ºE) was not examined, spination of leg I, shape of fovea and septum (cf. Fig. 219) depicted by Yu & Song [1988] are clear enough to see that this name is a junior synonym of *M. pseudoferruginea.* Figures provided for *A. triangulata* in Song et al. [1999] correspond to another species described below (*M. songi* sp.n.).

DISTRIBUTION. This species is known with certainty from the type localities of *M. pseudoferruginea* and *A. triangulata* in Bogda-Shan Mt. Range, Xinjiang and separated by about 400 km.

The *gobiensis*-group: We assign two species to this group, both are known from females only. Members of this group can be diagnosed by lips of epigyne not touching each other.

Mongolicosa gobiensis **sp.n.**

Figs. 220–222. Map 3.

Acantholycosa triangulata?: Marusik & Logunov, 1998: 245 (in part).

MATERIAL. Holotype ♀ (JWC), MONGOLIA, **Omnogov** (=South Gobi) Aimak, Khurmen Somon, Gurva Saikhan Mt. Range, 43°29'N, 104°04'E, 2300 m, 27.05.1997 (YM).

ETYMOLOGY. The specific name is derived from the type locality: South Gobi Aimak.

DESCRIPTION. Total length 6.80. Carapace: 3.15 long, 2.55 wide, black brownish without light pattern. Abdomen uniformly colored, dark gray, covered with sparse erected hairs. Carapace length/femora I ratio 1.13, carapace width/femur I ratio 0.91. Femur-metatarsus with annulation. Leg I joints: 2.80 + 1.35 + 2.75 + 2.35 + 1.35. Femur I with 3 dorsal, 2 pro- and retrolateral spines, patella without lateral spines, tibia I with 4 pairs of ventral spines and one pair of lateral spines. Epigyne as in Figs. 220–222, with widely spaces small pockets, rounded margins of fovea, fovea rhomboidal, steam wider in apical part than near septal base, lips not jointed, heads of receptacula rounded.

DIAGNOSIS. This species can be separated from sibling *M. songi* sp.n. by smaller, more widely spaced apical pockets, widened septal stem just below the pockets, rounded edges of fovea, relatively longer receptacula with rounded heads.

DISTRIBUTION. Known only from type locality.

Mongolicosa songi **sp.n.**

Figs. 223–227. Map 3.

Acantholycosa triangulata: Song et al., 1999: 316, fig. 186C–D (♀).

Acantholycosa triangulata ?: Marusik & Logunov, 1998: 245 (in part).

MATERIAL. Holotype ♀ (JWC) and paratypes 1 ♀ 1 juv. (ZMMU), MONGOLIA, **Bayankhongor** Aimak, Bogd Somon, Ikh-Bogd Mt. Range, Khar-Obot Mt., 44°54'N, 100°34'E, 2500 m., 04−06.06.1997 (YM).

ETYMOLOGY. The specific name is a patronym in honor of the famous Chinese arachnologist Dr. Daxiang Song.

DESCRIPTION. Total length 7.25–7.40. Carapace: 3.50–3.60 long, 2.85–2.90 wide. Carapace length/femur I ratio: 1.08-1.16, carapace width/femur I ratio 0.89–0.92. Coloration dirty brown, pattern almost indistinct. Abdomen with poorly visible heart mark. Femora with marking, legs III-IV darker than I–II. Leg I joints: 3.10 + 1.30 + 3.05 + 2.60 + 1.50. Spination of leg I: femur 3d, 2p, 2r; patella 2d; tibia 1p, 1r, 4-4v, metatarsus 1p, 1r, 2-2v. Epigyne as in Figs 223–225, with rhomboidal fovea, relatively wide apical pockets, pentagonal shape of septal base, leaps untouched, receptacula lenticular.

DIAGNOSIS. It can be separated from sibling *M. gobiensis* sp.n. by more rhomboidal shape of fovea, closer spaced apical pockets and lenticular receptacula.

DISTRIBUTION. Besides the type locality this species occur in adjacent China (Xinjiang Province) where it was reported and depicted by Song et al. [1999 sub. *A. triangulata*, cf. Figs. 226–227].

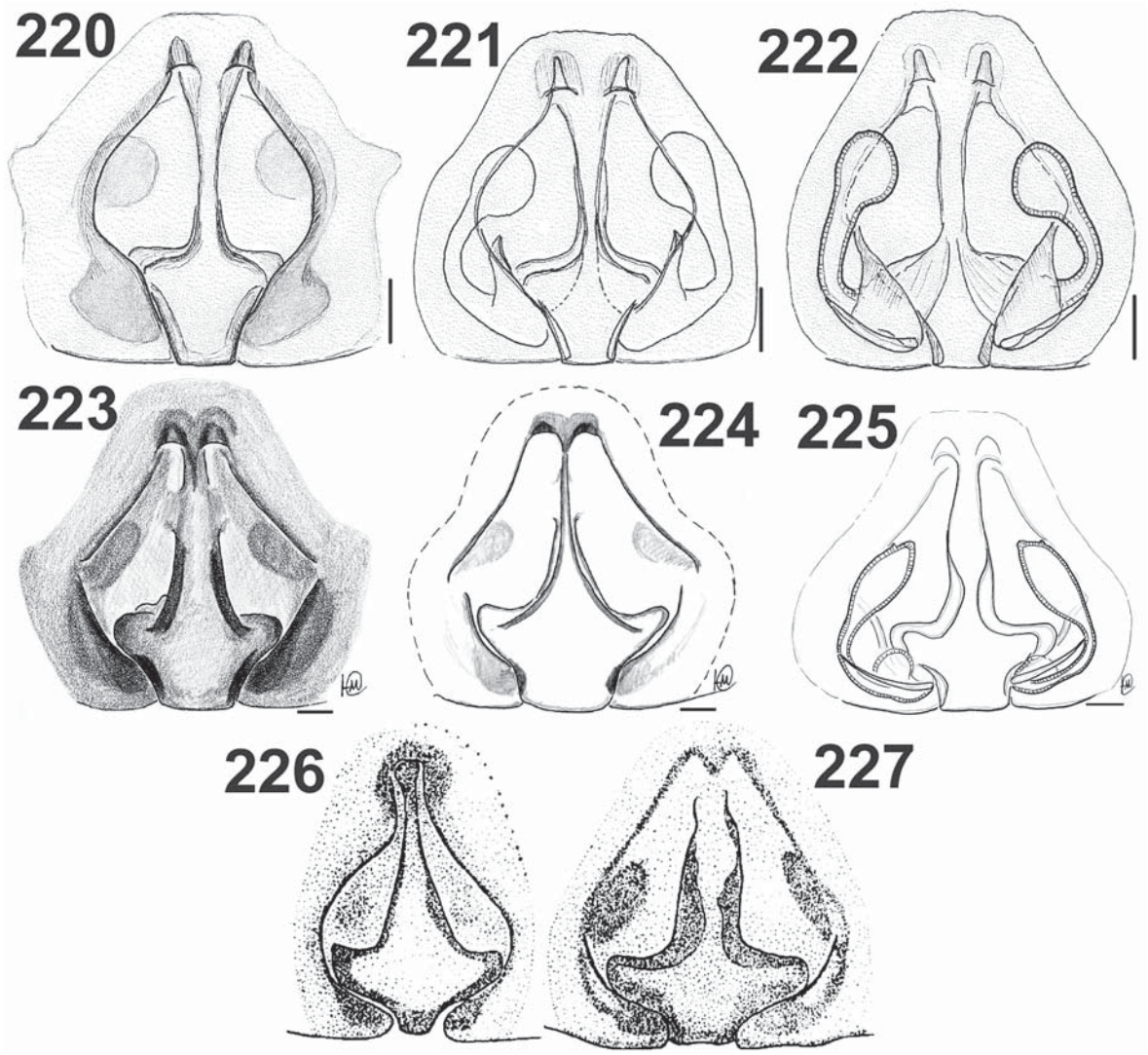
COMMENTS. It is possible that Chinese population represents a separate species or even two (cf. Figs. 226–227).

Sibirocosa gen.n.

Type species: *Sibirocosa kolymensis* sp.n.

ETYMOLOGY. The generic name is derived from "*Sibiria*" (Latin word for Siberia) and "-cosa" a common ending of lycosid genera.

DIAGNOSIS. Males of this genus can easily be distinguished from all other Pardosini and Lycosidae as a whole by combination of the wide and very thick embolus (wider than tegular apophysis) and strongly reduced palea. From Pardosi-



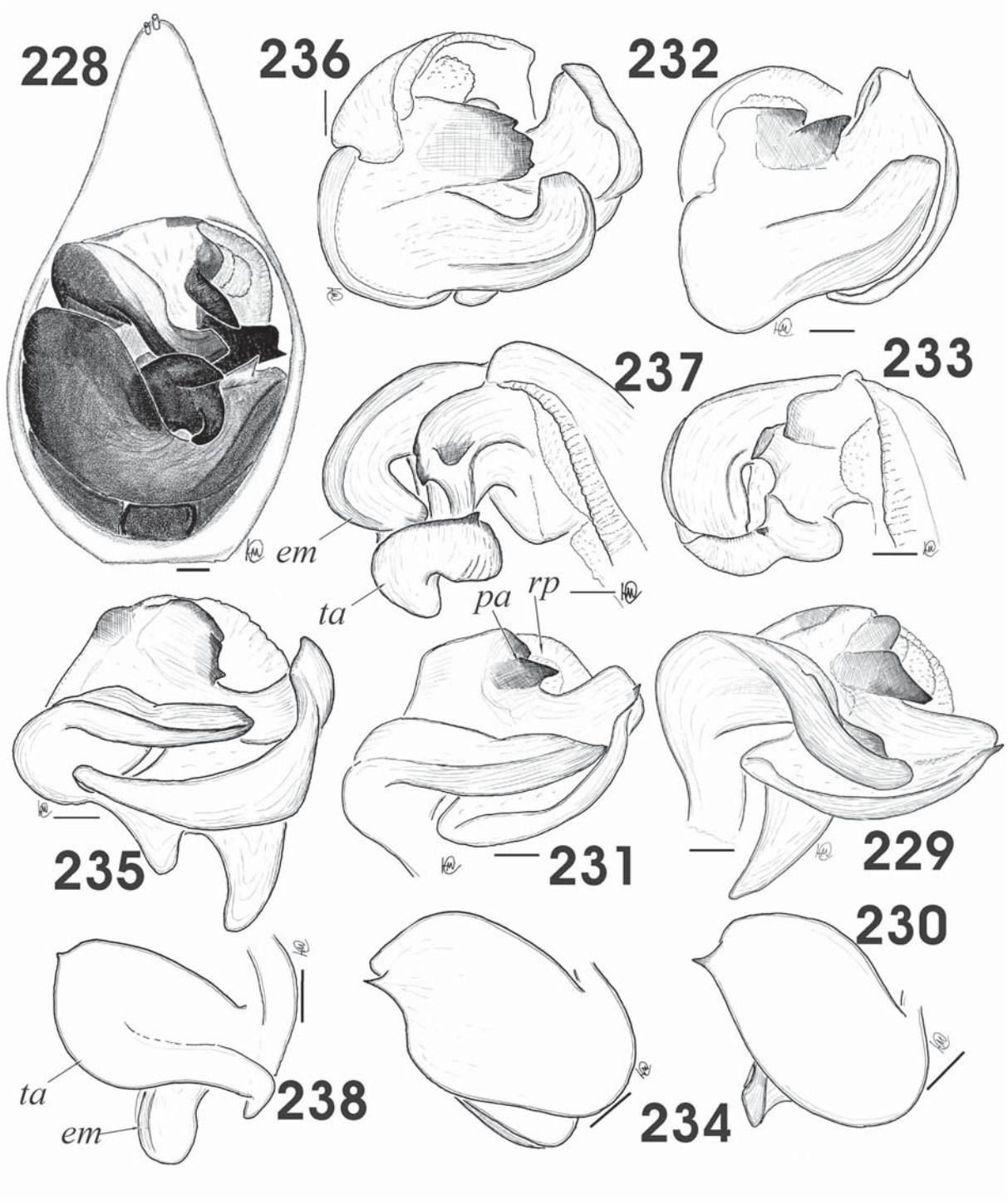
Figs. 220–227. Epigyne of *Mongolicosa gobiensis* sp.n (220–222) and *M. songi* sp.n. (223–227). 220–221, 223–224, 226–227 — ventral view; 211, 225 — dorsal view; 221 — after maceration; 226–227 from Song et al. (1999, sub. *Acantholycosa triangulata*). Scale = 0.1 mm.

Рис. 220–227. Эпигина *Mongolicosa gobiensis* sp.n (220–222) и *M. songi* sp.n. (223–227). 220–221, 223–224, 226–227 — вид снизу; 211, 225 — вид сверху; 221 — после просветления; 226–227 рисунок из Song et al. (1999, как *Acantholycosa triangulata*). Масштаб 0,1 мм.

ni with numerous ventral tibial spines (*Acantholycosa, Mongolicosa* gen.n.) males can be easily separated by strongly reduced palea, enormously massive, long (as long as embolus) and wide terminal apophysis (?conductor). Females can be separated from the multispine Pardosini by large and deep transversal fovea, visor (bill) formed by apical pockets extended into fovea, touching lips and near absence of septal base, very long and sharply turned receptacula.

DESCRIPTION. Total length 5.25–7.25. General coloration dark, pattern typical for Pardosini if distinct. Body covered with normal hairs. Male palp: cymbium with one or two claws, tegular apophysis with basal arm only, the apical one reduced to thick (swollen) upper edge of apophysis; embolus very broad and thick, distinctly turned, tip blunt; terminal apophysis (conductor?) very massive, long (as long as embolus) and broad; palea strongly reduced, however remaining part bears two apophyses. Epigyne with large transverse, rectangular or round fovea with sharp edges; fused apical pockets form massive bill penetrating fovea; lips touching or almost touching; septum poorly developed (almost reduced), stem with distinct edges in two species, base of septum absent or poorly developed; receptacula very long and thin, comprised by two distinct parts: divergenting basal part (duct) turning downward (except for *S. sibirica*) and convergenting terminal parts (receptacula proper), length of two parts subequal or ducts can be even longer than receptacula proper. Spination of leg I: 3d, 2v and 2r in males and 3-2-1 in females; patella with 1p and 1r in males, females with 1-1 or 0-1; tibia with 6-6, 6-5 or 5-5 ventral spines in males, and 5-5 in females, both sexes have 1p and 1r; metatarsus with 2p and 2r spines.

RELATIONSHIPS. Relationships of this genus are unclear. Females of *Sibiricosa* gen.n. resemble members of



Figs. 228–238. Male palp of *Sibirocosa subsolana* (Kulczyński) (228–230, from Egvekinot), *S. kolymensis* sp.n. (231–234, from Kontakt) and *S. sibirica* (Kulczyński) (235–238). 228 — ventral view; 229, 231, 235 — terminal part of bulbus, ventral view; 232, 236 — terminal part of bulbus, view from above; 233, 237 — terminal part of bulbus, retrolateral view; 230, 234, 238 — terminal apophysis and embolus, view from below. Scale = 0.1 mm. Abbreviations: *em* — embolus, *pa* — paleal apophysis, *rp* — reduced palea, *ta* — terminal apophysis.

Рис. 228–238. Пальпа самца of *Sibirocosa subsolana* (Kulczyński) (228–230, из Эгвекинота), *S. kolymensis* sp.n. (231–234, из Контакта) и *S. sibirica* (Kulczyński) (235–238). 228 — вид снизу; 229, 231, 235 — терминальная часть бульбуса, вид снизу; 232, 236 — терминальная часть бульбуса, вид сверху; 233, 237 — терминальная часть бульбуса, вид сбоку-сзади; 230, 234, 238 — терминальный отросток и эмболюс, вид снизу. Масштаб 0,1 мм. Условные обозначения: *em* — эмболюс, *pa* — отросток палеи, *rp* — палеа, *ta* — терминальный отросток.

Mongolicosa gen.n. by touching lips, well developed fovea, triangle shaped septal base, and closely spaced (almost fused) apical pockets. Males of these two genera share some similarities such as very broad embolus, massive extension of embolic complex (cf. Figs. 195, 235, 229). Tegular apophysis of *Sibirocosa* gen.n. is similar to those in *Pyrenecosa* gen.n. (reduced apical arm transformed into swollen upper edge). Two genera show similarity in reduction of palea bearing apophysis, position of the embolic base, wide apical pocket not isolated from fovea, epigyne proportion (as long as wide). Also, these genera have different types of embolus, terminal apophysis, and receptacula.

SPECIES GROUPS. All species are rather close each to other (exception *S. alpina* sp.n.) and can not be subdivided into species groups. Therefore we do not split this genus into species groups.

Sibirocosa kolymensis **sp.n.**
Figs. 231–234, 246–247, 254–256, 259–261, 264–265. Map 3.

Acantholycosa subsolana (Kulczyński, 1907): Marusik et al., 1992: 149 (in part).

MATERIAL. Holotype ♂ and paratypes 3 ♂♂ 4 ♀♀ (ZMMU), RUSSIA, NE Siberia, **Magadan** Area, upper Kolyma River flow (ca 62°N, 149°30'E), Aborigen Field Station, mountain tundra, 1250−1800 m, 2−3.07.1986 (YM); 2 ♀♀ (ZMMU), same locality, kurums, 22.08.1984 (KE); 5 ♀♀ (ZMMU), same locality, mountain tundra, 1300 m, Summer 1985 (YM); 7 ♂♂ 15 ♀♀ (NRS) 11♂♂ 16♀♀ (ZMUT), 53♂♂ 11♀♀ (YMUT),**Magadan** Area, Kulu River upper flow, Kontakt Field Station, 61°52'N, 147°38'E, Summer 1999 (S.P. Bukhkalo); 15 ♂♂ 13 ♀♀ (ISEA), same locality, Summer, 1987 (S.P. Bukhkalo); 1 ♂ 1 ♀ (MMUM), same locality, 900−1450 m, various places, 9−11.08.2002 (DL); 3 ♀♀ (IBPN), same locality, mountain tundra, 61°40'N, 147°30'E, 10.08.2002 (YM); 1♂ (IBPN),**Magadan** Area, env. of Talaya Vill. (ca. 61.380°N, 152.700°E), 10.06.1974 (E.G. Matis); 1 ♂ 1 ♀ (IBPN),**Magadan** Area, Yablonevyi (ca. 60.4°N, 151.5°E), 4.06.1974 (E.G. Matis); 5♀♀ (ZMMU), Magadan Area, upper Kolyma River flow, Detrin River basin, 30 km W of Vakkhanka River mouth, Butugychag Mt. (ca. 61.3°N, 149.2°E), 1000 m, among stones, 12.08.1987 (YM); 1 ♂ 1 ♀ (IBPN), **Magadan** Area, Koni Peninsula, Khindzha River middle flow, ca 59°N, 151.8°E, 200 m, 11−24.06.1988 (S. Pleshchenko).

ETYMOLOGY. The specific name is derived from the type locality, Kolyma River.

DESCRIPTION (Kontakt). Total length 5.25–7.00 (6.25–6.85). Carapace: 2.85–3.30 (3.20–3.40) long, 2.40–2.75 (2.45–2.65) wide. Coloration variable, from brown to very dark, almost black. Pattern of carapace poorly visible, but present. Abdomen of males with distinct red-brownish heart mark. Legs (femur-tibia) with distinct rings. Legs in males with interferencing hairs (surface). Carapace/femur I length ratio 1.18 (1.20), carapace width/femur I length ratio 1.0 (0.92).

Male. Leg I joints: 2.75 + 1.20 + 2.80 + 2.60 + 1.35. Spination of leg I: femur I 3d, 2p 2r, patella 2d, 1p, 1r; tibia 2d, 1p, 1r, 5-5 (in one small specimen) or 6-6v; metatarsus 2p, 2r, 3-3v. Tibia-tarsus of legs I & II lighter than thee of III & IV. Palp as in Figs. 231–234, 246–247, 259–261, cymbium with 2 claws, remains of palea slightly angled, embolus without distinct turn, conductor with turned external margin, tooth on conductor might be lost in some specimens.

Female. Leg I joints: 2.65 + 1.25 + 2.50 + 2.20 + 1.10. Spination of leg I: femur 3d, 2p, 1r; patella 2d, 0p (seldom 1p), 1r; tibia 2d, 1p, 1r, 5-5v; metatarsus 2p, 2r, 2-2v. Epigyne as in Figs. 254–256, 264–265, fovea about twice wide than high, visor formed by apical pockets wide.

DIAGNOSIS. This species is very close to *S. subsolana,* another northeastern species. Males can be separated with certainty by external margin of conductor: turned in *S. kolymensis* sp.n. and straight in *S. subsolana.* Two species have some differences in curves of embolus and shape of remains of palea: angled in *S. kolymensis* sp.n. and rounded in *S. subsolana.* Females of these species can be separated by proportion of fovea: width/height ratio less than 2.5 in *S. kolymensis* sp.n. and 2.5–3.0 in *S. subsolana.*

DISTRIBUTION. This species is distributed in the upper Kolyma and northern Cisokhotia. In the north this species is replaced with sibling *S. subsolana* (exact border unclear), and on the west by *S. sibirica*. It seems that Indigirka River forms the border between two vicariated congeners.

Sibirocosa manchurica **sp.n.**
Figs. 248–249, 266–271. Map 3.

MATERIAL. Holotype♂ and paratypes 2♂♂ 2♀♀ (ZMMU) RUSSIA, **Maritime** Province south part, Oblachnaya Mt, 1600-1856 m, 43°34'N, 134°12'E, 03−06.07.2002 (Yu. Sundukov). Paratypes: 3 ♀♀ (ZMMU), 1 ♀ (JWC) and 1 ♀ (NRS), RUSSIA, **Maritime** Province south part, Oblachnaya Mt, 1600−1750 m, 43°34'N, 134°12'E, 03.08.1998 (YM). Paratype: 1 ♀ (ZMUT), **Maritime** Province south part, Oblachnaya Mt., 1650 m, 43°34'N, 134°12'E, 03.08.1998 (M. Uusitalo).

ETYMOLOGY. The specific name is an arbitrary combination of letters.

DESCRIPTION. Total length 6.50–6.80(6.85–7.25). Carapace: 3.55–3.65(3.65–4.00) long, 2.75–2.80(2.90–3.10) wide. Coloration dark from dark brown to almost black. Abdomen of male with red-brown heart mark, and two sublateral longitudinal series of whitish spots (6 pairs), abdomen of female with 4 pairs of whitish spots. Legs I & II in males without annulation on patella-tarsus, these segments lighter than other legs and leg joints. Females have annulation on all legs. Carapace length/femur I ratio 1.12(1.18), carapace width/femur I length ratio 0.86(0.97).

Male. Leg I joints: 3.25 + 1.40 + 3.20 + 3.00 + 1.55. Spination of leg I: femur I 3d, 2p 2r, patella 2d, 1p, 1r; tibia 2d, 1p, 2r, 5-5v. Palp as in Figs. 266-271, apical third of cymbium light brown, cymbial tip with 1 claw, remains of palea not subdivided, conductor very massive and wide in apical part, embolus turned in apical part.

Female. Leg I joints: 3.10 + 1.40 + 3.00 + 2.60 + 1.35. Spination of leg I: femur 3d, 2p, 1r; patella 2d, 1p (or 0p), 1r; tibia 2d, 1p, 1r, 5-5v; metatarsus 2p, 2r, 2-2v. Epigyne as in Figs. 248–249, fused pockets form large visor extending to fovea, fovea about rectangular, fovea height 1.5 smaller than fovea width, upper margin of lips procurved.

DIAGNOSIS. *S. manchurica* females can be separated from congeners by larger size, almost parallel sides of fovea, horizontal (procurved) lower margin of fovea and large visor formed by fused apical pockets. Males of this species can be easily distinguished by the shape of paleal outgrowth (tip extended into spine), very thin tegular apophysis (in view from above), and other palpal sclerites.

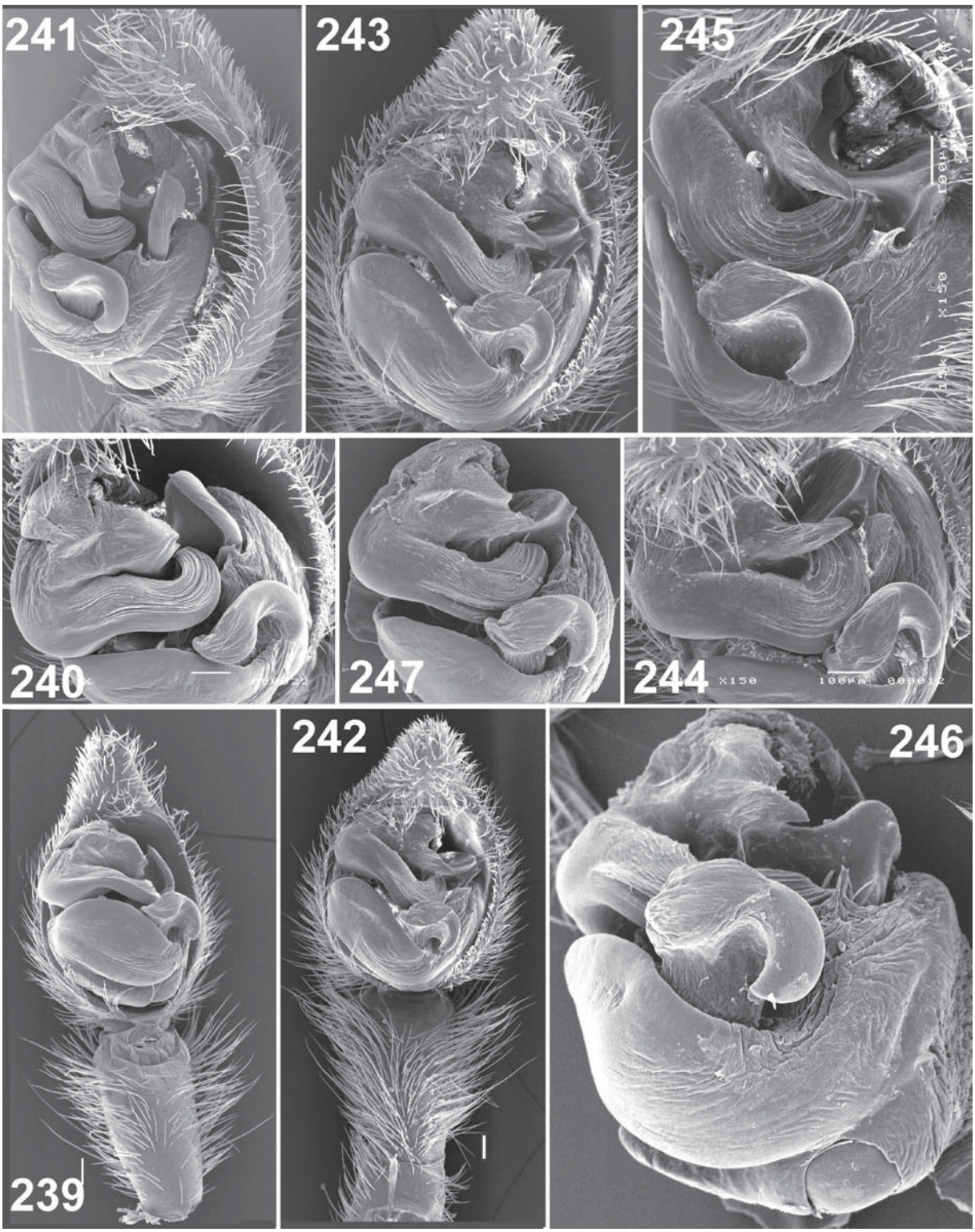
DISTRIBUTION. Known only from the type locality.

Sibirocosa sibirica (Kulczyński, 1908) **comb.n.**
Figs. 235–241, 251–253, 262. Map 3.

Lycosa sibirica Kulczyński, 1908b: 89, pl. 3, fig. 103–104, 106–107 (♂♀).

Pardosa sibirica: Roewer, 1955: 173.

Pardosa sibirica: Zyuzin, 1979a: 435, fig. 55 (♂).



Figs. 239–247. Male palp of *Sibirocosa sibirica* (Kulczyński) (239–241, from Khandyga), *S. subsolana* (Kulczyński) (242–245, from Cherski) and *S. kolymensis* sp.n. (246–247, from Kontakt). 239, 242, 246 — ventral view; 240, 243–245, 247 — view from above; 241 — retrolateral view. Scale = 0.1 mm.

Рис. 239–247. Пальпа самца *Sibirocosa sibirica* (Kulczyński) (239–241, из Хандыги), *S. subsolana* (Kulczyński) (242–245, из Черского) и *S. kolymensis* sp.n. (246–247, из Контакта). 239, 242, 246 — вид снизу; 240, 243–245, 247 — вид сверху; 241 — вид сбоку-сзади. Масштаб 0,1 мм.

Acantholycosa sibirica: Zyuzin, 1979b: 1737 (transferred from *Pardosa*).

Acantholycosa sibirica: Marusik et al., 1993: 75.

MATERIAL EXAMINED. RUSSIA: 1 ♂ 1 ♀ (ZMMU), **Krasnoyarsk** Province, Putorana Plateau, Ayan Lake, Ayan River mouth, mountain taiga, kurum, 01.08.1983 (KE); 1 ♂ 1 ♀ (ZMMU), **Krasnoyarsk** Province, Putorana Plateau, Ayan Lake, sources of Ayan River, mountain taiga, 01.07.1983 (KE); 1 ♀ (ZMUT),**Buryatia**, Barguzin Range, Olso River, 54°52'N, 110°55'E, 1700–1800 m, 07.07.1996 (M. Uusitalo); 2 ♀♀ (ZMMU), **Buryatia**, Balan-Tamur Lake, upper sources of Barguzin River, larch forest, 15.07.1995 (S.N. Danilov); 4 ♂♂ 1 ♀ (IBPN), **Yakutia**, Lena River Delta, Ust'-Lenski Reserve, Belaya Skala Kordon, 12.07.1989 (A. Tsybulski); 14 ♂♂ 1 ♀ (IBPN), **Yakutia** east part, env. of Khandyga Vil., Berandya Lake, larch forest with lichens, 19–26.06.1991 (N.N. Vinokurov); 1 ♂ (IBPN), **Yakutia** north-east part, Cherskogo Mt. Range, Chibagalakh River, left bank, steppe mountain slope, 07.09.2001 (S. Nogovitsyna); 10 ♂♂ 1 ♀ (IBPN), NE **Yakutia**, Kele River upper flow (right tributary of Aldan River), gravely mt. tundra, 8.07.1989 (N.N. Vinokurov).

DESCRIPTION (Khandyga). Total length 6.00–6.50(6.50). Carapace: 3.10–3.25(3.50) long, 2.35–2.40(2.55) wide. Coloration variable, while most specimens brown, carapace dark brown with no distinct pattern. Abdomen in male with light heart mark and 2 submedian lines formed with whitish spots. Legs with poorly distinct rings. Carapace/femur I length ratio 1.19(1.15), carapace width/femur I length ratio 0.90(0.84).

Male. Leg I joints: 2.60 + 1.15 + 2.65 + 2.50 + 1.30. Spination of leg I: femur I 3d, 2p 2r, patella 2d, 1p, 1r; tibia 2d, 1p, 1r, 5-6 or 6-5 or 6-6v. Tibia-tarsus of legs I & II lighter than these of III & IV. Palp as in Figs. 235–241, cymbial tip with 2 claws, remains of palea not subdivided, conductor very massive and wide in apical part, embolus turned in apical part.

Female. Leg I joints: 3.05 + 1.35 + 3.05 + 2.50 + 1.40. Spination of leg I: femur 3d, 2p, 1r; patella 2d, 1r; tibia 2d, 1p, 1r, 5-5v; metatarsus 2p, 2r, 2-2v. Epigyne as in Figs. 251–253, 262 fovea in some extent heart shaped, its width slightly exceeds height, lips touching, basal part of septum slightly developed, stem not distinct in apical part.

DIAGNOSIS. This species can be easily separated from two other northern species *S. subsolana* and *S. kolymensis* sp.n. by the shape of copulatory organs. Males of *S. sibirica* have paleal apophyses subequal in size (down apophysis significantly larger in NE Siberian species), more massive terminal apophysis turned along longitudinal axis (Figs. 237-238). Females of this species have almost round fovea, and ducts of receptacula turned upward (downward in all other species).

DISTRIBUTION. *S. sibirica* has a wider range than its congeners. It is known from Putorana Plateau to eastern Yakutia (Cherski Mt. Range), and from Lena River delta to northern Transbaikalia (Map 3).

Sibirocosa subsolana (Kulczyński, 1907) **comb.n.**
Figs. 228–230, 242–245, 257–258, 263. Map 3.

Lycosa subsolana Kulczyński, 1907: 592, pl. 21, fig. 26 (♀).

Pardosa subsolana: Holm, 1970: 205, fig. 38 (♀).

Pardosa subsolana: Zyuzin, 1979a: 435, fig. 33 (♀).

Acantholycosa subsolana: Zyuzin, 1979b: 1737 (transferred from *Pardosa*).

Acantholycosa subsolana: Marusik et al., 1992: 149 (in part).

Acantholycosa subsolana: Marusik et al., 1993: 75.

MATERIAL EXAMINED. RUSSIA: 2 ♂♂ (IBPN), **Yakutia,** Kolyma River mouth part, env. of Cherskiy Vil., 07.1990 (L. Penev); 12 ♂♂ 3 ♀♀ (IBPN, NRS, MMUM), NE **Yakutia**, Kolyma River mouth part from 68°40'N to 69°15'N, June–July, 1999 (A.V. Alfimov); 1 ♂ (ZMMU), **Chukotka**, Elgygytgyn Lake, 10–20.06.1991 (M.B. Skopets); 1 (♂) (IBPN), **Chukotka**, Shumnyi Creek (tributary of Shirokaya River, tributary of Palayavaam River), 15.07.1989 (YM); 1 ♀ (IBPN), **Chukotka**, Beringovski Dist., Meinypylgino Vil., Pekul'neiskoye Lake, Pakharveem Ck, 08.1988 (L.A. Nesov); 2 ♀♀ (IBPN), **Chukotka**, Beringovski Dist., Meinypylgino Vil., Pekul'neiskoye Lake, Kokanaut River, 08.1988 (L.A. Nesov); 1 ♂ 1 ♀ (IBPN), **Chukotka,** env. of Egvekinot Vil., screes and kurums on S exposed slopes in mountain tundra, 15.07.1988 (YM); 1 ♀ (IBPN), **Chukotka**, Egvekinot Vil., scree on SE exposed slope, 30.07.1988 (YM); 1 ♀ (IBPN), **Chukotka**, 161th km of Egvekinot-Iul'tin Hwy, 24.06.1989 (YM); 1 ♀ (IBPN), **Chukotka**, Chegitun' River middle flow, 66°20'N, 21.07–10.08.1991 (S.P. Bukhkalo).

DESCRIPTION (Egvekinot). Total length 6.35(7.0). Carapace: 3.5(3.5) long, 2.8(2.85) wide. Coloration variable, from brown to very dark, almost black. Pattern of carapace almost absent in males, while present in females. Abdomen of both sexes with distinct red-brownish heart mark, and submedian rows of whitish spots. Legs (femur-tibia) with distinct rings. Carapace/femur I length ratio 1.3(1.17), carapace width/femur I length ratio 1.04(0.95).

Male. Leg I joints: 2.70 + 1.20 + 2.80 + 2.55 + 1.30. Spination of leg I: femur I 3d, 2p 2r, patella 2d, 1p, 1r; tibia 2d, 1p, 1r, 5-5v; metatarsus 2p, 2r, 3-3v. Tibia-tarsus of legs I & II lighter than thee of III & IV. Palp as in Figs.228–230, 242–245, cymbium with 2 claws, remains of palea rounded, conductor with almost straight external margin.

Female. Leg I joints: 3.00 + 1.40 + 2.85 + 2.45 + 1.35. Spination of leg I: femur 3d, 2p, 1r; patella 2d, 1p, 1r; tibia 2d, 1p, 1r, 5-5v; metatarsus 2p, 2r, 2-2v. Epigyne as in Figs. 257–258, 263, fovea transverse, 3 times wider than high, lips closely separated, septal base undeveloped.

COMMENTS. Previously the male of this species was unknown.

DIAGNOSIS. Males can be separated from the closely related *S. kolymensis* sp.n. by almost strait external margin of conductor and having two cymbial claws. Females of the two species can be separated by proportion of fovea (wider in *S. subsolana*). However females of *S. subsolana* from Cherski are almost indistinguishable from those from the upper Kolyma. Females from Cherski have fovea width/height ratio 2.5, while *S. kolymensis* sp.n. has less than 2.5.

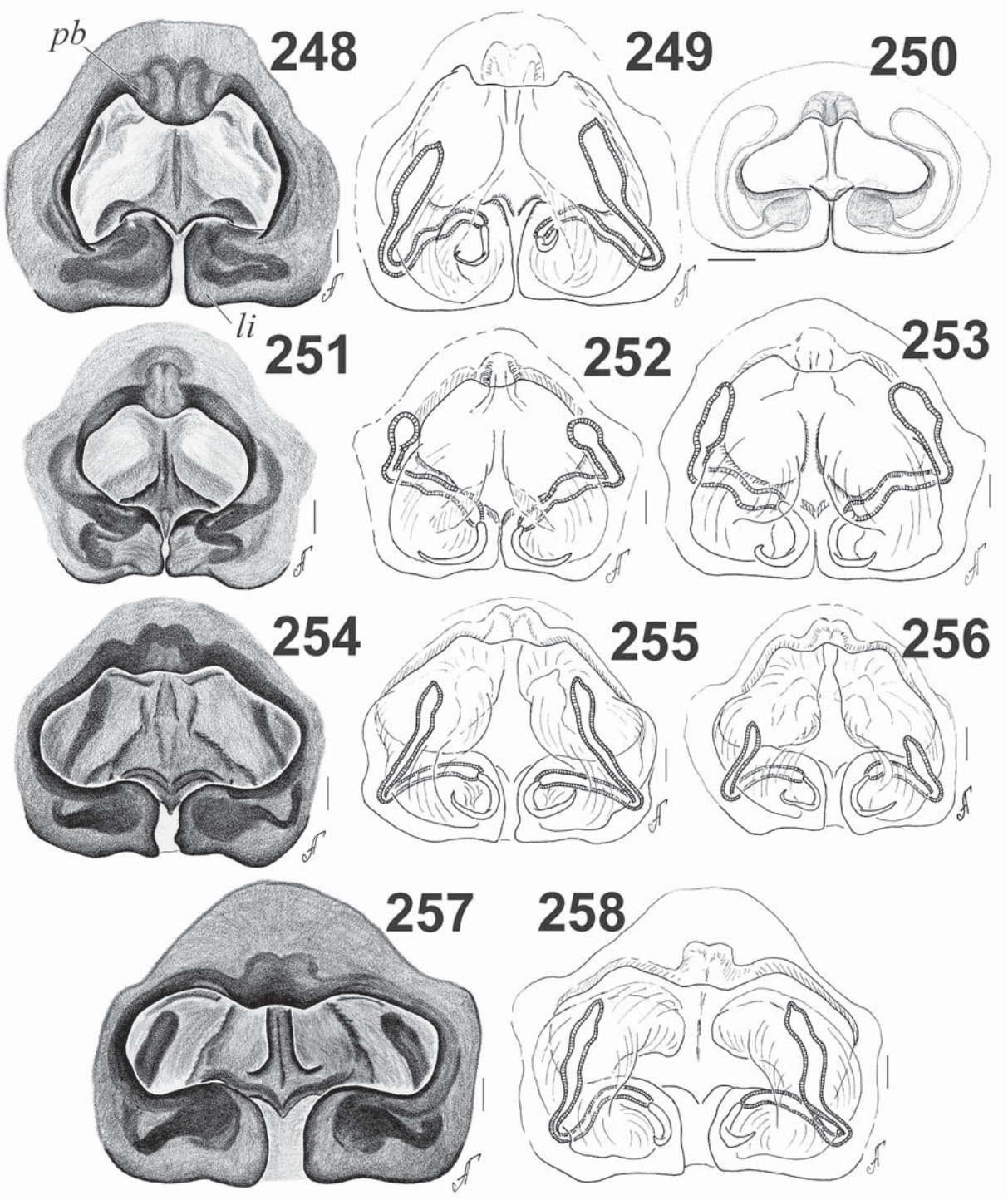
DISTRIBUTION. Exact type locality is unknown; it lies somewhere in Chukotka. It seems that range of this species covers the north-eastern extremity of Asia (from Kolyma River mouth to eastern edge of Chukotka Peninsula. The northernmost record in from the Wrangel Island and southernmost is from southwestern Chukotka. It seems possible that this species may also occur in the adjacent Seward Peninsula of Alaska.

Sibirocosa alpina **sp.n.**
Fig. 250.

MATERIAL. Holotype♀ (ZMMU) and paratype 1♀ (ZMMU), KAZAKHSTAN, **Almaty** Area, Almaty environs, Zailiyski Altau, Bolshaya Almaatinka River gorge, 2400–2600, spruce forest, in moss and under stones, 01–03.09.1992 (KE).

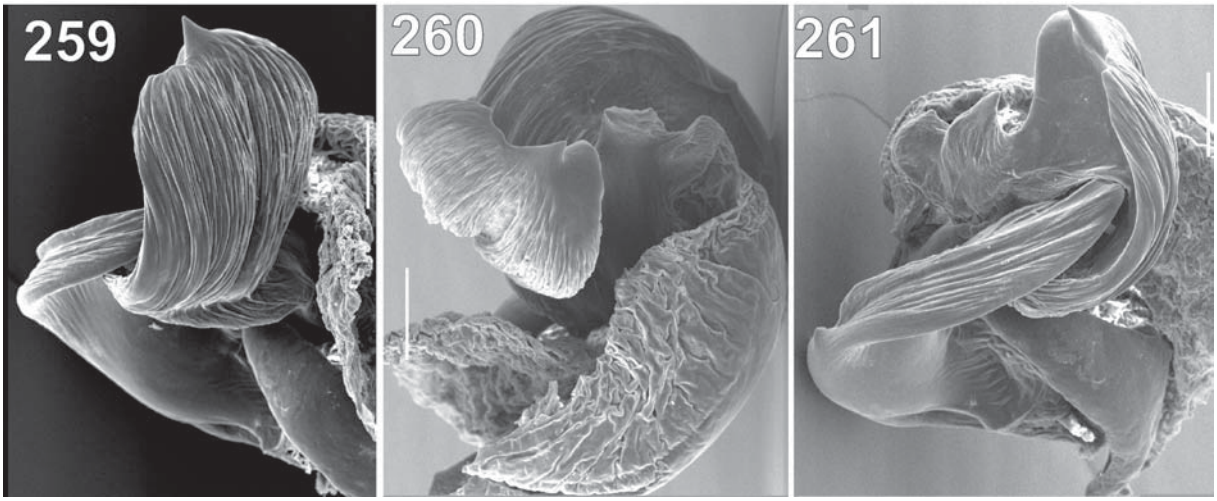
ETYMOLOGY. The specific name derived from the mountain habitat of this species.

DESCRIPTION. Total length 5.45–5.75. Carapace 2.75–2.90 long, 2.25–2.30 wide, brown with distinct pattern, eye field black with pair of brown longitudinal stripes between PLE, median band and submarginal stripes lighter than other parts. Carapace length/femur I ratio 1.34, carapace width/



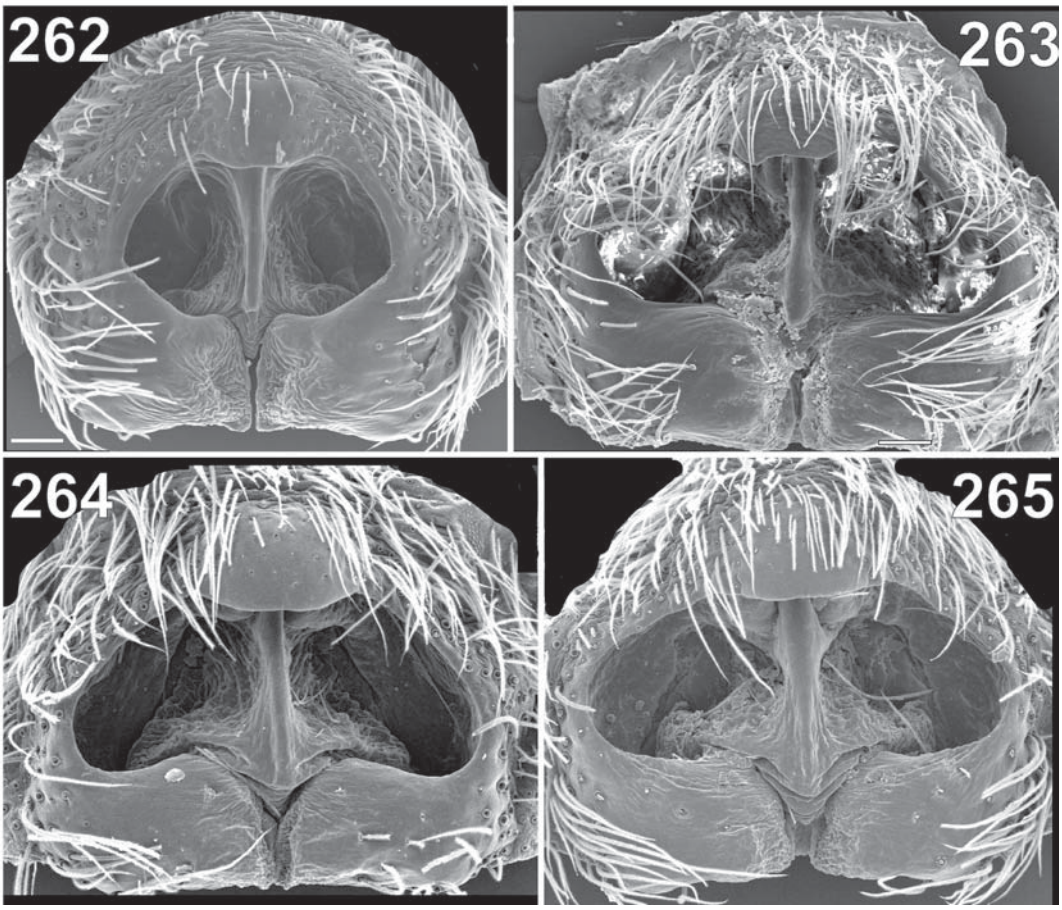
Figs. 248–258. Epigyne of *Sibirocosa manchurica* sp.n. (248–249), *S. alpina* sp.n. (250), *S. sibirica* (Kulczyński) (251–253), *S. kolymensis* sp.n. (254–256, from Kontakt) and *S. subsolana* (Kulczyński, from Egvekinot) (257–258). 248, 250–251, 254, 257 — ventral view; 249, 252–253, 255–256, 258 — dorsal view. Scale = 0.1 mm. Abbreviations: *li* — lip, *pb* — bill of the apical pocket.

Рис. 248–258. Эпигина of *Sibirocosa manchurica* sp.n. (248–249), *S. alpina* sp.n. (250), *S. sibirica* (Kulczyński) (251–253), *S. kolymensis* sp.n. (254–256, из Контакта) и *S. subsolana* (Kulczyński, из Эгвекинота) (257–258). 248, 250–251, 254, 257 — вид снизу; 249, 252–253, 255–256, 258 — вид сверху. Масштаб 0,1 Условные обозначения: *li* — нижняя губа, *pb* — козырёк верхнего кармана.



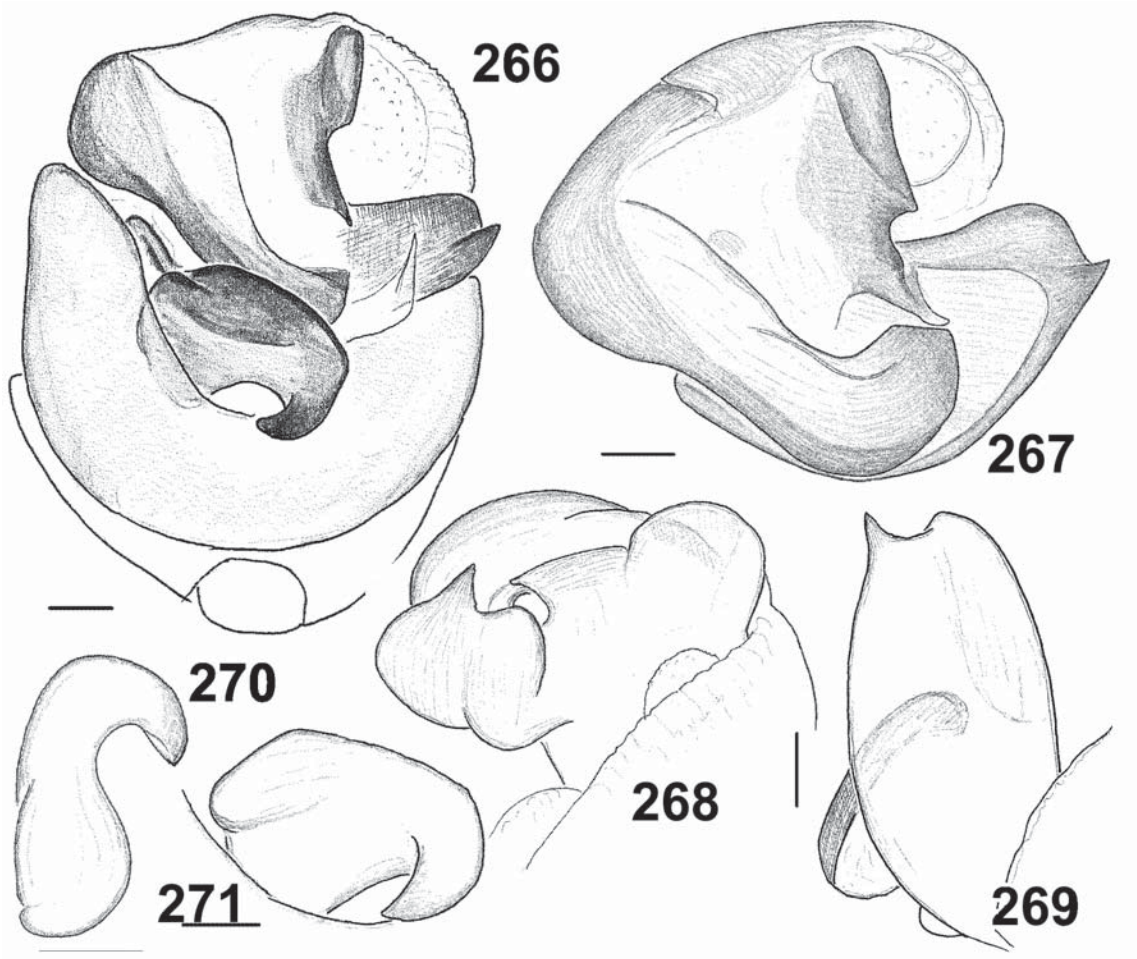
Figs. 259–261. Terminal part of bulbus of *Sibirocosa kolymensis* sp.n. 259 — retrolaterally — from below; 260 — retrolaterally; 261 ventrally. Scale = 0.1 mm.

Рис. 259–261. Терминальная часть бульбуса *Sibirocosa kolymensis* sp.n. 259 — вид снизу-ретролатерально; 260 — ретролатерально; 261 — вид снизу. Масштаб 0,1 мм.



Figs. 262–265. Ventral view of epigyne of *Sibirocosa sibirica* (Kulczyński) (262), *S. subsolana* (Kulczyński) (263, from Cherski)) and *S. kolymensis* sp.n. (264–265). Scale = 0.1 mm.

Рис. 262–265. Эпигина, вид снизу *Sibirocosa sibirica* (Kulczyński) (262), *S. subsolana* (Kulczyński) (263, из Черского) и *S. kolymensis* sp.n. (264–265). Масштаб 0,1 мм.



Figs. 266–271. Male palp of *Sibirocosa manchurica* sp.n. 266 — bulbus, ventral view; 267–268 — apical portion of bulbus, view from above and retrolateral view, respectively; 269 — terminal apophysis and embolus, view flow below; 270–271 — tegular apophysis, view from above and ventro-apical view. Scale = 0.1 mm.

Рис. 266–271. Пальпа самца *Sibirocosa manchurica* sp.n. 266 — бульбус, вид снизу; 267–268 — верхняя часть бульбуса, вид с вершины и сбоку-сзади; 269 — терминальный отросток и эмболюс, вид снизу; 270–271 — тегулярный отросток, вид с вершины и ретролатерально. Масштаб 0,1 мм.

femur I ratio 1.12. Abdomen with wide brown median band, sides blackish. Legs with distinct annulation. Leg I joints: 2.05 + 0.85 + 1.90 + 1.65 + 1.05. Femur I with 3d, 2p and 2r, patella I — 1p and 1r or 1p and 0r, tibia I with 2p, 1r, 3-3v while one of four legs I examined — 4-4v, metatarsus I with 2p, 1r and 2-2v. Epigyne as in Fig. 250, fovea transversal, 3 times wider than high, fovea not deep, lips touching, pockets fused, septal stem thin, septal base almost reduced.

DIAGNOSIS. It can easily be separated from congeners by its short (carapace width > femur I), the smaller number of ventral tibial spines like in *Pardosa s. lato* and by courses of receptacula lying aside of fovea.

COMMENTS. We have some doubts about the generic placement of this species because of its unusual spination, shallow fovea, receptacula spaced much wider than in other species. However epigyne of this species in general very similar to *S. kolymensis* sp.n. and such conformation of epigyne is not known among other *Acantholycosa* or *Pardosa s. lato*. Another difference is connected with the species range which is far from other *Sibirocosa* gen.n. species. The nearest locality of *S. sibirica* is 2500 km from Almaty. Placement of this species can be verified when males are found.

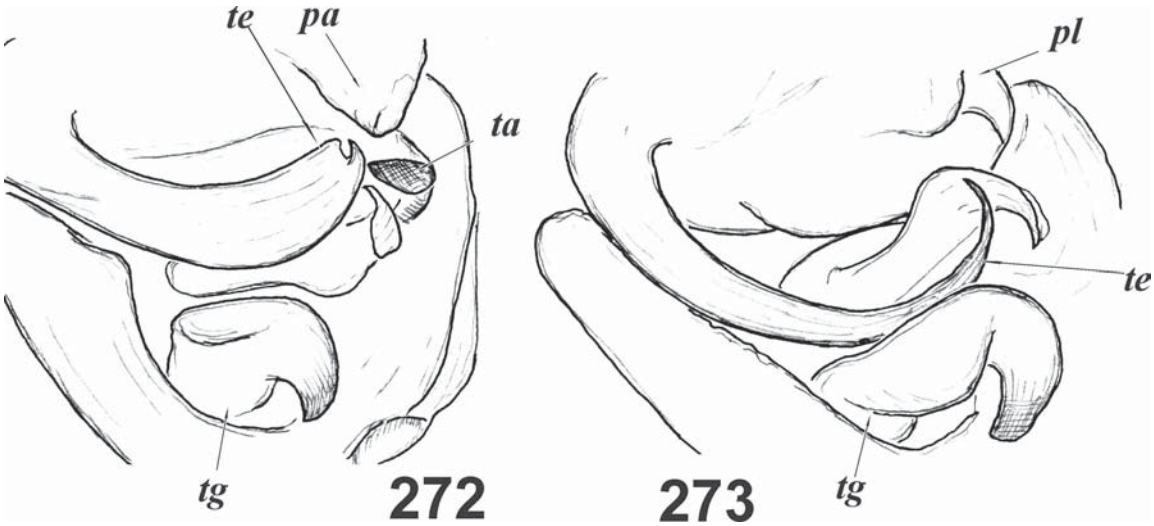
Pyrenecosa gen.n.

Type species: *Lycosa rupicola* Dufour, 1821.

ETYMOLOGY. The generic name derived from the combination of “Pyrenees” and “-cosa” common ending of lycosid genera.

DIAGNOSIS. Males of this genus can be diagnosed by combination of the following characters: 1) 6–7 pairs of ventral tibial spines on leg I, 2) high position of the embolic base, 3) reduced palea, 4) large membranous paleal apophysis and large terminal apophysis fused with remains of palea. Females of *Pyrenecosa* gen.n. have wide apical pocket (wider than septum and not separated from fovea), width and height of epigyne are subequal, septum with subparallel or divergenting sides.

DESCRIPTION. Illustrated descriptions of three species were given by Buchar & Thaler [1993]. Members of this genus are rather large 7.0–10.0. Male palp with 1 claw on cymbium, tegular apophysis with totally reduced apical arm; prolateral side of tegulum exceeds upper margin of tegular apophysis; embolus modified: from relatively wide to wide, its opening placed on external margin of sclerite, base of embolus placed very high; palea reduced, however it has large



Figs. 272–273. Bulbus of *Acantholycosa pedestris* (Simon) (272) and *Pyrenecosa rupicola* (Dufour) (273), view from above. Abbreviations: *pa* — paleal apophysis, *pl* — palea, *ta* — terminal apophysis, *te* — tip of embolus, *tg* — tegular apophysis.

Рис. 272–273. Бульбус *Acantholycosa pedestris* (Simon) (272) и *Pyrenecosa rupicola* (Dufour) (273), вид сверху. Условные обозначения: *pa* — отросток палеи, *pl* — палеа, *ta* — терминальный отросток, *te* — кончик эмболюса, *tg* — тегулярный отросток.

membranous apophysis (terminal apophysis "B" *sensu* Buchar & Thaler [1983]). Epigyne with distinct fovea, wide apical pocket formed by two fused pockets, pocket touching fovea, lips touching, septum subparallel or with diverging sides, receptacula relatively short.

RELATIONSHIPS. Relationships of this genus are unclear. In some way it seems closest to *Sibirocosa* gen.n. by having reduced palea, totally reduced apical arm of the tegular apophysis, high position of the embolic base, relatively large paleal and terminal apophyses, subequal height and width of epigyne, wide pocket not isolated from fovea. However, these genera have very different embolus shapes and types of terminal apophysis. All in all, this genera seem to be more closely related to each other than to other Pardosini genera.

COMPOSITION AND COMMENTS. This genus is comprised of only three species: *Pyrenecosa rupicola* (Dufour, 1821) **comb.n.**, *Pyrenecosa pyrenaea* (Simon, 1876) **comb.n.** and *Pyrenecosa spinosa* (Denis, 1938) **comb.n.** All three species occur in Pyrenees [cf. Map 1 in Buchar & Thaler, 1983], although there are two populations of *P. rupicola* in Western Alps and Sierra Nevada (SE Spain). Judging from the figures of both male palp and epigyne of different populations of *P. rupicola* in Buchar & Thaler [1983], it is easy to suggest that these isolated populations most probably represent separate subspecies or even species.

In the Table 1 we present some characters that allow the discrimination of five Pardosini genera.

Table 1. Diagnostic characters for five Pardosini genera.
Таблица 1. диагностические признаки пяти родов трибы Pardosini.

	Acantholycosa	*Mongolicosa*	*Sibirocosa*	*Pyrenecosa*	*Pardosa**
pairs of ventral spines on tibia I	4–6	4	5–6	6–7	0–4
embolus wide (+)	+	++	++	+–	+–
embolus thick (+)	–	–	+	–	–
embolus>tegular apophysis	–	–	+	–	–
palea modified (with apophysis)	+	–	+	+?	–+
palea modified (reduced)	–	–	+	+?	– ?+
embolus with spine	+-	+-	–	–	–
embolus fused with palea	–	+	–	–	–
embolic base highly placed	–	–	+	+	–
apical pocket separated from fovea	+	–	–	–	+–
lips touching	–	+–	+	–	+–
septal base distinct	+–	+	–	–	+
receptacula long	+	+	+	–	+–

* *Pardosa sensu lato*

Discussion

Data about the composition of four genera: *Acantholycosa*, *Mongolicosa* gen.n., *Pyrenecosa* gen.n. and *Sibirocosa* gen.n. and the distribution of their species is summarized in Table 2. *Acantholycosa,* in our sense, is comprised of 26 species distributed through all of Eurasia and the Rocky Mountains on North America. 17 of 26 species are restricted to Altai and adjacent mountain ranges (West & East Sayan, Gornaya Shoriya, etc.). Most of these 17 species have very small ranges and are restricted to one mountain range. Besides the Altaian endemics there are two endemic species in Far East, and *A. pedestris* has very limited range within the Alps.

Mongolicosa gen.n. is the second largest genus among former *Acantholycosa*, and is comprised of 6 species. Half of them are known only from females. The range of this genus is rather small (ca. 900 km) and restricted to western Mongolia, Tuva, Altai and eastern Xinjiang (Map 3).

Another east Palaearctic genus *Sibirocosa* gen.n. is comprised of not less than 4 species. Taxonomic position of *S. alpina* sp.n., known from northern Tian-Shang, in *Sibirocosa* gen.n. is not certain. If we consider only true (definite) *Sibirocosa* gen.n. species, the range of this genus is restricted to Siberia east of Yenisei. *Sibirocosa* gen.n. has the widest latitudinal range among all taxa previously treated in *Acantholycosa* (cf. Map 3). Its species occur from 72ºN (*S. sibirica*) to 43º34'N (*S. manchurica* sp.n.).

Pyrenecosa gen.n. is the smallest genus among those treated in this paper, having only three species. However, it is possible that it contains one or two more species (distantly isolated populations of *P. rupicola* most probably represent separate species). Range of this genus is second smallest of the former *Acantholycosa* and extends to about 1500 km. *Pyrenecosa* gen.n. has the southernmost range (from 37ºN to 47ºN).

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We wish express our deep gratitude to all colleagues who provided us with unidentified material, namely A.V.Alfimov, D.I. Berman, S.P. Bukhkalo (IBPN), S.E. Chernyshov, A.Yu. & R.Yu. Dudko, V.V. Dubatolov, N.A. Gladkevich, V.C. Glupov, D.E. Lomakin, I.I. Lyubechanskiy, V.K.Zinchenko (ISEA), D.V. Logunov (MMUM), T.I. Oliger (Leningrad Area), Yu. Sundukov (Lazo Reserve, Maritime Prov.), K.Yu. Eskov, S.I. Golovatch, N.V. Levina, A.V.Tanasevitch (Moscow), N.N. Vinokurov (Yakutsk), J. Kullberg (Helsinki) and many other colleagues not mentioned here. Our special thanks

Table 2. Composition of four genera *Acantholycosa*, *Mongolicosa* gen.n., *Pyrenecosa* gen.n. and *Sibirocosa* gen.n. and distribution of species.
Таблица 2. Таксономический состав четырех родов, *Acantholycosa*, *Mongolicosa* gen.n., *Pyrenecosa* gen.n. и *Sibirocosa* gen.n. и распространение включенных в них видов.

Genus/species		Sex	Distribution	Genus/species		Sex	Distribution
Acantholycosa				22.	*A. solituda*	♂♀	Nearctic
1.	*A. aborigenica*	♂♀	E Siberia	23.	*A. spinembolus*	♂	Altai
2.	*A. altaiensis*	♂♀	Altai	24.	*A. sterneri*	♂♀	S Siberia
3.	*A. azheganovae*	♂	Sayan	25.	*A. sundukovi*	♂	Far East
4.	*A. azyuzini*	♂♀	"Altai"*	26.	*A. zinchenkoi*	♂♀	Altai
5.	*A. baltoroi*	♂♀	Himalaya	***Mongolicosa***			
6.	*A. dudkoromani*	♀	Altai	1	*M. buryatica*	♂♀	"Altai"
7.	*A. dudkorum*	♂♀	Altai	2	*M. glupovi*	♂♀	"Altai"
8.	*A. katunensis*	♂	Altai	3	*M. gobiensis*	♀	S Gobi
9.	*A. khakassica*	♂	"Altai"	4	*M. mongolensis*	♂♀	C Mongolia
10.	*A. kurchumensis*	♀	Altai	5	*M. pseudoferruginea*	♀	Xinziang
11.	*A. levinae*	♂♀	Altai	6	*M. songi*	♀	Mongolia + ?Xinziang
12.	*A. lignaria*	♂♀	Eurasia	***Pyrenecosa***			
13.	*A. logunovi*	♂♀	Altai	1	*P. rupicola*	♂♀	SW Europe
14.	*A. mordkovitchi*	♂♀	Altai	2	*P. pyrenaea*	♂♀	Pyrenees
15.	*A. norvegica*	♂♀	Eurasia	3	*P. spinosa*	♂♀	Pyrenees
16.	*A. oligerae*	♂♀	Far East	***Sibirocosa***			
17.	*A. paraplumalis*	♂♀	Altai	1	*S. alpina*	♀	Tien-Shang
18.	*A. pedestris*	♂♀	Alps	2	*S. kolymensis*	♂♀	NE Siberia
19.	*A. petrophila*	♂	"Altai"	3	*S. manchurica*	♂♀	Far East
20.	*A. plumalis*	♂♀	Altai	4	*S. sibirica*	♂♀	M Siberia
21.	*A. sayanensis*	♂	"Altai"	5	*S. subsolana*	♂♀	Chukotka

* "Altai" in quotation marks means that species occur in mountains adjacent to Altai.

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References

Buchar J. 1966. Bemerkungen zu den verwandtshaftlichen Beziehungen zwischen den mitteleuropäischen Populationen der Art *Acantholycosa norvegica* (Thorell). (Araneae: Lycosidae) // Acta Univ. Carol. Biol. Vol.1966. No.1. P.1–8.

Buchar J. 1976. Über einige Lycosiden (Araneae) aus Nepal // Khumbu Himal. Vol.5. P.201–227.

Buchar J., Thaler K. 1993. Die Arten der Gattung *Acantholycosa* in Westeuropa (Arachnida, Araneida: Lycosidae) // Revue suisse Zool. T.100. Fasc.2. P.327–341.

Charitonov D.E. 1936. [Spiders of Denezhkin Kamen Mt. and its environs (Northern Ural)] // Uchenye Zapiski Perm. Univ. T.2. No.3. P.15–35 [in Russian, with English summary].

Chen J., Song D.X., Kim J.P. 1998. Two new species and two new records of Chinese wolf spiders (Araneae: Lycosidae) // Korean Arachnol. Vol.14. No.1. P.70–76.

Dondale C.D., Redner J.H. 1990. The insects and arachnids of Canada, Part 17. The wolf spiders, nurseryweb spiders, and lynx spiders of Canada and Alaska, Araneae: Lycosidae, Pisauridae, and Oxyopidae. Research Branch, Agriculture Canada. Publ. No.1856. 383 pp.

Fuhn I.E., Niculescu-Burlacu F. 1971. Fam. Lycosidae // Fauna Republicii Socialiste Romania (Arachnida). Bucureşti. Vol.5. No.3. 253 pp.

Holm Å. 1947. Svensk Spindelfauna III. Oxyopidae, Lycosidae, Pisauridae. Stockholm. 48 pp.

Holm Å. 1970. On spiders collected by the "Vega" Expedition 1878–1880 // Entomologica scand. Vol.1. No.3. P.188–208.

Holm Å. 1973. On the spiders collected during the Swedish expeditions to Novaya Zemlya and Yenisey in 1875 and 1876 // Zoologica Scripta. Vol.2. No.3. P.71-110.

Hu J.L., Wu W.G. 1989. Spiders from agricultural regions of Xinjiang Uygur Autonomous Region, China. Jinan: Shandong Univ. Publ. House. 435 pp.

Koch L. 1875. Beschreibungen einiger von Herrn Dr Zimmermann bei Niesky in der Oberlausitz und im Riesengebirge entdeckter neuer Spinnenarten // Abh. naturf. Ges. Görlitz. Bd.15. P.1–21.

Koch L. 1879. Arachniden aus Sibirien und Novaja Semlja, eingesammelt von der schwedischen Expedition im Jahre 1875 // Kongl. Svenska. Vet.-Akad. Handl. Bd.16. H.5. P.1–136.

Kronestedt T., Marusik Yu.M. 2002. On *Acantholycosa solituda* (Levi & Levi) and *A. sterneri* (Marusik) (Araneae, Lycosidae), a pair of geographically distant allied species // Acta Arachnologica. Vol.51. No.1. P. 63–71.

Kulczyński W. 1907. Fragmenta arachnologica. VIII, IX // Bull. Acad. Cracovie. Cl. Sci. math. natur. No.6. P.570–596.

Kulczyński W. 1908. Araneae et Oribatidae. Expeditionum rossicarum in insulas Novo-Sibiricas annis 1885–1886 et 1900-1903 susceptarum // Mém. Acad. Imp. Sci. St. Pétersbourg. Ser.8. Vol.18. No.7. P.1–97.

Lobanova T.V. 1978. [New spider species of the family Lycosidae (Aranei)] // Taksonomia i ekologia chlenistonogikh Sibiri. Novosibirsk: Nauka Publ. P.6–9 [in Russian, with English summary].

Logunov D.V., Marusik Yu.M., Koponen S. 1998. A check-list of the spiders in Tuva, South Siberia with analysis of their habitat distribution // Ber. nat.-med. Verein Innsbruck. Vol.85. P.125–159

Marusik Yu.M. 1993. Three new wandering spider species (Aranei Lycosidae Gnaphosidae) from Mongolia // Arthropoda Selecta. Vol.2. No.1. P.77–81.

Marusik Y.M., Hippa H., Koponen S. 1996. Spiders (Araneae) from the Altai area, southern Siberia // Acta Zool. Fennica. No.201. P.1–45.

Marusik Yu.M., Logunov D.V. 1999. On the spiders (Aranei) collected in Mongolia during a joint American-Mongolian-Russian expedition in 1997 // Arthropoda Selecta. Vol.7 (for 1998). No.3. P.233–254.

Marusik Yu.M., Logunov D.V., Koponen S. 2000. Spiders of Tuva, South Siberia. Magadan: IBPN FEB RAS. 252 pp.

Mikhailov K.G. 1997. Catalogue of the spiders of the territories of the former Soviet Union (Arachnida, Aranei). Moscow: Zoological Museum of the Moscow State University. 416 pp.

Odenwall E. 1901. Araneae nonnullae Sibiriae transbaicalensis // Öfvers. Finska Vet. Soc. Förh. Vol.43. P.255–273.

Palmgren P. 1939. Die Spinnenfauna Finnlands I. Lycosidae // Acta Zool. Fennica. No.25. S.1-86.

Platnick N.I. 2002. The world spider catalog, version 3.5. American Museum of Natural History, online at http://research.amnh.org/entomology/spiders/catalog81-87/index.html

Roewer C.F. 1955. Katalog der Araneen von 1758 bis 1940, bzw. 1954. Bruxelles. Bd.2. 1751 S.

Schenkel E. 1936. Schwedisch-chinesische wissenschaftliche Expedition nach den nordwestlichen Provinzen Chinas, unter Leitung von Dr Sven Hedin und Prof. Sü Ping-chang. Araneae // Ark. Zool. Bd.29A. Nr.1. S.1–314.

Song D.X., Zhu M. S., Chen J. 1999. The Spiders of China. Shijiazhuang: Hebei Sci. Technol. Publ. House. 640 pp.

Thorell T. 1872. Remarks on synonyms of European spiders. Part I. Upsala. P.3–407.

Yu L. M., Song D.X. 1988. On new species of wolf spiders from China (Araneae: Lycosidae) // Acta zootaxon. sin. Vol.13. P.234–244.

Wunderlich J. 1984. Zu Taxonomie und Determination europäischer Spinnen-Gattungen. 1. Wolfspinnen (Lycosidae) (Arachnida: Araneae) // Neue ent. Nachr. Bd.7. S.21–29.

Zyuzin A.A. 1979a. [A taxonomic study of Palearctic spiders of the genus *Pardosa* (Aranei, Lycosidae). Part 1. The taxonomic structure of the genus] // Entomol. Obozr. T.58. No.2. P.431–447 [in Russian, with English summary].

Zyuzin A.A. 1979b. [Notes on two rare species of the genus *Acantholycosa* F. Dahl (Aranei, Lycosidae) in the USSR] // Zool. Zhurn. T.58. No.11. P.1736–1738 [in Russian, with English summary].

Zyuzin A.A. & Logunov D. V. 2000. New and little-known species of the Lycosidae from Azerbaijan, the Caucasus (Araneae, Lycosidae) // Bull. Br. arachnol. Soc. Vol.11. Pt.8. P.305–319.

Zyuzin A.A., Marusik Yu.M. 1988. [A new species of spiders of the genus *Acantholycosa* (Aranei, Lycosidae) from the east Siberia] // Zool. Zhurn. T.67. No.7. P.1083–1085 [in Russian, with English summary].