



Studies on species of Holarctic *Pardosa* groups (Araneae, Lycosidae). VII. The *Pardosa tesquorum* group

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Abstract

Three species, *Pardosa eskovi* sp. nov. (Russia: Yakutia and Evenkia), *P. logunovi* sp. nov. (Mongolia and Russia: Altai and Tuva), and *P. zyuzini* sp. nov. (Mongolia and Russia: Altai, Tuva, Chita Area) are described. Redescriptions are provided for the widely distributed *P. tesquorum* (Odenwall, 1901) (Siberian—Nearctic) as well as for *P. mulaiki* Gertsch, 1934 (western Nearctic) and *P. tesquorumoides* Song & Yu, 1990 (China and ?Mongolia). All species are assigned to the Holarctic *Pardosa tesquorum* group (westernmost records from the Polar Ural). *Pardosa paratesquorum* Schenkel, 1963 (China and Mongolia) is redescribed but excluded from the *P. tesquorum* group. *Pardosa daqingshanica* Tang, Urita & Song, 1994 is a junior synonym of *P. paratesquorum*.

Key words: taxonomy, wolf spiders, Palearctic, Nearctic

Introduction

Within the Lycosidae Sundevall, 1833, *Pardosa* C. L. Koch, 1847 is, with 544 species group taxa currently listed in Platnick (2011), the most speciose genus with representatives from many parts of the world. Its presence in South America is limited and it is missing from Australia (the South Australian species *Pardosa pexa* Hickman, 1944, still listed in Platnick (2011), belongs in the subfamily Lycosinae Sundevall, 1833 (Kronstedt 2010)). Several species have been assigned into separate, informal species-groups due to shared characteristics in the copulatory organs (e.g. Zyuzin 1979; Dondale & Redner 1990) but no taxonomic division of the genus has been proposed.

These morphological details are, regrettably, poorly known for many species and the identity of these species as well as their placement in any species group or even in the genus *Pardosa* still remains unclear. This lack of knowledge notably concerns the configuration of details in the male palp (embolus and terminal part with terminal apophysis and conductor). In this paper we will focus on some species placed in the Holarctic *Pardosa tesquorum* group.

The knowledge of the spider fauna of Siberia, Mongolia and adjacent mountainous parts of Kazakhstan has improved considerably during the last two decades due to increased collecting and taxonomic studies, including the description of new species (e.g. Eskov 1988; Eskov & Marusik 1995; Logunov *et al.* 1998; Logunov & Marusik 1995; Marusik & Buchar 2003; Marusik & Logunov 1999, 2009; Marusik *et al.* 1992, 1993, 1996, 2000, 2003). This vast area still harbours an unknown number of species, including many in *Pardosa*, which is the lycosid genus encompassing most species in this region; in Russia 73 species have been found east of Ural (Mikhailov 1997; Marusik 2007, personal data). In material that we have studied from this area, we were able to distinguish three new species, which are here assigned to the *P. tesquorum* group. Redescriptions are provided for three other species in this group.

The *tesquorum* group within the genus *Pardosa* was first discerned by Zyuzin (1979) who placed three species in this group, viz. *Pardosa tesquorum* (Odenwall, 1901), *P. paratesquorum* Schenkel, 1963 and probably *P. uncata* sensu Schenkel (the latter currently considered a synonym of *P. algoides* Schenkel, 1963 (Yu & Song 1988, Song *et al.* 1999)). Zyuzin (1979) defined the group on characters present in *P. tesquorum* and *P. paratesquorum* sensu Schenkel (1963) (= *P. paratesquorum* ♂ and *P. zyuzini* sp. nov. ♀), i. e. the shape of the epigyne and the shape of the tegular apophysis of the male palp. This definition was, however, rather general and does not hold for the present recognition of this group (moreover, as given below, *P. paratesquorum*, is now excluded from this group).

Dondale & Redner (1986, 1990) treated the *Pardosa tesquorum* group species occurring in the Nearctic, viz. *P. tesquorum* and *P. mulaiki* Gertsch, 1934. They concluded that members of this group share the following characteristics: (1) a basally directed paleal process on the conductor base, (2) pale, contrasting male palpal patellae, and (3) a distally concave terminal apophysis. Among additional characteristics mentioned by Dondale & Redner (1990) is (4) cheliceral retromargin with 2 teeth. After adding more species, we found that only character 1 holds good for all the species here assigned to the *Pardosa tesquorum* group. The basally directed paleal process forms a part of the sclerite from which the terminal apophysis protrudes [similar to the condition in some species of the *modica* group, cf., e.g., Kronstedt (1975, 1988)] though the distinction of the latter from the conductor is sometimes not at all clear.

Pardosa paratesquorum Schenkel, 1963 is redescribed but is, due to the configuration of the copulatory organs, removed from the *tesquorum* group. At present we refrain from placing this species in a species group. Yin *et al.* (1997) placed *Pardosa paratesquorum* in their *P. lapponica* group, which, in our view, seems to encompass a heterogeneous set of species when considering the conformation of the copulatory organs.

Material and methods

The material studied is preserved in the following collections:

CAS	California Academy of Sciences, San Francisco, USA
IBPN	Institute for Biological Problems of the North, Magadan, Russia
ISEA	Institute for Systematics and Ecology of Animals [with Siberian Zoological Museum (SZM)], Novosibirsk, Russia
IZAS	Institute of Zoology, Chinese Academy of Sciences, Beijing, China
MNHN	Muséum National d'Histoire Naturelle, Paris, France
NHRS	Swedish Museum of Natural History, Stockholm, Sweden
ZMMU	Zoological Museum of the Moscow State University, Moscow, Russia
ZMUT	Zoological Museum, Turku University, Turku, Finland

Collectors: D.B.—D.I. Berman; D.L.—D.V. Logunov; D.O.—D.V. Obydov; G.Z.—G.D. Zhigulski; Y.M.—Y.M. Marusik.

Localities mentioned in Tuva can be found on a map in Marusik *et al.* (2000).

Micrographs were made using a Hitachi S-4300 scanning electron microscope at the Swedish Museum of Natural History. Some of the digital colour photographs of specimens in ethanol were taken by the senior author using an Olympus SZX12 stereomicroscope with an Olympus DP70 camera and later a Deltapix Infinity X camera at the Department of Entomology, Swedish Museum of Natural History and others by the second author using an identical stereomicroscope with an Olympus Camedia C-5050 camera at the Zoological Museum in Turku.

For illustrations, left male palps were used except for *Pardosa eskovi* **sp. nov.** (Figs 15–18) and *P. paratesquorum* (Figs 112–114) in which parts of a right palp were depicted and digitally reversed for easier comparison.

Coordinates are given if labels contained such information or when the locality could be traced on maps available on the internet (e.g. iTouchMap.com).

Measurements refer to specified individuals and are given in mm except for eyes. Eyepiece micrometer units (given for eyes) can be converted to mm by dividing by 80. Eye row distances are measured as in Kronstedt (1975).

Comment on terminology. The use of the terms 'conductor' and 'terminal apophysis' in the terminal part of the male copulatory organ (bulbus) follows Kronstedt (1975) (e.g. Figs 73–74). 'Conductor' and 'terminal apophysis' *sensu* Kronstedt may be homologous to 'terminal apophysis' and 'paleal apophysis', respectively, as used in *Acantholycosa* and related genera *sensu* Marusik *et al.* (2003). The term 'basal process of palea' (e.g. Fig. 73) is used *sensu* Dondale & Redner 1990 ('palea with basal process'). It is well sclerotised and confluent with the terminal apophysis.

Abbreviations. *Eyes:* ALE, anterior lateral; AME, anterior median; PLE, posterior lateral; PME, posterior median. *Legs and palp:* Fe, femur; Pt, patella; Ti, tibia; Mt, metatarsus; Ta, tarsus; Cy, cymbium.

Taxonomy

Family Lycosidae Sundevall, 1833

Genus *Pardosa* C. L. Koch, 1847

The *Pardosa tesquorum* group. The following species are here placed in this group: *Pardosa eskovi* **sp. nov.**, *P. logunovi* **sp. nov.**, *P. mulaiki* Gertsch, *P. tesquorum* (Odenwall), *P. tesquorumoides* Song & Yu, and *P. zyuzini* **sp. nov.**

We recognize this group by a combination of the following characters in the male copulatory organs: 1) tegular apophysis rugose, characteristically bent and sharply pointed, with small hook-shaped process at base (Figs 18, 49, 51, 76, 93, 105), 2) embolus broad and laminar, with more or less truncated tip (Figs 13, 42, 43, 70, 87, 98), and 3) more or less heavily built basal process of palea (Figs 15, 44, 46, 73, 90, 102).

Pardosa eskovi **sp. nov.**

Figs 1, 9–19, 25, 29, 116

?*Pardosa* sp. 4: Eskov 1988: 138.

Pardosa sp. 3: Marusik *et al.* 1993: 74.

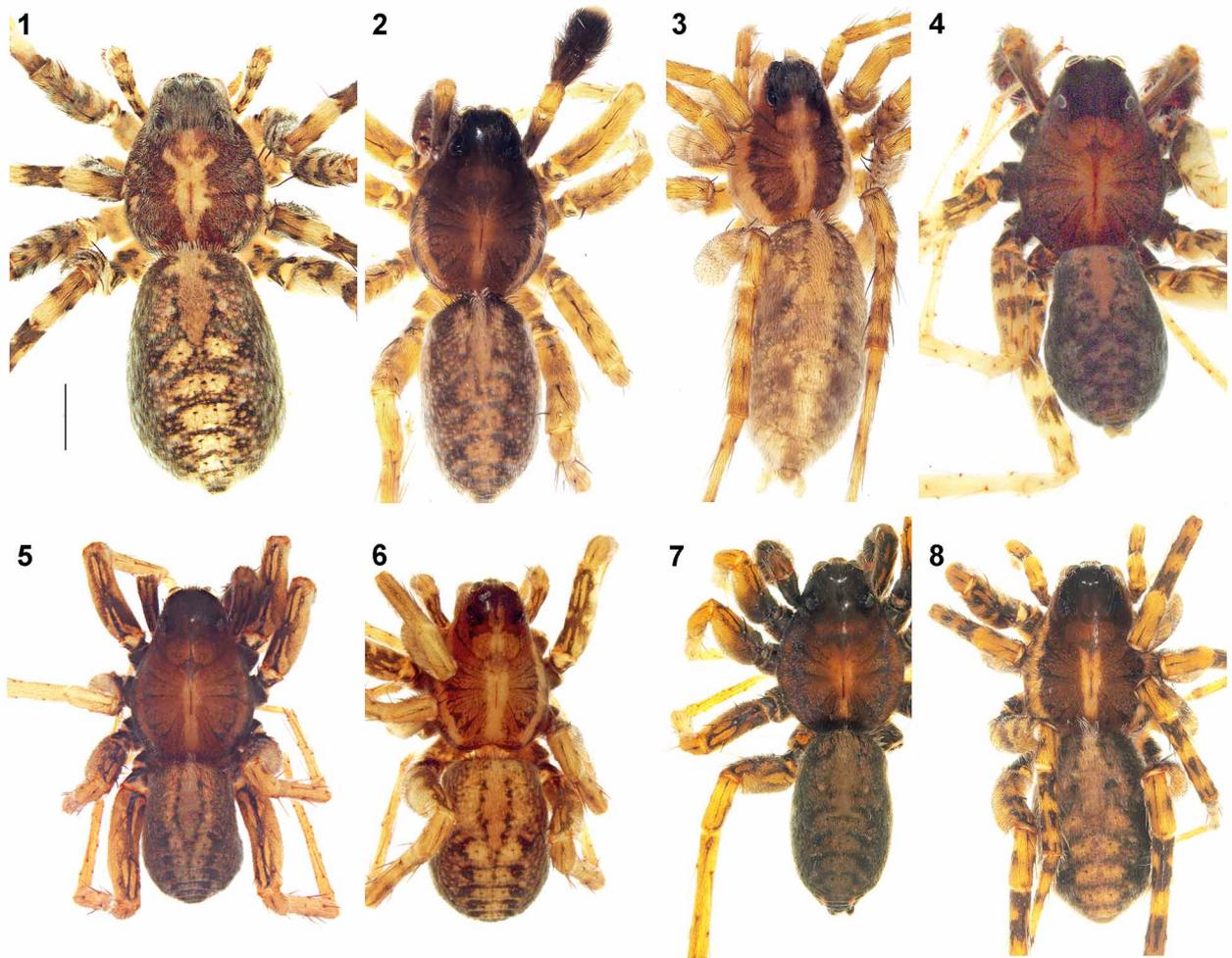
Type material. *Holotype* ♂ and *allotype* ♀ from RUSSIA, Yakutia, Lena River, Zhigansk Village (66°46'02"N 123°22'25"E), July 1989 (K.Y. Eskov) in ZMMU. – **Paratypes.** RUSSIA. *Yakutia:* same data as holotype (NHRS), 3♂ 1♀; Suntar Village (62°09'26"N 117°38'07"E), 3–5 July 1988 (K.Y. Eskov, IZAS, ISEA, ZMMU), 8♀; 40 km up from Kempendyai Village (62°02'N 118°37'E), July 1988 (K.Y. Eskov ISEA, NHRS, ZMMU), 10♀.

Etymology. The specific name is a patronym in honour of the collector of the type series and our friend and colleague Kirill Y. Eskov (Moscow), who made significant contributions to the study of Siberian spiders.

Remark. The configuration of the conductor and the epigyne as well as the presence of three retromarginal teeth on the chelicerae set this species apart from the other species in the *tesquorum* group and its placement in this group is tentative.

Diagnosis. Males can be distinguished from other congeners by an abruptly cut tip of embolus, long conductor

with sclerotized distal part protruding obliquely forwards, and small terminal apophysis (Fig. 16). Females can be recognised by the wide transversal posterior part of septum (Fig. 19).



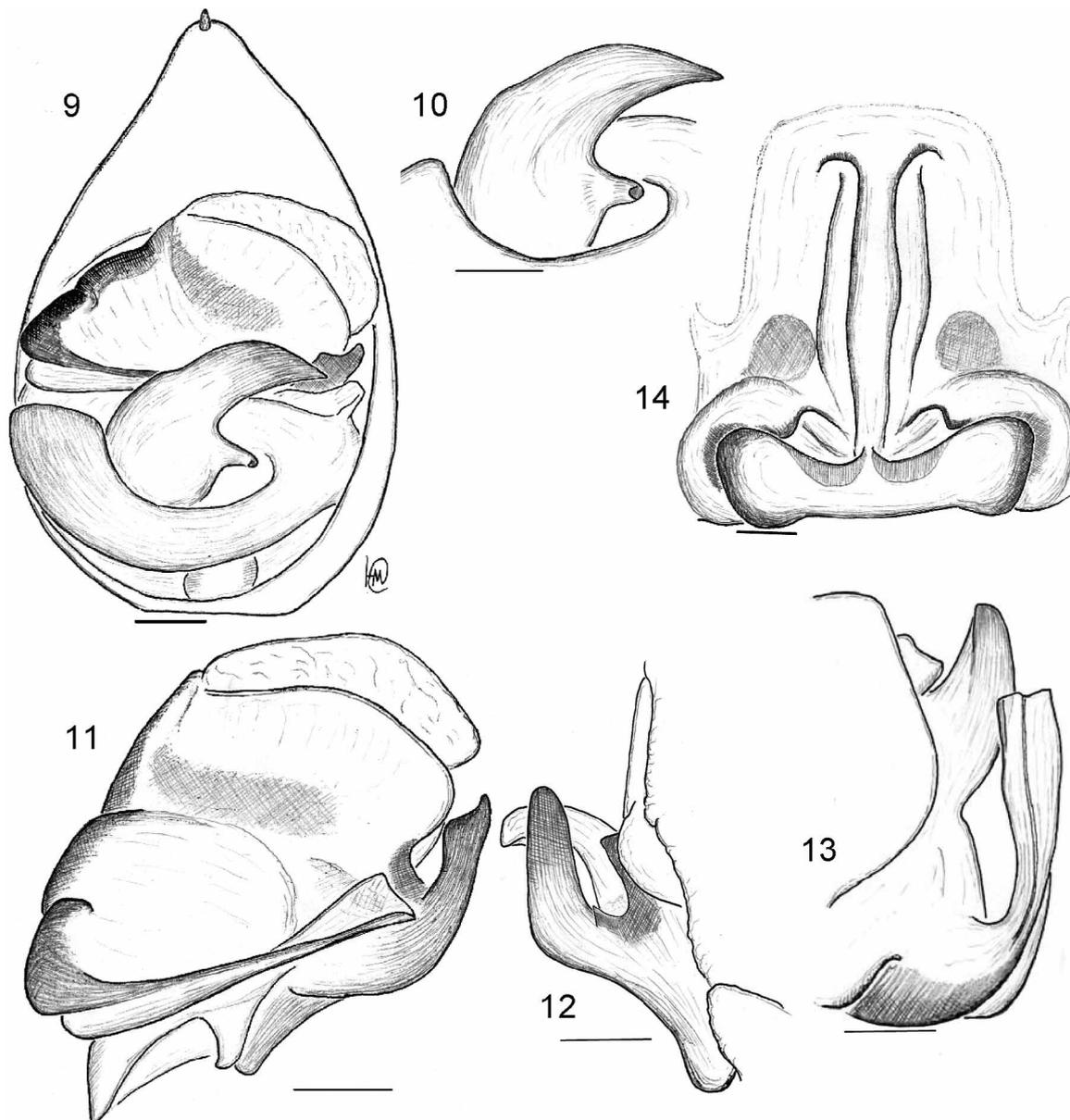
FIGURES 1–8. Habitus, dorsal view. 1, *Pardosa eskovi* sp. nov. ♀ from Yakutia: Suntar. 2–3, *P. mulaiki* Gertsch ♂ (2) ♀ (3), both from Saskatchewan: Rosetown. 4, *P. paratesquorum* Schenkel ♂ (paratype of *P. daqingshanica* Tang, Urita & Song) from Inner Mongolia: Mt Daqing Shan. 5–6, *P. tesquorumoides* Song & Yu ♂ (5) ♀ (6), both from Sichuan: Hongyuan Co. 7–8, *P. zyzini* sp. nov. ♂ (7) ♀ (8), both from Tuva: Lake Tere Khol'. Scale line (applies to all) 1 mm.

Description. Male (holotype). Total length 4.9. Carapace 2.45 long, 1.85 wide.

Prosoma. Carapace dark brown with light brown median band, distinct in thoracic part, widening but more obscure in cephalic part behind PLEs, as well as light brown lateral bands, each broken into three short longitudinal spots. Thoracic part with dark recumbent hairs, in median band and lateral spots also with whitish hairs. Ocular area with numerous whitish hairs. Clypeus sooty yellowish brown. Chelicerae sooty brownish with darker longitudinal veins and furnished with dark hairs, inner side and ventrally yellow, retromargin with 3 teeth. Sternum dirty greyish brown with narrow yellowish stripe anteriorly and furnished with light hairs.

Eyes. Width of row I 40 (slightly procurved when seen from in front), row II 54, row III 74, row II–III 52. Diameter of AME 9, ALE 8, PME 20, PLE 16. Distance between AMEs 7, between AME and ALE 2.

Opisthosoma. Dorsum with pattern in dark and light brown. Anteriorly with greyish-brown lanceolate stripe followed by a series of transverse dark bars, each bar between a white-haired spot at each side. Between bars paired yellowish-brown spots, each spot with a dark dot in middle. A yellow, white-haired spot at each side of anal tubercle. Sides of dorsum and venter greyish-brown with dense, recumbent whitish pubescence.



FIGURES 9–14. *Pardosa eskovi* sp. nov. 9, left male palp, ventral view. 10, left tegular apophysis. 11–13, terminal part of left bulbus in ventral (11), retrolateral (12) and frontal view (13). 14, epigyne, ventral view. Scale lines 0.1 mm.

Legs (Table 1). Yellow with dark annulation. Coxae dorsally black, ventrally sooty. Fe I dorsally with sooty basal half, rest of Fe I and remaining femora and tibia with dark annulation. Mt I+II with small paired ventral hairs spine-like (continuation of similar hairs on corresponding tarsi). Ti I with 2 retrolateral spines.

Palp (Figs 9–13, 15–18). Pt 0.45, Ti 0.45, Cy 0.95. Sooty brownish with black pubescence, cymbium distally lighter. Tegular apophysis stout, directed retrolaterad, with distinct hooked process at base (Fig. 18). Conductor prominent, bent, distal part straight and directed obliquely forward (Figs 11, 15). Immediately inside of conductor a minute denticle, which is here interpreted as terminal apophysis (Figs 12, 16). It is part of a sclerotized portion appearing as an outer part of the paleal shield, continuing into a sclerite that surrounds the conductor, and extends posteriorly into basal process of palea (Fig. 16). Embolus with distal part widened and laminar, tip truncated (Figs 13, 17).

Female (allotype). Total length 6.5. Carapace 2.70 wide, 2.05 wide.

Prosoma and opisthosoma (Fig. 1). Lighter than in male. Carapace brown with wide bright yellow median band, star-shaped at fovea, narrowing at cephalic-thoracic junction, and distinctly widening in postocular area. Lateral bands bright yellow, broken into spots larger than in male. Clypeus and chelicerae bright yellow, retromargin

of latter with 3 teeth. Sternum dark greyish, with yellow longitudinal stripe in front. Abdomen patterned as in male. Palp yellow with dark annulation.

Eyes. Width of row I 44 (slightly procurved when seen from in front), row II 59, row III 80, row II–III 58. Diameter of AME 10, ALE 8, PME 21, PLE 16. Distance between AMEs 7, between AME and ALE 2.

Legs (Table 1). Yellow with dark annulation on femora to metatarsi. Coxae yellow, dorsally with dark spots.

Epigyne (Figs 14, 19, 25, 29). Septum anchor-shaped, i. e. long and narrow and abruptly widening posteriorly into a transverse piece. Transverse piece widening towards ends. Longitudinal part of septum (septal ridge) distinctly elevated. Copulatory tubes long and slender, bent obliquely mesally, spermathecae round in outline (Fig. 29).

TABLE 1. Leg (I–IV) measurements (in mm) of *Pardosa* spp.

	Fe	Pt	Ti	Mt	Ta	Total
<i>Pardosa eskovi</i>						
Male						
I	1.90	0.80	1.70	1.90	1.25	7.55
II	1.80	0.80	1.40	1.70	1.10	6.80
III	1.75	0.75	1.35	1.85	1.05	6.75
IV	2.30	0.85	1.90	2.75	1.35	9.15
Female						
I	2.20	0.95	1.75	1.75	1.15	7.80
II	2.10	0.90	1.55	1.70	1.10	7.35
III	2.05	0.90	1.55	1.95	1.10	7.55
IV	2.75	1.00	2.30	3.20	1.50	10.75
<i>Pardosa logunovi</i>						
Male						
I	2.40	1.00	2.15	2.35	1.40	9.30
II	2.30	1.00	1.90	2.30	1.35	8.85
III	2.20	0.95	1.80	2.55	1.15	8.65
IV	2.90	1.05	2.50	3.80	1.75	12.00
Female						
I	2.80	1.25	2.35	2.30	1.45	10.15
II	2.70	1.15	2.15	2.30	1.40	9.70
III	2.60	1.10	2.10	2.70	1.35	9.85
IV	3.55	1.30	3.05	4.50	1.90	14.30
<i>Pardosa mulaiki</i>						
Male						
I	1.50	0.70	1.25	1.35	0.95	5.75
II	1.45	0.65	1.05	1.25	0.90	5.30
III	1.40	0.60	1.00	1.40	0.85	5.25
IV	1.95	0.70	1.60	2.25	1.15	7.65
Female						
I	1.80	0.90	1.40	1.40	1.05	6.55
II	1.75	0.80	1.30	1.35	1.00	6.20
III	1.70	0.75	1.30	1.60	0.95	6.30
IV	2.35	0.95	2.10	2.85	1.40	9.65
<i>Pardosa tesquorum</i>						
Male						
I	2.50	1.05	2.25	2.50	1.55	9.80
II	2.40	1.00	2.00	2.25	1.50	9.15
III	2.30	0.95	1.80	2.45	1.35	8.85
IV	3.00	1.10	2.70	3.90	1.90	12.60

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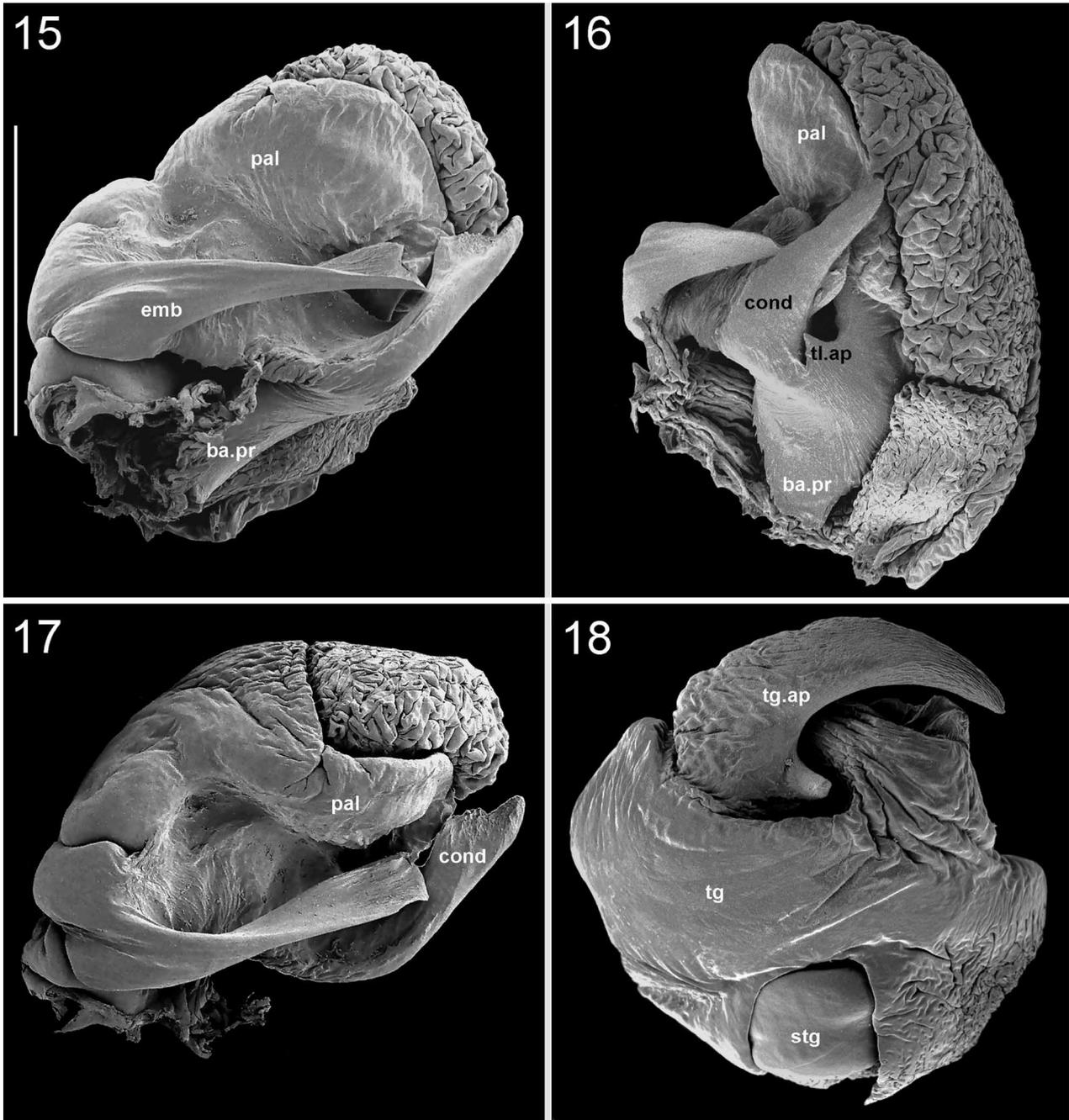
TABLE 1. (continued)

	Fe	Pt	Ti	Mt	Ta	Total
Female						
I	2.60	1.15	2.25	2.30	1.45	9.75
II	2.50	1.10	2.10	2.25	1.40	9.35
III	2.50	1.05	2.00	2.60	1.35	9.50
IV	3.45	1.20	3.00	4.45	1.95	14.05
<i>Pardosa tesquorumoides</i>						
Male						
I	1.70	0.80	1.40	1.50	1.10	6.50
II	1.65	0.80	1.25	1.45	1.05	6.20
III	1.60	0.75	1.20	1.65	1.00	6.20
IV	2.20	0.90	1.80	2.60	1.40	8.90
Female						
I	1.85	0.90	1.40	1.35	1.00	6.50
II	1.80	0.85	1.25	1.35	0.95	6.20
III	1.75	0.85	1.25	1.65	1.00	6.50
IV	2.50	1.00	2.00	2.85	1.50	9.85
<i>Pardosa zyuzini</i>						
Male						
I	2.05	0.90	1.65	1.80	1.25	7.65
II	1.95	0.85	1.45	1.75	1.20	7.20
III	1.90	0.80	1.45	2.00	1.15	7.30
IV	2.45	0.90	2.10	3.20	1.60	10.25
Female						
I	1.90	0.90	1.45	1.45	1.05	6.75
II	1.85	0.85	1.35	1.40	1.00	6.45
III	1.80	0.75	1.30	1.70	1.00	6.55
IV	2.50	0.95	2.10	2.95	1.45	9.95
<i>Pardosa paratesquorum</i>						
Male						
I	2.45	1.05	2.25	2.50	1.50	9.75
II	2.45	1.05	2.05	2.45	1.40	9.40
III	2.40	1.00	2.00	2.80	1.35	9.55
IV	3.10	1.10	2.70	4.10	1.70	12.70
Female						
I	3.05	1.45	2.65	2.65	1.55	11.35
II	3.05	1.40	2.50	2.70	1.50	11.15
III	3.00	1.30	2.45	3.20	1.50	11.45
IV	3.80	1.45	3.30	4.90	1.95	15.40

Size variation. Carapace length: males 2.25–2.45 (n=4), females 2.30–2.70 (n=10).

Habitat. Not known.

Distribution (Fig. 116). So far known with certainty from Yakutia. Based on the drawings presented in this paper, Alexey A. Zyuzin (pers. comm.) has informed Y.M. that he has studied material from Middle Siberia (Evenkia: Taimura River, *Pardosa* sp. 4 in Eskov 1988) that most probably is conspecific with *P. eskovi* **sp. nov.** The material, however, was not available to us.



FIGURES 15–18. *Pardosa eskovi* sp. nov., male (from Yakutia: Zhigansk), left palp. 15–17, terminal part of bulbus in ventral (15), retrolateral (16), and frontal (17) view. 18, tegulum with tegular apophysis in ventral view. *ba.pr*, basal process of palea; *cond*, conductor; *emb*, embolus; *pal*, palea; *stg*, subtegulum; *tg*, tegulum; *tg.ap*, tegular apophysis; *tl.ap*, terminal apophysis of palea. Scale line (applies to all) 300 μ m.

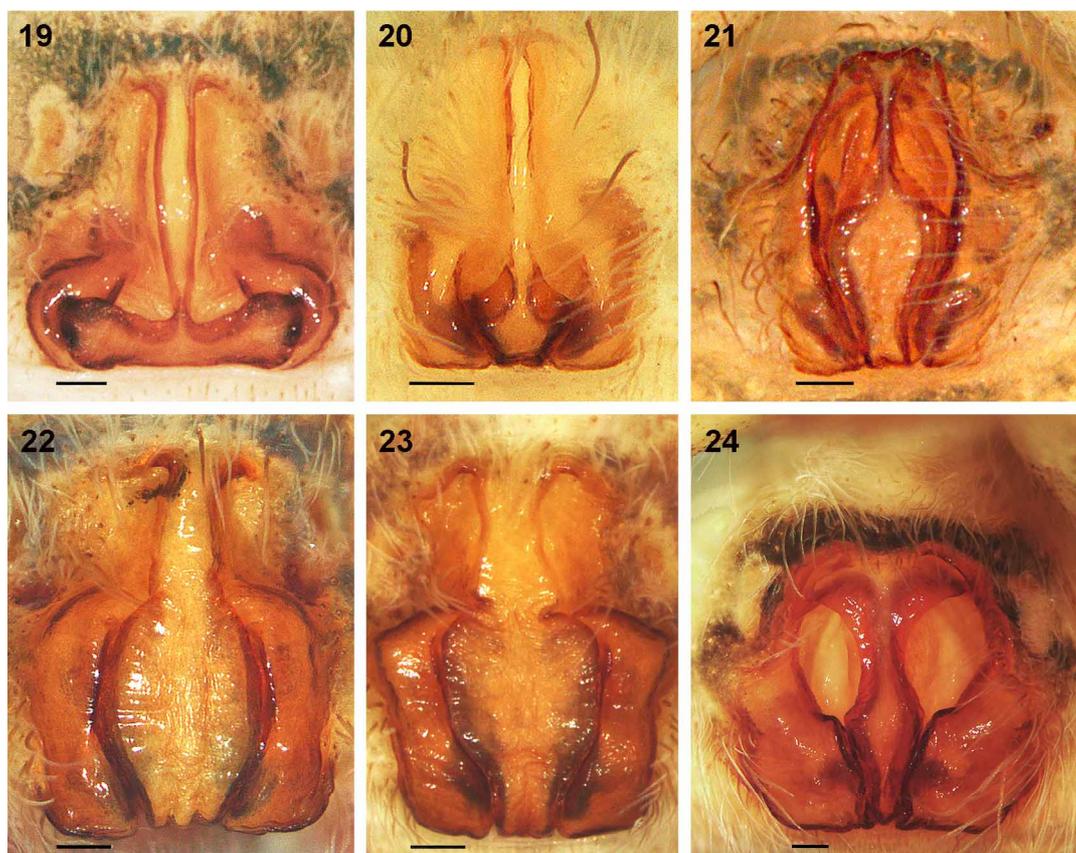
***Pardosa logunovi* sp. nov.**

Figs 32–33, 36, 38, 40, 42, 44–45, 48–49, 52–53, 56, 59–60, 63–64, 117

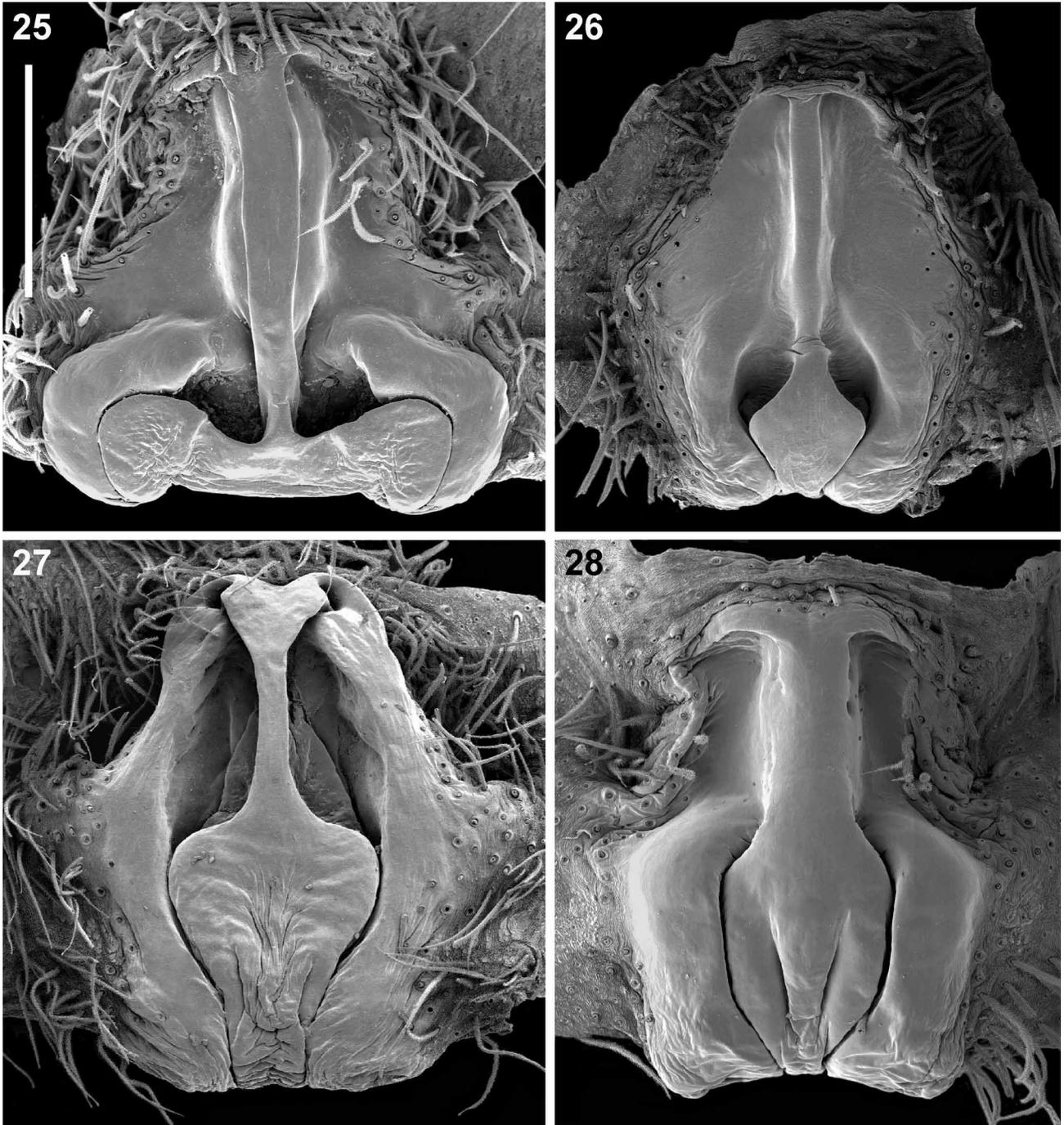
Pardosa tesquorum (Odenwall, 1901) (misidentification): Logunov *et al.* 1998: 139; Marusik & Logunov 1999: 247; Marusik *et al.* 2000: 86; Marusik & Buchar 2003: 157.

Type material. *Holotype* ♂ and *allotype* ♀ from RUSSIA, SE Tuva, Naryn River upper flow (50°13'N 96°15'E), 1820–1900 m, 24–26 June 1996 (Y.M., ZMMU). – *Paratypes*. RUSSIA. *Altai*: 15 km NE of Kokorya Village (50°16'N, 87°40'E), 2000 m, stony bank of Buguzun River, 28 June 2010 (A.A. Fomichev, ISEA), 1♂ 2♀; Zhalpak-

koby natural boundary (49°47'N, 89°22'E), 2200 m, stony bank with grass of Yustyd River, 13 July 2009 (A.A. Fomichev, ISEA), 2♂ 1♀. Tuva: Tsagan-Shibetu Mt. Range, 6–7 km NE of Mugur-Aksy, 50.312°N, 90.608°E, 2100–2200 m, mountain meadow, 22 July 1993 (D.L., ISEA), 6♂ 2♀; same locality and date as holotype (Y.M., CAS, ISEA, IZAS, ZMMU), 33♂ 20♀ (collected together with holotype); Naryn River middle flow (50°12'N 95°39'E), 1540 m, 22–24 June (Y.M., CAS), 3♂ 1♀; same locality, 1440 m, pit traps, 22 June–6 July 1996 (D.O., Y.M., CAS), 93♂ 37♀; Naryn-Balyktyg-Khem Pass (50°15.45'N 96°19.97'E), 2550 m, mountain stony tundra, 26 June 1996 (Y.M., ZMMU), 1♀; Khorumnug-Taiga Mt. Range, Shuurmak Ck (50°44'N 95°19'E), 1100 m, pitfall traps in larch forest, 20 June–18 July 1996 (Y.M. & D.O., CAS), 12♂ 10♀; Tere-Khol' Lake, SE shore (50°01'N 95°03'E), Sharlaa Stand, 1150 m, 11–12 June 1995 (D.L. & Y.M., ISEA), 5♂ 6♀; same locality, 1050 m, 6–14 July 1996 (Y.M., NHRS, ZMMU), 306♂ 38♀; Kyzyl, 19–20 June 1995 (Y.M., ISEA), 1♂; Samagaltai River valley, ca. 1.5 km E of Samagaltai, *Caragana* shrub steppe, 14 July 1993 (D.L., ISEA), 8♂ 6♀; East Tannu-Ola Mt. Range, ca. 30 km NW of Khol'-Oozhu, Kara-Khol' Lake, wet meadow, 16 July 1993 (D.L., ISEA), 1♀; same range, ca. 5 km E of Khol'-Oozhu, Aryskannyg-Khem River canyon (50°45'N 94°29'E), poplar forest, 1250–1300 m, 16 July 1993 (D.L., ISEA), 35♂ 10♀; same locality, 16–18 June 1995 (Y.M., ISEA), 13♂ 8♀; Tes-Khem Distr., ca. 5 km N of Shuurmak, under stones along creek, 4 June 1989 (D.L., ISEA), 4♂ 1♀; nr Khoddergei (51°08'N 91°37'E), 15 July 1949 (A.I. Cherepanov, ISEA), 1♀; Balyktyg-Khem river upper flow (50°17'N 96°39'E), 2000 m, 26–28 June 1996 (Y.M., ZMMU), 9♂ 3♀; same locality (50°18.65'N 96°29.64'E), 2300 m, 26 June 1996 (Y.M., ZMMU), 1♂; Sangelen Mt. Range, Dzhen-Aryk Creek upper flow (50°28.50'N 95°24.740'E), 1750 m, 16–18 July 1996 (Y.M., ZMMU), 4♂; same range (50°24.31'N 95°26.28'E), 1450 m, 14–18 July 1996 (Y.M. & D.O., NHRS, ZMMU), 93♂ 26♀; same range, Moren Village env. (50°23.53'N 95°22.92'E), 1150 m, 14–18 July 1996 (D.O., ZMMU), 15♂ 9♀; same range, Kargy River, middle flow (50°35'N 97°5'E), 1300 m, 2–4 July 1996 (Y.M., ZMMU), 2♂ 4♀; same range, Kargy River, middle flow (50°31'N 97°3'E), 1400 m, 28–30 June 1996 (Y.M., ZMMU), 2♂ 7♀. MONGOLIA. *Arkhangai Aimag*: Onder-Ulaan, Tsakhir, Chulut gorge (48°07'N 100°22' E), 2100 m, 10–13.06.1997 (Y.M., NHRS, ZMMU), 7♂.



FIGURES 19–24. Epigynes in ventral view. 19, *Pardosa eskovi* sp. nov. (from Yakutia: Suntar). 20, *P. mulaiki* Gertsch (from Saskatchewan). 21, *P. tesquorumoides* Song & Yu (from Sichuan: Hongyuan Co.). 22–23, *P. zyuzini* sp. nov. (from Tuva: Lake Tere-Khol'). 24, *P. paratesquorum* Schenkel (from Shanxi: Mt Huo Shan). Scale lines 0.1 mm.

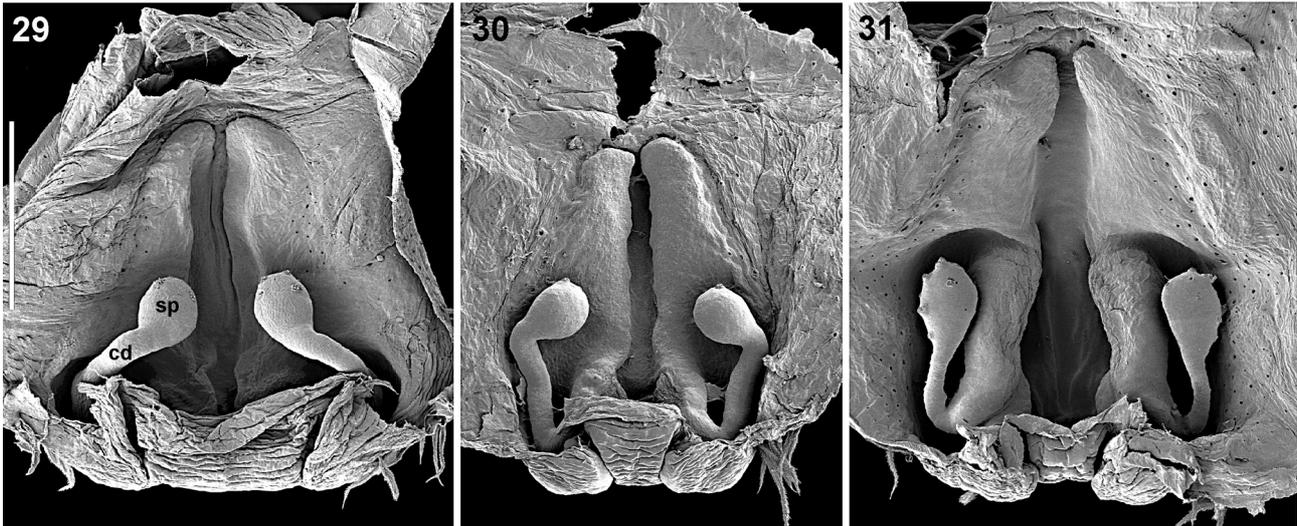


FIGURES 25–28. Epigynes in ventral view. 25, *Pardosa eskovi* **sp. nov.** (Yakutia: Suntar). 26, *P. mulaiki* Gertsch (from Saskatchewan: Hanley). 27, *P. tesquorumoides* Song & Yu (from Sichuan: Hongyuan Co.). 28, *P. zyuzini* **sp. nov.** (from type locality). Scale line (applies to all) 300 μ m.

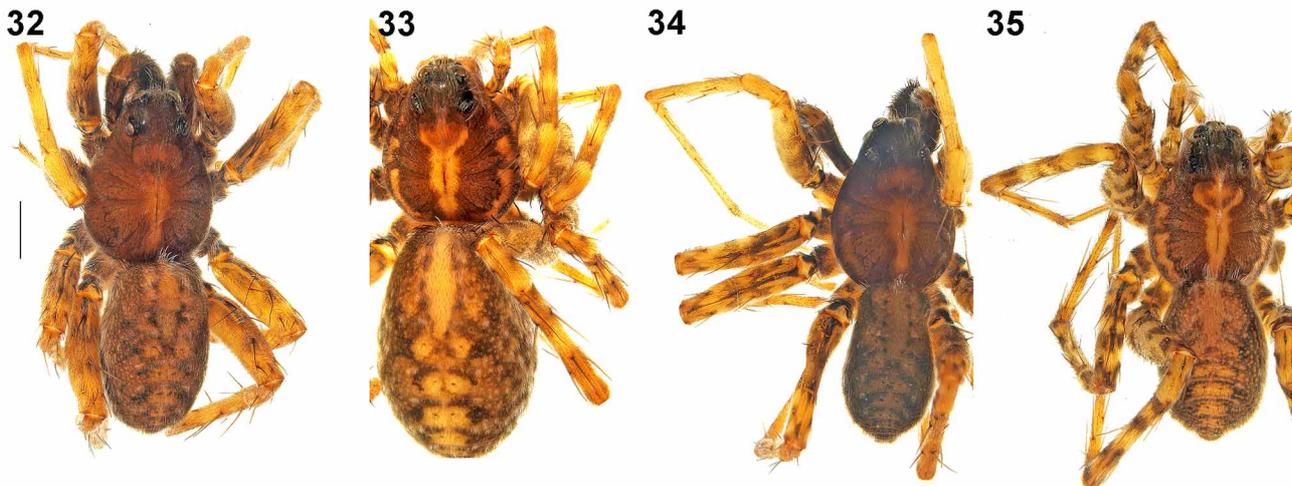
Etymology. The specific name is a patronym in honour of our friend and colleague Dmitri V. Logunov (Manchester) in recognition of his initiation of what became an intensive study of the spider fauna of Tuva.

Diagnosis. The new species is closely related to *P. tesquorum*. Males of *P. logunovi* **sp. nov.** differ from those of *P. tesquorum* by having (1) brownish palpal patella with black hairs (cf. Figs 38 & 39), (2) terminal apophysis slightly wider and less angled (cf. Figs 42 & 43), and (3) basally directed paleal process more curved (cf. Figs 48 & 50). Females are distinguishable from those of *P. tesquorum* by the bulging structure in the epigyne visible in dorsal view (Fig. 56, *arrow*) and by the arrangement of folds forming this bulging structure (cf. Figs 63 & 65).

Description. Male (holotype). Total length 5.8. Carapace 3.00 long, 2.20 wide.



FIGURES 29–31. Epigynes in dorsal view. 29, *Pardosa eskovi* **sp. nov.** (from Yakutia: Suntar). 30, *P. mulaiki* Gertsch (from Saskatchewan: Hanley). 31, *P. zuzuni* **sp. nov.** (from type locality). *cd*, copulatory duct; *sp*, spermatheca. Scale line (applies to all) 300 μ m.



FIGURES 32–35. Habitus, dorsal view. 32–33, *Pardosa logunovi* **sp. nov.** ♂ (32) ♀ (33), both from Tuva: Kargy river. 34–35, *P. tesquorum* (Odenwall) ♂ (34) ♀ (35), both from Buryatia: Barguzin valley. Scale line 1 mm.

Prosoma. Carapace (Fig. 32) dark brown with narrow yellowish median band in thoracic part. Lateral bands commonly not traceable but may be lighter but indistinct, anteriorly broken into spots. Thoracic part with short dark pubescence. Clypeus yellowish brown, notably below ALEs, and furnished with dark hairs. Chelicerae yellowish-brown with darker longitudinal streaks, mesally yellow; furnished with dark hairs; retromargin with 2 teeth. Sternum dark greyish with narrow yellowish stripe anteriorly and furnished with light hairs.

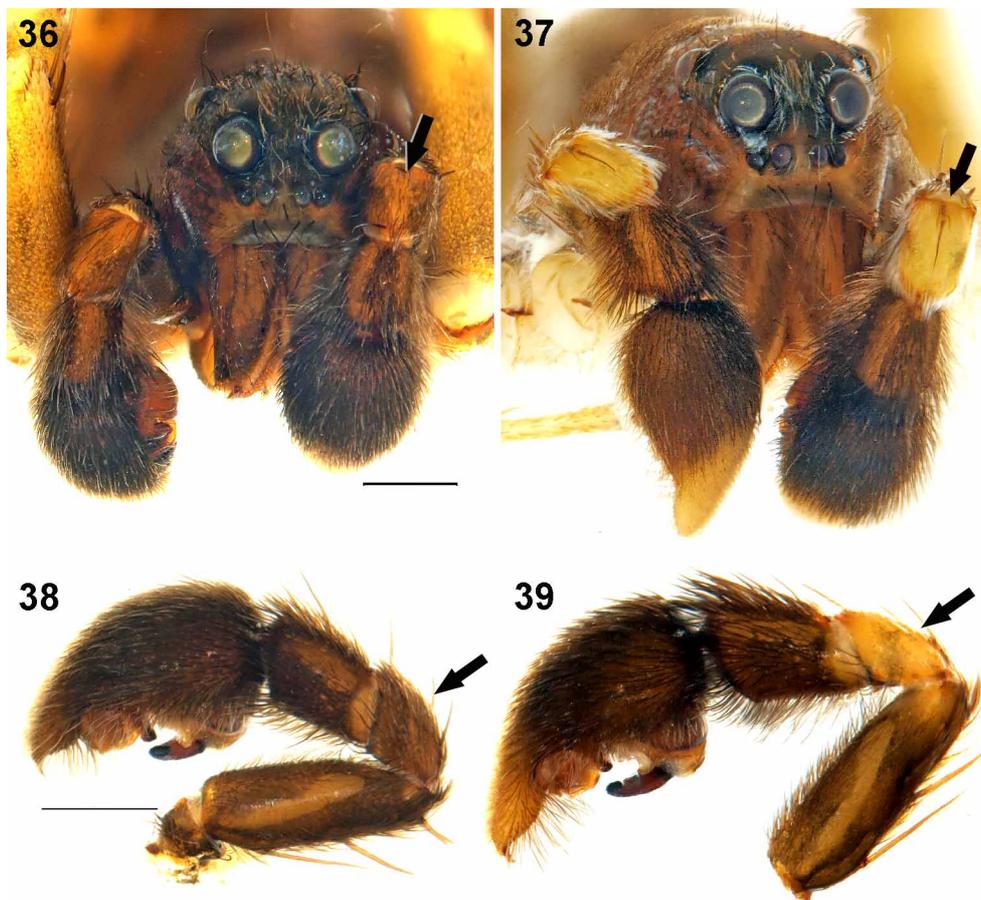
Eyes. Width of row I 44 (slightly procurved when seen from in front), row II 68, row III 88, row II–III 65. Diameter of AME 9, ALE 8, PME 24, PLE 19. Distance between AMEs 7, between AME and ALE 2.

Opisthosoma. Dorsum (Fig. 32) with light greyish-brown lanceolate stripe anteriorly followed by a series of transverse dark bars, each bar between a white-haired spot at each side. Between bars paired yellowish spots (often confluent), each spot with a dark dot in middle. Venter brown. Sides of dorsum and venter with dense, recumbent whitish pubescence.

Legs (Table 1). Rather thin, yellow, with weak, slightly darker markings and annulation. Leg I without deviant pilosity. Ti I with 2 retrolateral spines.

Palp (Figs 36, 38, 40, 42, 44–45, 48–49). Pt 0.60, Ti 0.55, Cy 1.30. All segments dark brownish, more or less suffused with black, and with dark pubescence (Figs 36, 38). Tegular apophysis stout, rugose, curved retrolaterad,

with small hooked process at base (Fig. 49). Basally directed paleal process distinctly curved (Figs 44, 48). Terminal apophysis sclerotized, flattened, blunt at tip (Figs 42, 45). Embolus laminar, grooved along its length, ventral edge turned forwards along two thirds of embolus length, then abruptly narrowing.



FIGURES 36–39. Males from in front (36–37) and left palps in retrolateral view (38–39) showing differences in coloration of palpal patella (arrows). 36, 38, *Pardosa logunovi* sp. nov. from Tuva: Kargy river. 37, 39, *P. tesquorum* (Odenwall) from Buryatia: Barguzin valley. Scale lines 0.5 mm (same for 36 & 37 and 38 & 39, respectively).

Female (allotype). Total length 7.5. Carapace 3.30 long, 2.55 wide.

Prosoma and opisthosoma. Coloration lighter, with more contrasting pattern compared to the male. Carapace (Fig. 33) with bright yellow median band, wider than in the male and continuing into postocular area; yellow lateral bands broken into distinct spots. Bands with whitish pubescence. Clypeus yellowish. Chelicerae yellowish with brown veins, furnished with dark and whitish hairs; retromargin with 2 teeth. Opisthosoma (Fig. 33) patterned as in the male, lanceolate stripe and spots between dorsal dark bars yellowish; venter yellowish brown.

Eyes. Width of row I 49 (slightly procurved when seen from in front), row II 70, row III 93, row II–III 67. Diameter of AME 10, ALE 9, PME 26, PLE 22. Distance between AMEs 8, between AME and ALE 3.

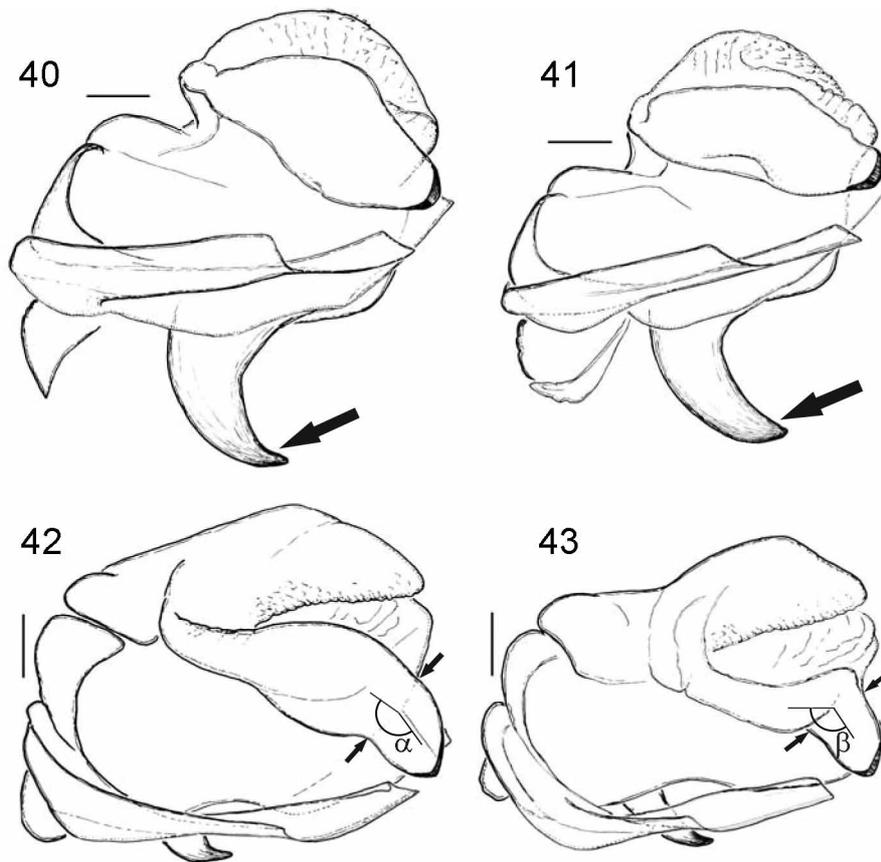
Legs (Table 1). Yellowish, with more distinct dark markings than in the male.

Epigyne (Figs 52–53, 56, 59–60, 63–64). Septal ridge of varying width, extending approximately one-half epigynal length, anteriorly with two transversal pockets. Cavity wide, divided by widened septum. Lateral margins of epigynal plate deeply indented, clearly visible in dorsal view (Fig. 63, arrow).

Size variation. Carapace length: males 2.65–3.00 (n=10), females 2.75–3.30 (n=10).

Habitat. In Mongolia, this species was collected on a pebbly lake shore and along a river bank. In Tuva, in habitats near streams.

Distribution (Fig. 117). Mongolia and Russia (Altai and Tuva). It is very likely that this species may occur in adjacent Xinjiang. Records of *P. tesquorum* from Inner Mongolia (cf. Song *et al.* 1999: 334) likely refer to this species.



FIGURES 40–43. Terminal part of left bulbus in ventral (40–41) and frontal (42–43) view. 40, 42, *Pardosa logunovi* sp. nov. from Tuva. 41, 43, *P. tesquorum* (Odenwall) from Yakutia. Note differences in angling of terminal apophysis visavi palea ($\alpha > \beta$), width (between *small arrows*) of terminal apophysis in frontal view, and curvature (*large arrows*) of basal paleal process. Scale line 0.1 mm.

Pardosa mulaiki Gertsch, 1934

Figs 2–3, 20, 26, 30, 67–76, 116

Pardosa mulaiki Gertsch, 1934: 22; Dondale & Redner 1986: 827, figs 19, 20, 46–48 (♂♀); Dondale & Redner 1990: 156, figs 190–194 (♂♀); Vogel 2004: 106, figs 135, 137 (♂♀).

Type material. *Holotype* ♂ from USA “Edinburgh, Texas” in AMNH, not examined. Type locality believed to be incorrect (Dondale & Redner 1986).

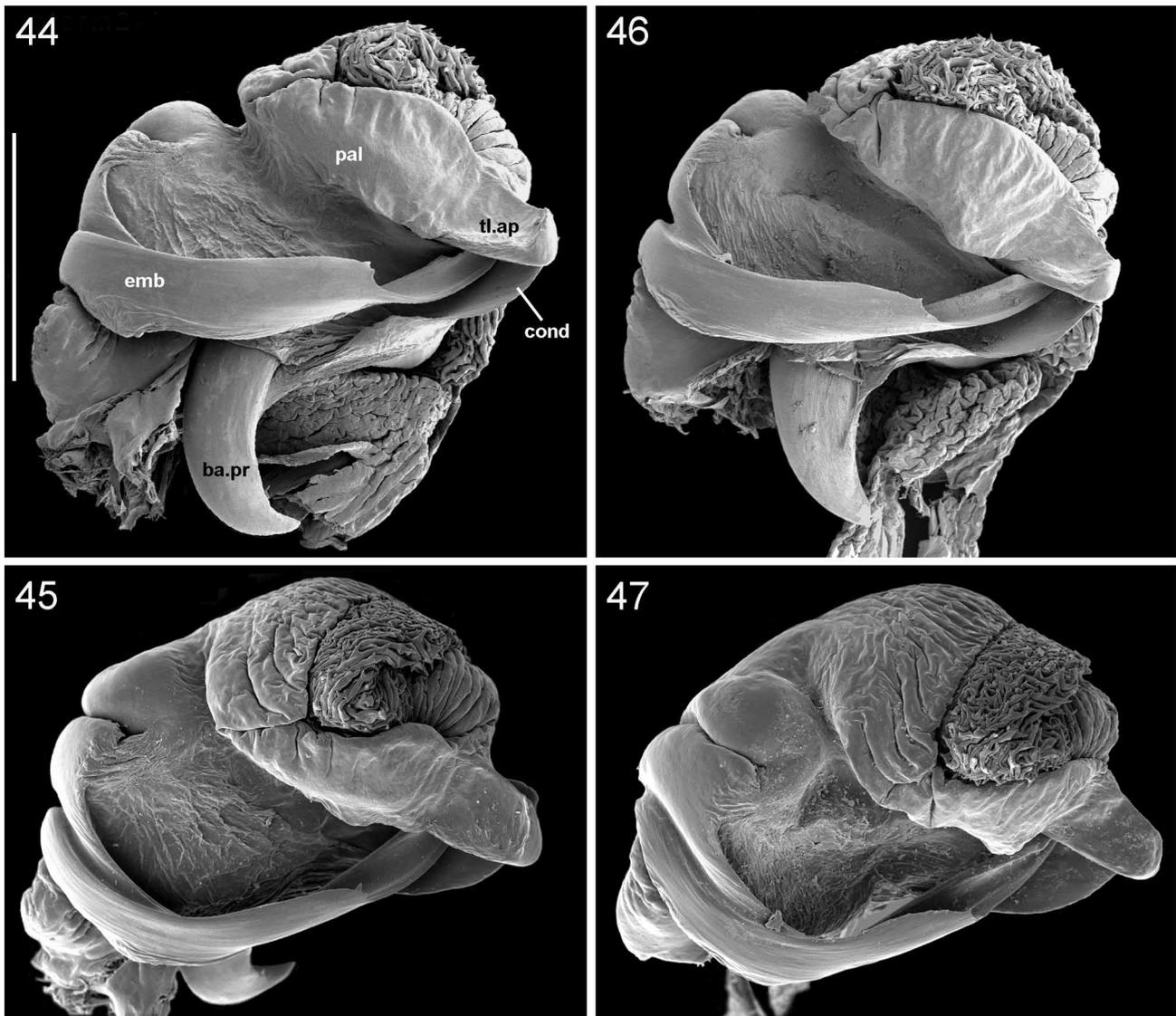
Material examined. CANADA. Saskatchewan, Hanley (51°37'40"N 106°26'22"W), cultivated land, pit-traps, 30 May–19 June 1995, 12♂ 12♀ (K. Pivnick, NHRS); Rosetown (51°33'08"N 107°59'22"W), 16–17 June 1973, 2♂ 2♀ (J. Redner & C. Starr, NHRS).

Diagnosis. This species can be easily distinguished from all other members of the group by the pattern on the carapace and the shape of the copulatory organs. Males are distinguished by the configuration of the terminal part (shape of conductor and terminal apophysis: Figs 69, 73, 74); females by the narrow epigyne with very long septal ridge and comparatively short and modestly widened part of septum (Fig 20). Females have no marginal dark stripe, which is present in other members of the group.

Description. *Male* (from Canada: Saskatchewan). Total length 4.3. Carapace 2.10 long, 1.50 wide.

Prosoma. Carapace (Fig. 2) dark brown with narrow yellowish median band in thoracic part and distinct yellowish lateral bands (anteriorly reaching level of first coxae). Thoracic part with pubescence of short dark, recumbent hairs as well as greyish adpressed hairs on dark sides and with whitish hairs in yellowish bands. Clypeus yellowish (younger specimens) to dark brownish with a few stout dark hairs. Chelicerae brownish, inner side yellowish.

low; furnished with dark hairs; retromargin with 2 teeth. Sternum greyish with narrow yellowish median stripe in front, furnished with light hairs.



FIGURES 44–47. Terminal part of left bulbus in ventral (44, 46) and frontal (45, 47) views. 44–45, *Pardosa logunovi* sp. nov. from Tuva. 46–47, *P. tesquorum* (Odenwall) from Yakutia. *ba.pr*, basal process of palea; *cond*, conductor; *emb*, embolus; *pal*, palea; *tl.ap*, terminal apophysis of palea. Scale line (applies to all) 300 μ m.

Eyes. Width of row I 33 (slightly procurved when seen from in front), row II 49, row III 64, row II–III 48. Diameter of AME 8, ALE 6, PME 18, PLE 16. Distance between AMEs 6, between AME and ALE 1.

Opisthosoma. Dorsum (Fig. 2) brownish, with light greyish brown lanceolate stripe in front followed by a series of transverse dark bars, each bar between a white-haired spot at each side. Between bars paired yellowish spots (often confluent), each spot with a dark dot in middle. Venter light brown with recumbent whitish pubescence.

Legs (Table 1). Yellowish, Fe with faint dark markings (pseudoannulation). Leg I without deviant pilosity. Ti I with 2 retrolateral spines (sometimes only distal one present).

Palp (Figs 67–70, 73–76) Pt 0.40, Ti 0.40, Cy 0.90. Fe, Ti and Cy sooty brown, apical part of Fe and entire Pt yellowish. Tegular apophysis stout, rugose, curved retrolaterad, with small hooked process at base (Figs 68, 76). Palea with somewhat hooked terminal apophysis, latter more protruding retrolaterally than conductor (Figs 69, 73). Embolus laminar, grooved along its length, ventral edge turned forward except distally where dorsal edge is turned forward, tip truncated (Figs 69–70, 73, 75).

Female (from Canada: Saskatchewan). Total length 5.9. Carapace long, 2.40, wide 1.80.

Prosoma and opisthosoma (Fig. 3). Coloration lighter and with more contrasting pattern than in male. Carapace with bright yellow median band, wider than in male and continuing into postocular area. Wide yellow lateral bands extending to carapace margin and confluent anteriorly with yellow clypeus. Bands with whitish pubescence. Chelicerae yellowish, furnished with whitish hairs; retromargin with 2 teeth. Abdomen patterned as in male, lanceolate stripe and spots between dorsal dark bars yellowish; venter yellowish.

Eyes. Width of row I 37 (slightly procurved when seen from in front), row II 53, row III 70, row II–III 53. Diameter of AME 9, ALE 7, PME 21, PLE 18. Distance between AMEs 6, between AME and ALE 1.

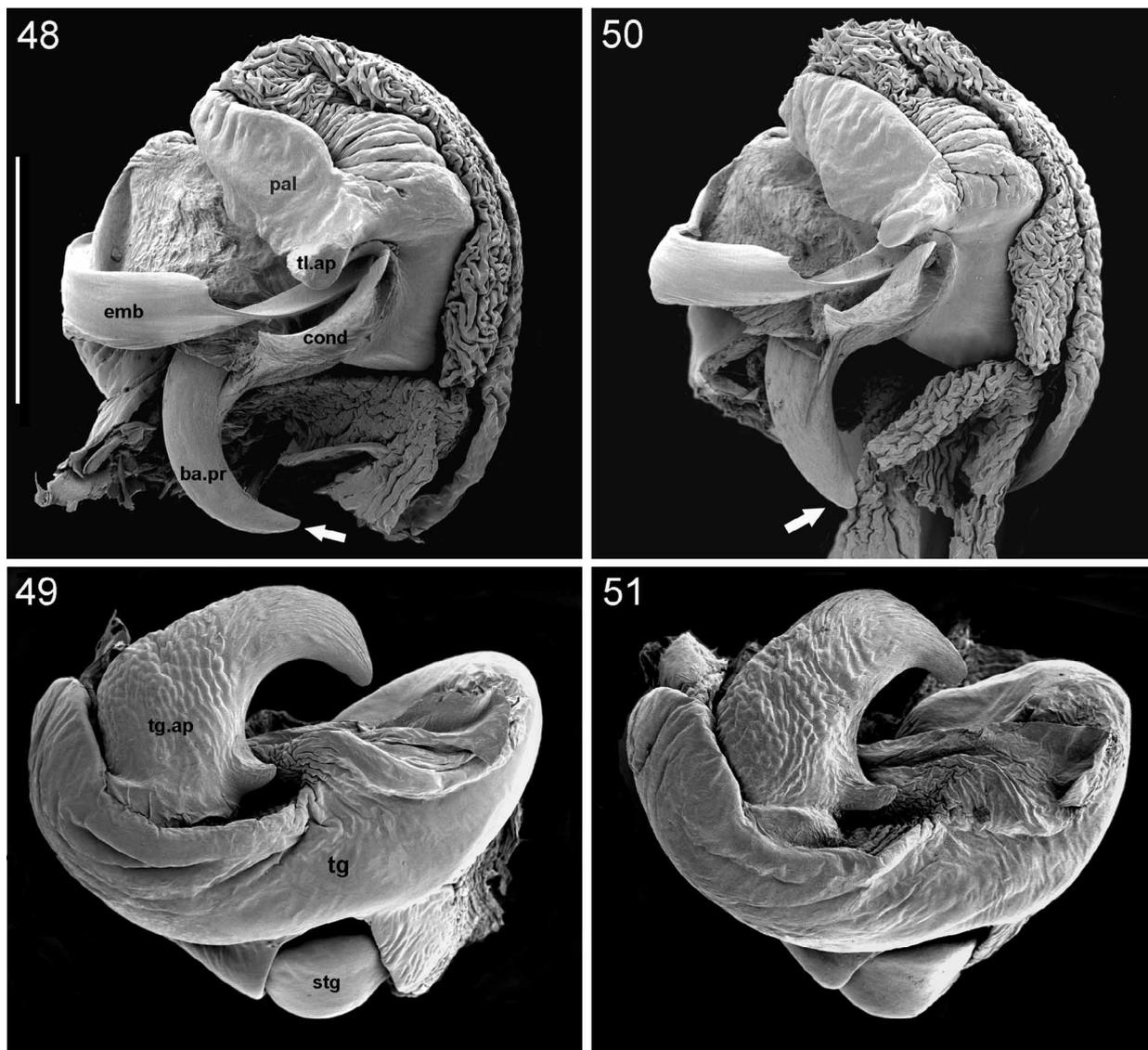
Legs (Table 1). Yellowish with more distinct dark markings than in male.

Epigyne (Figs 20, 26, 30, 71–72). Anterior ridge of septum long and narrow, in front with two shallow transversal pockets. Posterior cavity divided by moderately widened septum. Copulatory ducts long, spermathecae rounded (Figs 30, 72).

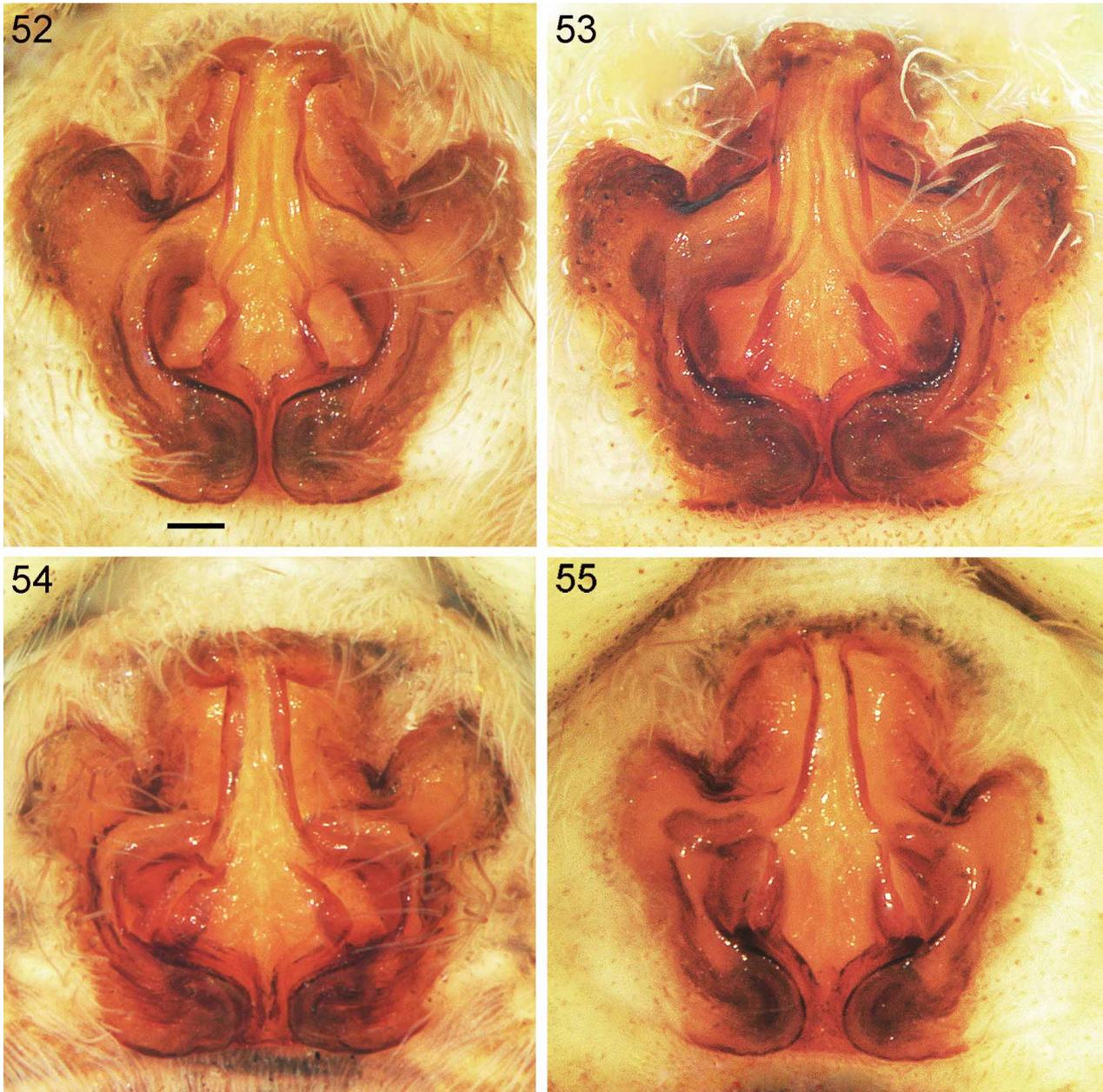
Size variation. Carapace length: males 1.95–2.10 (n=10) females 2.05–2.55 (n=10).

Habitat. Grassland, including prairies, alfalfa fields, margins of sloughs as well as alpine meadows (Dondale & Redner 1990).

Distribution (Fig. 116). Canada (Alberta to Manitoba) and USA (Wyoming and Colorado) (Dondale & Redner 1986).



FIGURES 48–51. Terminal part (48, 50) and tegulum with tegular apophysis (49, 51) of left bulbus. 48–49, *Pardosa logunovi* sp. nov. from Tuva. 50–51, *P. tesquorum* (Odenwall) from Yakutia. *ba.pr.*, basal process of palea; *cond.*, conductor; *emb.*, embolus; *pal.*, palea; *stg.*, subtegulum; *tg.*, tegulum; *tg.ap.*, tegular apophysis; *tl.ap.*, terminal apophysis of palea; *arrow*, points at basal process of palea, indicating differences in curvature between the two species. Scale line (applies to all) 300 μ m.



FIGURES 52–55. Epigynes in ventral view. 52–53, *Pardosa logunovi* **sp. nov.** from Tuva: Kargy river. 54–55, *P. tesquorum* (Odenwall) from Buryatia: Barguzin valley. Scale line (applies to all) 0.1 mm.

***Pardosa tesquorum* (Odenwall, 1901)**

Figs 34–35, 37, 39, 41, 43, 46–47, 50–51, 54–55, 57–58, 61–62, 65–66, 77–82, 117

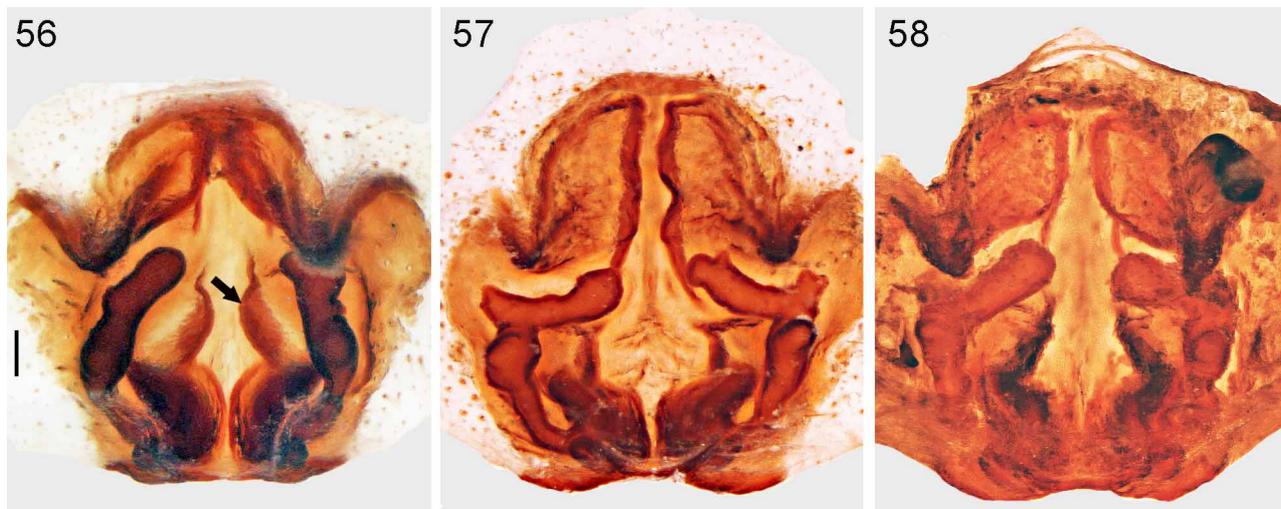
Lycosa tesquorum Odenwall, 1901: 4, figs 5, 6 (♀).

Pardosa albiceps Emerton, 1915: 153, pl. 3, figs 5, 5a, 5b (♂♀)

Pardosa tesquorum: Kulczyński 1908: 90, pl. 3, figs 108–109 (♂♀); Zyuzin 1979: 435, figs 32 & 58 (♂♀); Dondale & Redner 1986: 826, figs 17, 18, 43–44 (♂♀); Dondale & Redner 1990: 154, figs 185–189 (♂♀); Paquin & Dupérré 2003: 166, figs 1852–1855 (♂♀); Vogel 2004: 106, figs 134, 136 (♂♀).

Type material. Syntypes. Three intact females and one separate epigyne (Fig. 58) (No. 61.020, ZMHU), without locality label, from Russia, presumably southern Buryatia (Odenwall 1901: "omnibus locis Sibiriae Transbaicalensis"), examined.

Other material examined. RUSSIA. *Tyumen Area*: Polar Ural, Krasnyi Kamen, river shore, 5 July 1994 (S. Koponen, ZMUT), 1♂ 5♀. *Krasnoyarsk Territory*: down flow of Kotui River (71°24'N 103°E), June–July 2010 (O.A. Khrulyova, IBPN), 98♂ 49♀; Kotui River, 114 km from Khandyga village (71°24'N 102°53'E), 205 m, 20–30 July 2010 (A.V. Barkalov, ISEA), 138♂ 5♀. *Buryatia*: Barguzin valley, Nesterikha River (53°39'N 109°42'E), 500 m, 1 July 1996 (S. Koponen, ZMUT), 1♂; Barguzin valley, Maisky (54°35'N 110°48'E), meadow, 3–11 July 1996 (S. Koponen, ZMUT), 4♀; Barguzin valley, Zugdeli (55°01'N 111°18'E), 650 m, 9 July 1996 (S. Koponen, ZMUT), 2♂ 1♀; Barguzin Range, Olso River (54°52'N 110°55'E), 950 m, 7 July 1996 (S. Koponen, ZMUT), 3♂ 1♀. *Yakutia*: Yana River lower flow, Kular Village, environs (70.35°N 134.34°E), July 1996 (N.N. Vinokurov, NHRS) 3♂ 1♀. *Magadan Area*: 15 km E of Magadan, 31 July–27 September 1996 (Y.M., CAS), 1♂ 27♀. 50 km W of Magadan, Oira River (59°50'N 151°55'E), summer 1994 (D.B., CAS), 56♂ 6♀; Gertner Bay (env. of Magadan), 3 km W of Nyuklya Village (59°35'N 151°08'E), 23 Sept. 1995 (Y.M., CAS), 1♀. *Chukotka*: Apapelgino (69°47'46"N, 170°37'E), 22 July 2011 (O.A. Khrulyova, IBPN), 1♀ 3 juv. *Kamchatka*: Koryakia, environs of Tigil Village (ca 57°46'N 158°40'E. 7 July–5 August 2010 (A.S. Ryabukhin, IBPN), 1♀. – CANADA. *Yukon Territory*: Kluane Lake, Cultus Bay (61°11'N 138°20'W), 2600–2800 ft., various habitats: under stones around small lake on moraine, pebbly bank and grass, pebbles near moss spruce grove, and sweeping within aspen grove, 11–23 July 1993 (Y.M., IBPN), 18♂ 35♀; Kluane Lake, Christmas Bay (61°03'N 138°21'W) most on pebbly banks, 22 July 1993 (Y.M., IBPN), 6♀; Kluane Lake, environs of research station, south bank of the lake, 5–11 July 1993 (Y.M., D.B., G.Z., IBPN), 4♂ 12♀; 1 mi. SE of bridge on Takhini River on Whitehorse–Haines Junction Hwy, litter in willow grove near alkaline lakes, 20 July 1993 (Y.M., IBPN), 1♀; environs of Carmacks, Tatchun Lake Campground (62°18'N 136°09'W), around lake, meadow and under stones, 16–18.07.1993 (Y.M., IBPN), 33♀; environs of Carmacks (62°11'N 136°22'W), aspen grove with moss and grass, 17 July 1993 (Y.M., IBPN), 4♀; environs of Carmacks (62°05'N 136°35'W), in spruce–*Calluna* forest, 18 July 1993 (Y.M., IBPN) 1♀. – USA. *Alaska*: Hwy, Northway Village, 4 July 1993 (Y.M., IBPN), 1♀. *Colorado*: Park County, Lynch Creek 15.5 mi. W of Hartsel, 10 440 ft., 15 July 1972 (B. Vogel NHRS), 2♂ 3♀.

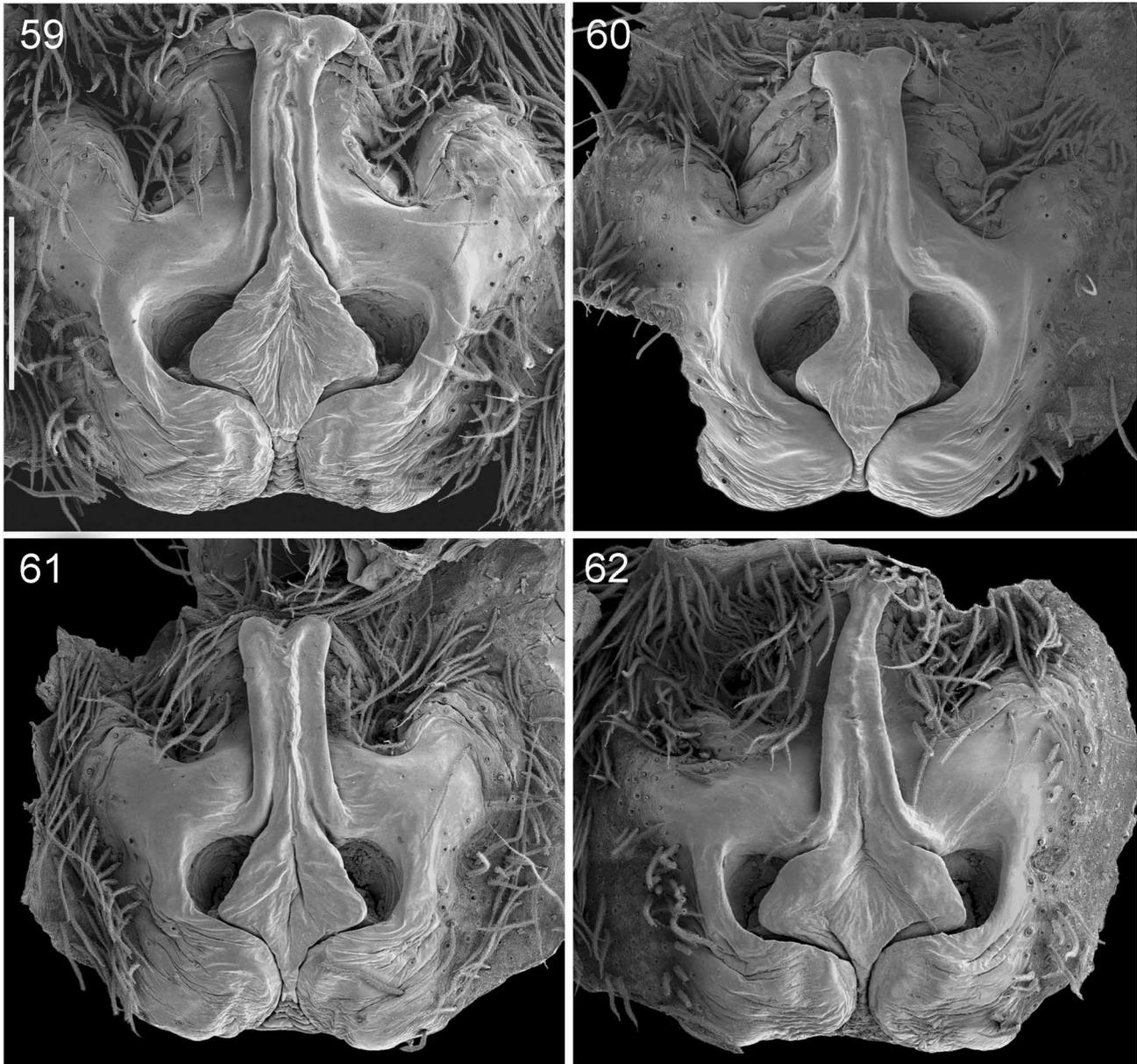


FIGURES 56–58. Epigynes in dorsal view. 56, *Pardosa logunovi* sp. nov. from Tuva: Kargy river. 57–58, *P. tesquorum* (Odenwall) from Magadan: Oira river (57) and syntype (58). Arrow, bulging structure. Scale line (applies to all) 0.1 mm.

Diagnosis. This species is closely related to *P. logunovi* sp. nov. Males differ from those of the latter by having (1) palpal patella yellowish with light hairs (cf. Figs 39 & 38), (2) terminal apophysis slightly narrower and more angled (cf. Figs 43 & 42), and (3) basally directed paleal process less curved (cf. Figs 50 & 48). Females are distinguishable from those of *P. logunovi* sp. nov. by the arrangement of folds in the epigynal cavity bottom as seen in dorsal view (cf. Figs 65 and 63).

Description. Male (from Russia: Buryatia, Barguzin Range). Total length 5.6. Carapace 3.00 long, 2.15 wide.

Prosoma. Carapace (Fig. 34) dark brown with narrow yellowish median band in thoracic part. Lateral bands hardly traceable or absent, anteriorly interrupted into spots. Thoracic part with short dark, recumbent pubescence. Clypeus yellowish, at least below ALEs, furnished with dark hairs. Chelicerae yellow to yellowish-brown with darker longitudinal veins, mesally yellow; furnished with dark hairs; retromargin with 2 teeth. Sternum dark greyish with narrow yellowish stripe anteriorly and furnished with light hairs.



FIGURES 59–62. Epigynes in ventral view. 59–60, *Pardosa logunovi* **sp. nov.** from Tuva. 61–62, *P. tesquorum* (Odenwall) from Yakutia: Kular (61) and Magadan (62). Scale line (applies to all) 300 μ m.

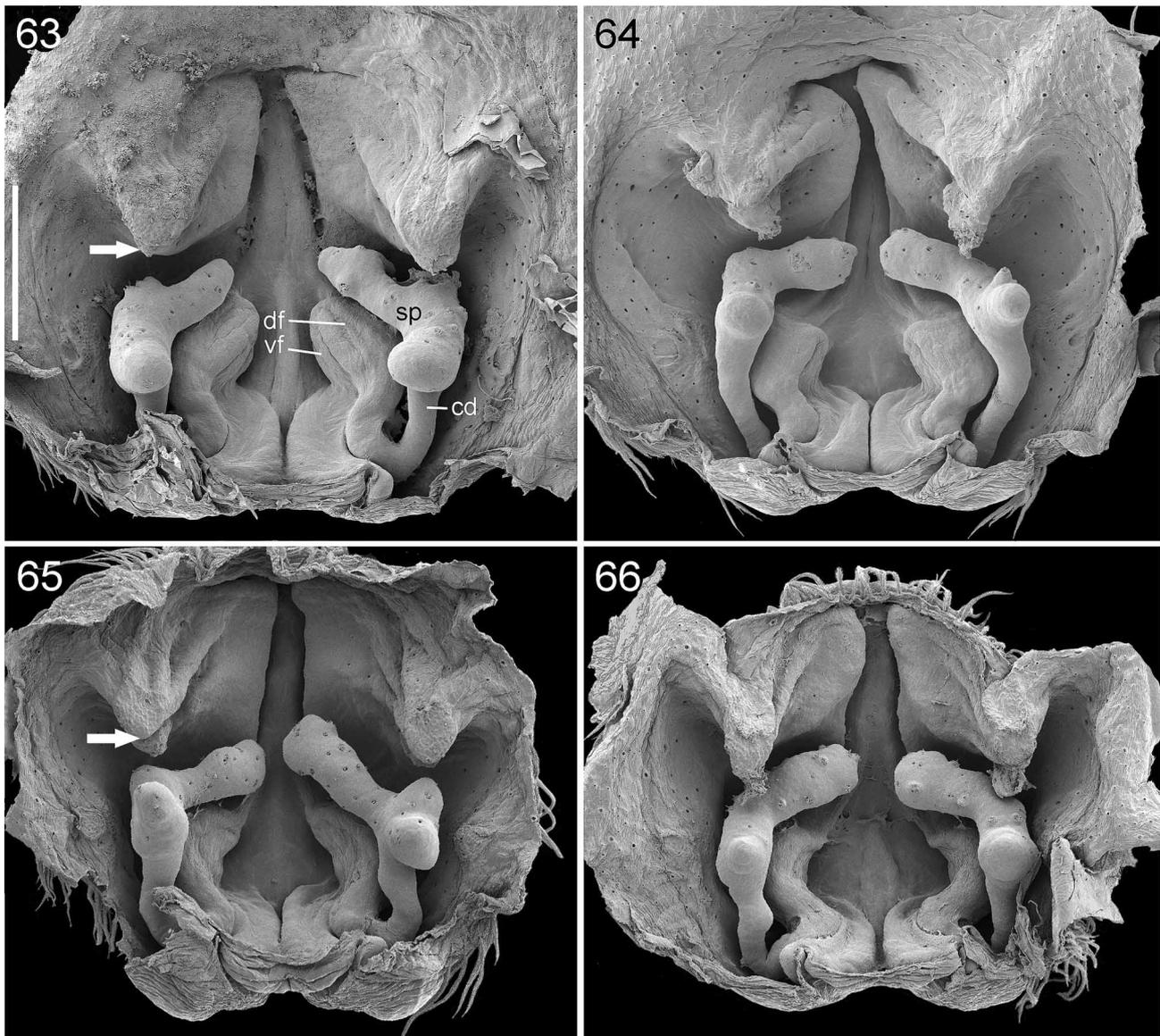
Eyes. Width of row I 43 (slightly procurved when seen from in front), row II 67, row III 86, row II–III 65. Diameter of AME 10, ALE 8, PME 25, PLE 20. Distance between AMEs 7, between AME and ALE 2.

Opisthosoma. Dorsum (Fig. 34) brownish, anteriorly with light greyish-brown lanceolate stripe, followed by a series of transverse dark bars, each bar between a white-haired spot at each side. Between bars paired yellowish spots (often confluent), each spot with a dark dot in middle. Sides of dorsum with recumbent whitish pubescence. Venter brown with short light pubescence.

Legs (Table 1). Yellowish, outer segments with faint traces of darker annulation, Fe dorsally with sooty markings and ventrally with faint dark markings (pseudoannulation). Leg I without deviant pilosity. Ti I with 2 retrolateral spines.

Palp (Figs 37, 39, 41, 43, 46–47, 50–51, 77–80). Pt 0.60, Ti 0.60, Cy 1.30. Fe, Ti and Cy blackish, Pt mainly yellowish (sometimes, presumably in older specimens, partly suffused with black) (Figs 37, 39, 80). Fe (except apically), Ti and Cy with black hairs, apical part of Fe and Pt with short whitish pilosity (Pt in addition with some black hairs). Tegular apophysis stout, rugose, curved retrolaterad, with small hooked process at base (Fig. 51). Basally directed paleal process moderately curved (Figs 41, 46, 79). Terminal apophysis sclerotized, flattened,

blunt at tip, pointing obliquely ventrad (Figs 43, 46–47). Embolus laminar, grooved along its length, ventral edge turned forward along two thirds of embolus length, then smoothly narrowing (Figs 46–47, 78–79).



FIGURES 63–66. Epigynes in dorsal view. 63–64, *Pardosa logunovi* sp. nov. (63 from Tuva: Tere-Kol', 64 from Tuva: Sangelen Mt. range). 65–66, *P. tesquorum* (Odenwall) (both from Magadan). *cd*, copulatory duct; *df*, dorsal fold; *sp*, spermatheca; *vf*, ventral fold; *arrow*, indentation in lateral margin. Scale line (applies to all) 300 μ m.

Female (from Russia: Buryatia, Barguzin Range). Total length 7.0. Carapace 3.00 long, 2.30 wide.

Prosoma and opisthosoma (Fig. 35). Coloration lighter and pattern more contrasting than in the male. Carapace with bright yellow median band, wider than in male and continuing into postocular area; yellow lateral bands broken into distinct spots. Bands with whitish pubescence. Clypeus yellowish. Chelicerae yellowish with brown veins, furnished with dark and whitish hairs; retromargin with 2 teeth. Abdomen patterned as in male, lanceolate stripe and spots between dorsal dark bars yellowish; venter yellowish brown.

Eyes. Width of row I 45 (slightly procurved when seen from in front), row II 66, row III 85, row II–III 63. Diameter of AME 10, ALE 9, PME 25, PLE 20. Distance between AMEs 7, between AME and ALE 2.

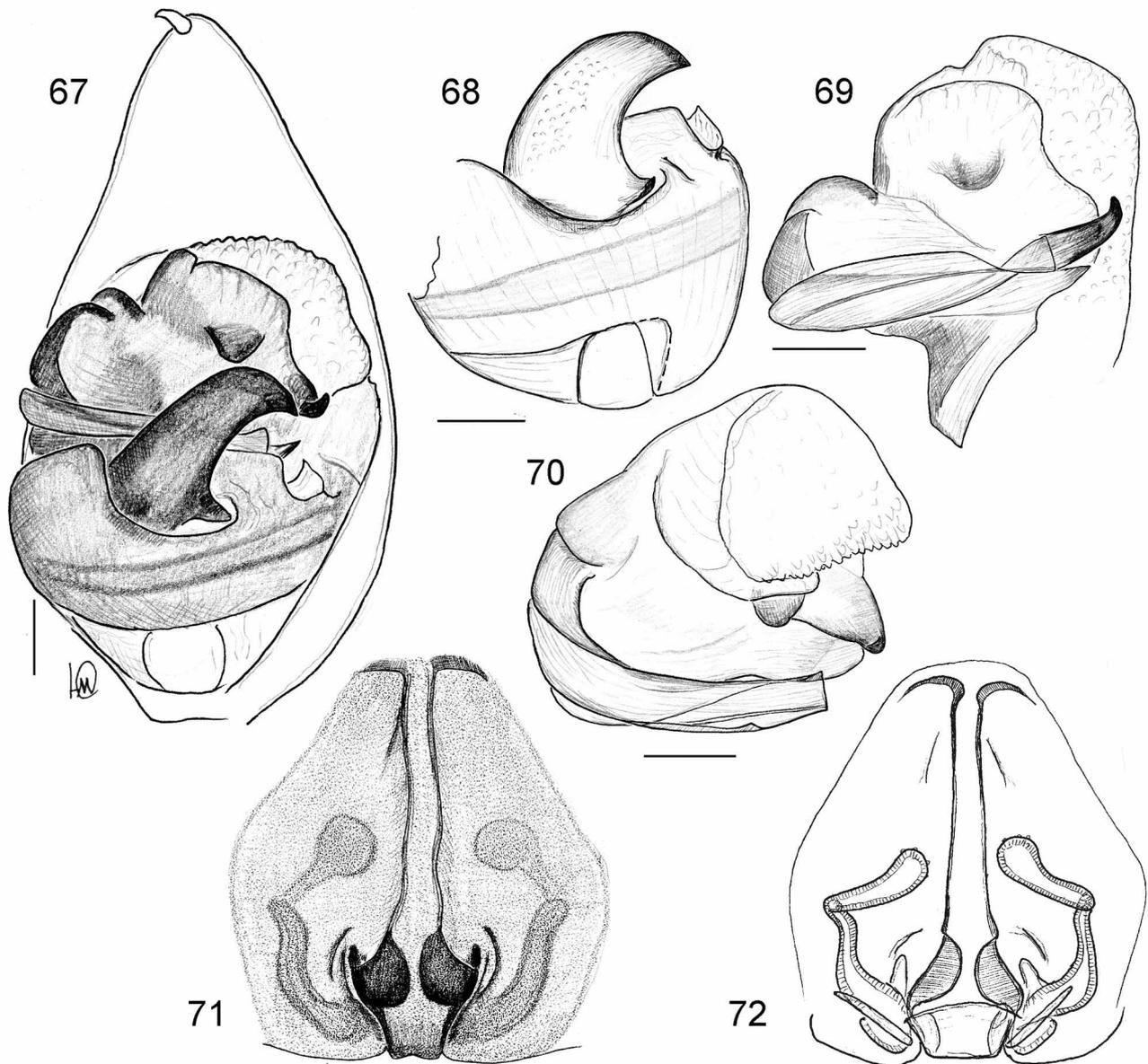
Legs (Table 1). Yellowish with more distinct dark markings than in the male.

Epigyne (Figs 54–55, 57–58, 61–62, 65–66, 81–82): Septal ridge wide, extending approximately one-half epigynal length, anteriorly with two transversal pockets. Cavity wide, divided by widened septum. Lateral margins of epigynal plate deeply indented, clearly visible in dorsal view (Fig. 65, *arrow*).

Size variation. Carapace length: males 2.50–3.00 (n=10), females 2.60–3.30 (n=10).

Habitat. Dweller of sandy and pebbly shores around water bodies, river and creek banks, seashore, and talus.

Distribution (Fig. 117). Russia (Polar Ural to Chukotka), North America (Alaska to northern Quebec, south to northern New Mexico). Record from Kyren west of Irkutsk (Izmailova 1989) is doubtful because of close to the range of *Pardosa logunovi* sp. nov. Two previous records from the Russian Far East [the Ussuri Reserve in the Maritime Province (Šternbergs 1988) and Amur Area (Lobanova 1985)] are very likely based on misidentifications. The record from Inner Mongolia, China (Song *et al.* 1999) needs to be verified (only illustration of an epigyne given).



FIGURES 67–72. *Pardosa mulaiki* Gertsch (male and female from Saskatchewan: Hanley). 67, left male palp, ventral view. 68, left tegulum with tegular apophysis. 69–70, left terminal part of bulbus in ventral (69) and frontal (70) view. 71–72, epigyne in ventral (71) and dorsal (72) view. Scale lines 0.1 mm.

***Pardosa tesquorumoides* Song & Yu, 1990**

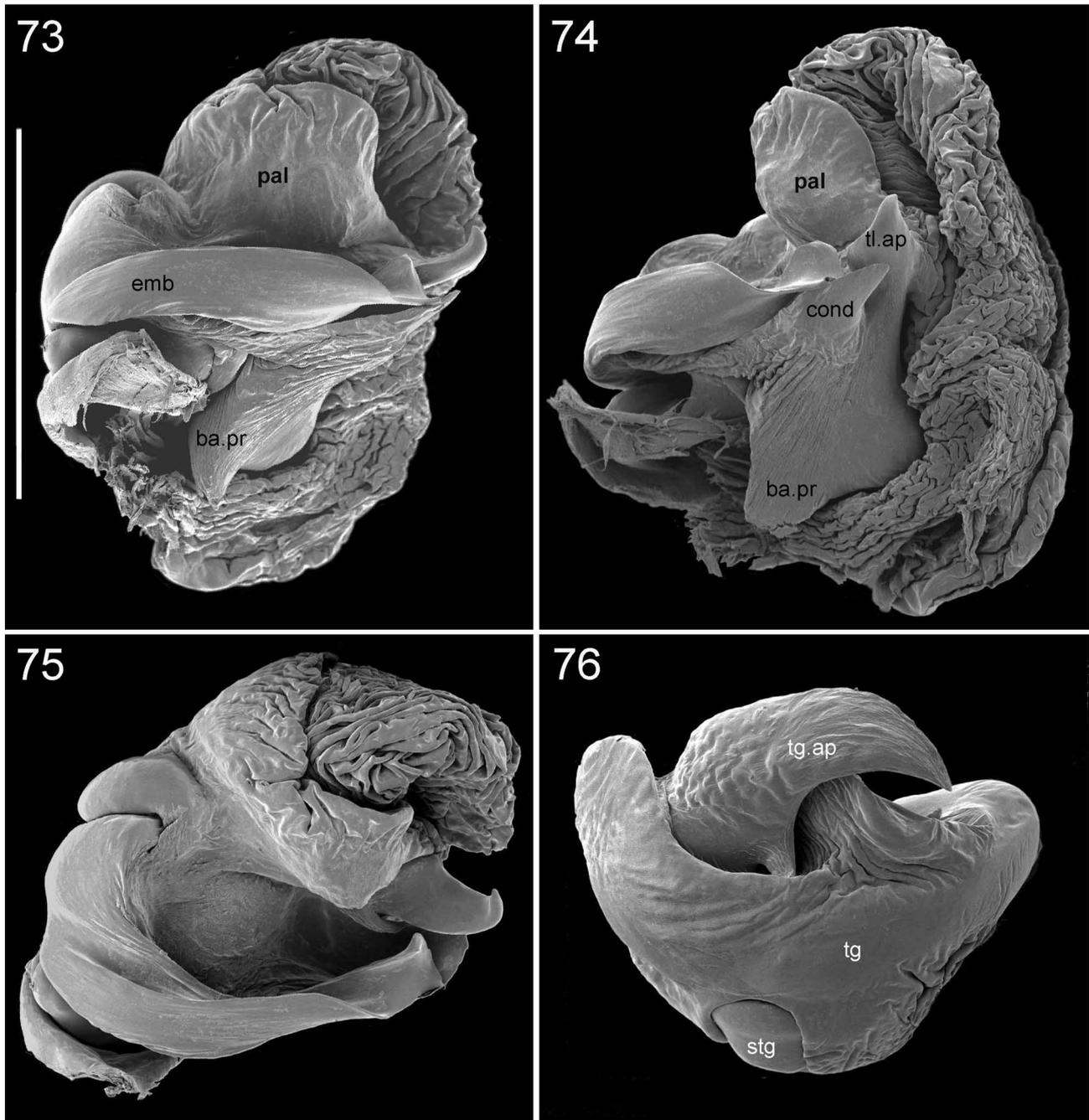
Figs 5–6, 21, 27, 83–93, 116

Pardosa tesquorumoides Song & Yu, 1990: 79, figs 10–13 (♂♀); Yin *et al.* 1997: 209, figs 98a–e (♂♀); Song *et al.* 1999: 334, figs 199B, J (♂♀); Song *et al.* 2001: 256, figs 159A–D (♂♀); Hu 2001: 204, figs 104. 1–4 (♂♀).

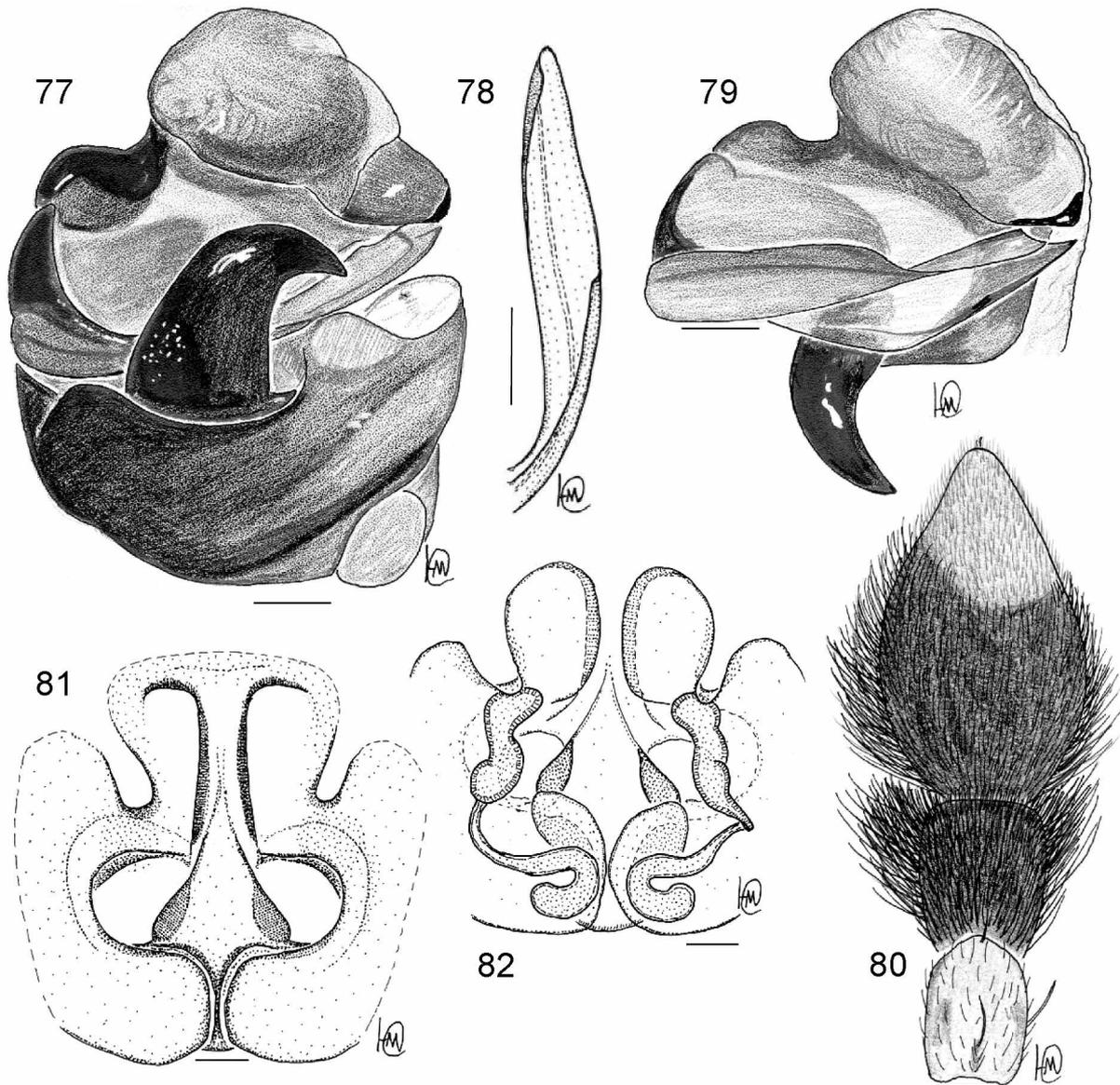
Type material. *Holotype* ♂ and *allotype* ♀ from CHINA, *Qinghai*: Menyuan. Originally placed in Bethune Medical University, now in Jinlin University, not examined. *Paratype* ♀ from CHINA, *Sichuan*: Batang, in IZAS, not examined.

Material examined. CHINA: *Sichuan*: Kangding County, Mt. Zheduo Shan (30°24'N 101°41'E), 4200 m, 20 Aug. 1983 (IZAS), 1♂ 2♀; Hongyuan County (32°42'N 102°29'E), 3000 m, 17 June 1985 (IZAS), 2♂ 2♀.

Remark. Types were not available to us but drawings of this species (references above) are adequate and well illustrate the species-specific characters in the copulatory organs.



FIGURES 73–76. *Pardosa mukaii* Gertsch, male (from Saskatchewan: Hanley), left palp. 73–75, terminal part of bulbus in ventral (73), retrolateral (74), and frontal (75) view. 76, tegulum with tegular apophysis in ventral view. *ba.pr*, basal process of palea; *cond*, conductor; *emb*, embolus; *pal*, palea; *stg*, subtegulum; *tg*, tegulum; *tg.ap*, tegular apophysis; *tl.ap*, terminal apophysis of palea. Scale line (applies to all) 300 µm.



FIGURES 77–82. *Pardosa tesquorum* (Odenwall) (male and female from Yukon Territory: Lake Kluane). 77, left bulbus. 78, embolus of left palp, frontal view. 79, left terminal part, ventral view. 80, left male palp (patella, tibia and cymbium), dorsal view. 81, 82, epigyne in ventral (81) and dorsal (82) view. Scale lines 0.1 mm.

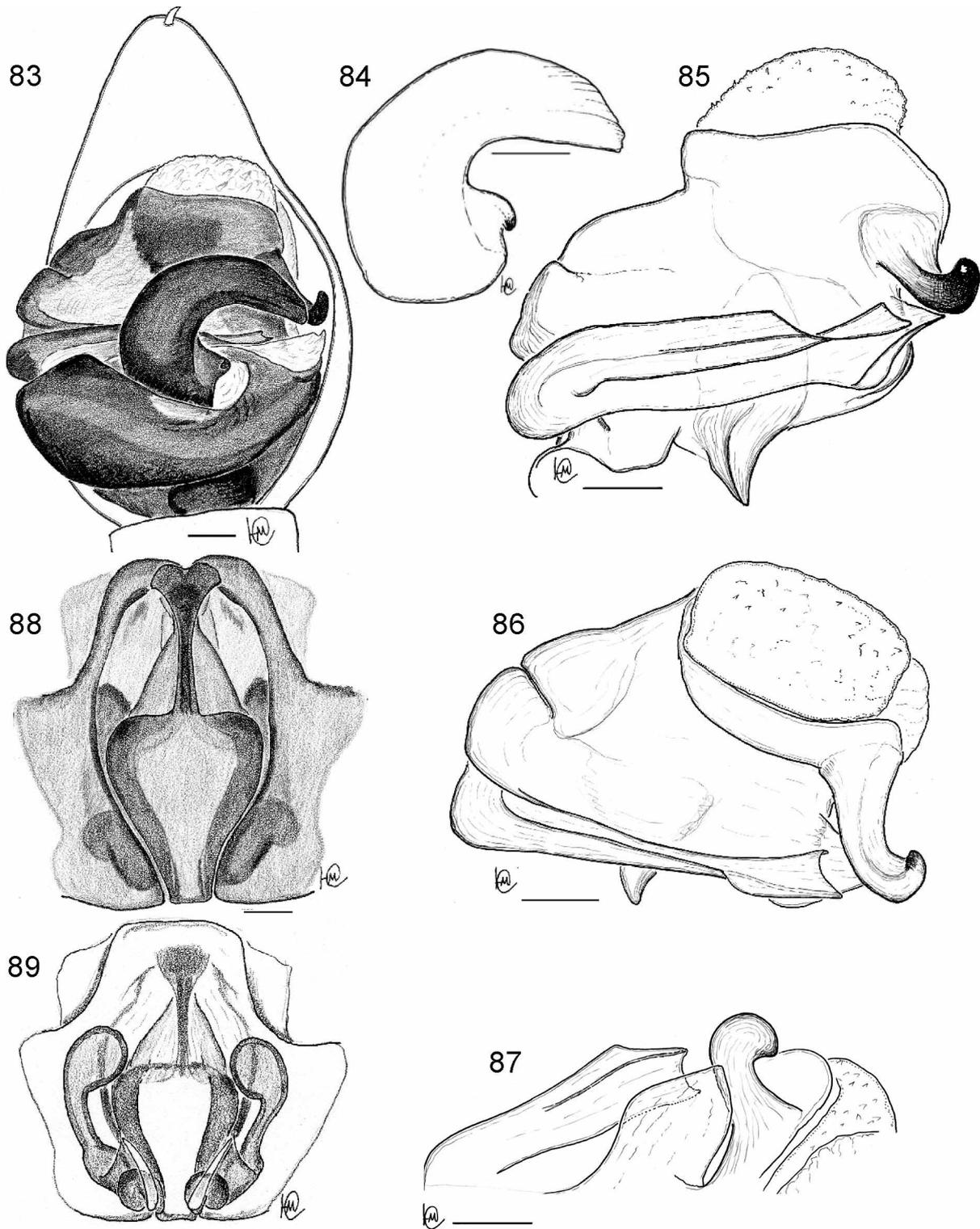
Diagnosis. Males can be distinguished from other members of the group by the configuration of the large tegular apophysis (Figs 83, 93) and the distinct, protruding, hooked terminal apophysis (Figs 85, 90). Females can be easily recognized by the amphoral shape of the epigynal septum (Figs 21, 88), which does not fill out the epigynal cavities in the anterior half (cf. *P. zyuzini* **sp. nov.**) and the somewhat protruding condition of the anterior part of the septal stem.

Description. Male (from Sichuan, Hongyuan County). Total length 4.9. Carapace 2.65 long, 1.90 wide.

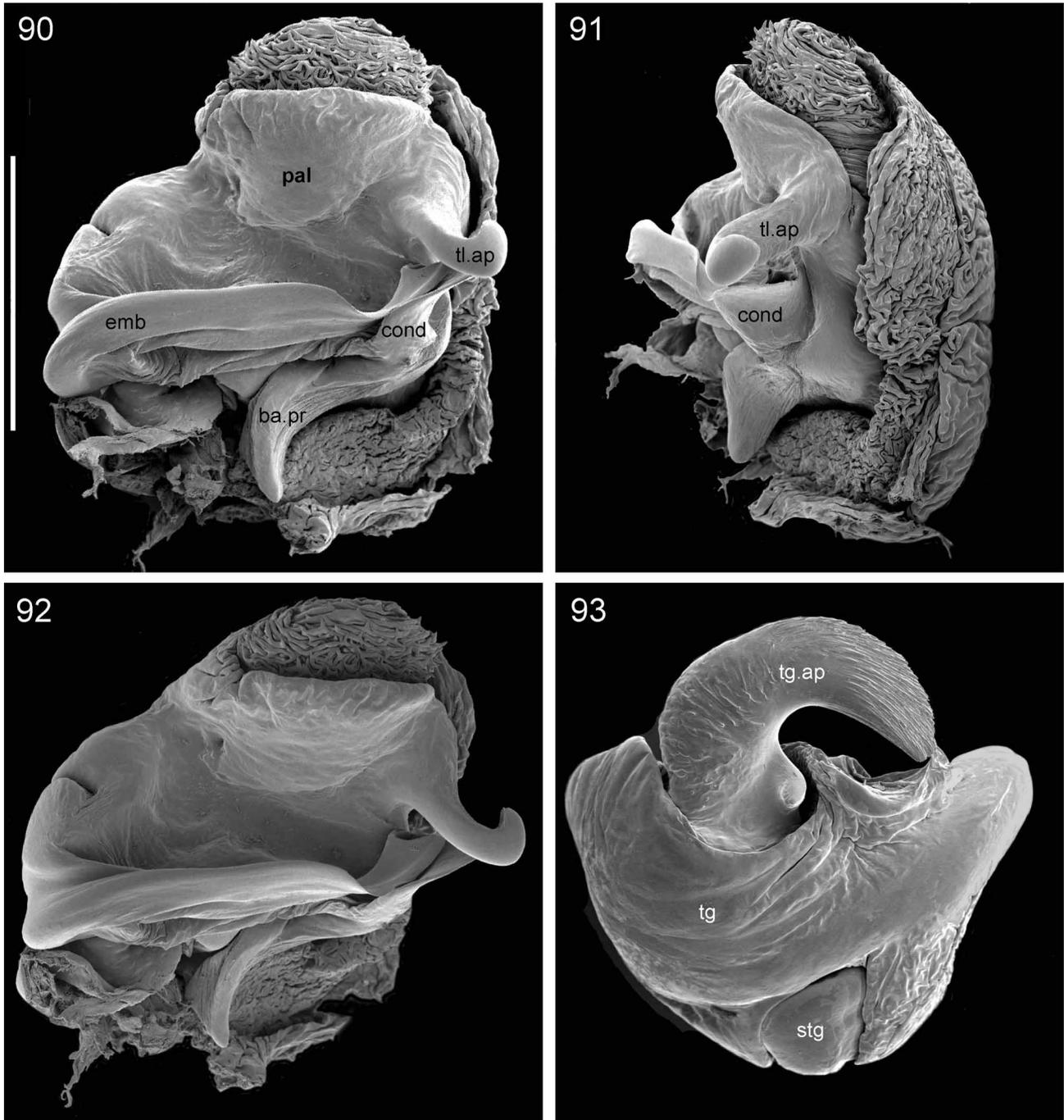
Prosoma. Carapace (Fig. 5) dusky brown with yellowish brown median band in thoracic part and yellow brown lateral, unbroken bands. Thoracic part with recumbent black hairs, in bands also with whitish hairs. Clypeus dusky yellowish. Chelicerae dusky yellowish with greyish streaks; hairs dark; retromargin with 2 teeth (in one male one chelicera with 2 the other with 3 teeth). Sternum yellowish grey with numerous light hairs and a few dark, erect ones.

Eyes. Width of row I 40 (slightly procurved when seen from in front), row II 61, row III 80, row II–III 59. Diameter of AME 9, ALE 8, PME 23, PLE 18. Distance between AMEs 6, between AME and ALE 2.

Opisthosoma. Dorsum (Fig. 5) greyish, with dark-bordered greyish-brown lanceolate stripe. Longitudinal greyish-yellow band encompassing lanceolate stripe, posteriorly formed by pairs of greyish yellow spots or, when confluent, bars. Each spot laterad dark greyish and with a stout, erect black hair in the middle. Dorsum with black hairs and, in lighter parts, with recumbent light hairs. Venter light greyish brown with recumbent light hairs.



FIGURES 83–89. *Pardosa tesquorumoides* Song & Yu (male and female from Sichuan). 83, left male palp, ventral view. 84, left tegular apophysis, ventral view. 85–86, left terminal part of bulbus in ventral (85), frontal (86) and rear (87) view. 88–89, epigyne in ventral (88) and dorsal (89) view. Scale lines 0.1 mm.



FIGURES 90–93. *Pardosa tesquorumoides* Song & Yu (from Sichuan), left male palp. 90–92, terminal part of bulbus in ventral (90), retrolateral (91), and ventro-frontal (92) view. 93, tegulum with tegular apophysis in ventral view. *ba.pr*, basal process of palea; *cond*, conductor; *emb*, embolus; *pal*, palea; *stg*, subtegulum; *tg*, tegulum; *tg.ap*, tegular apophysis; *tl.ap*, terminal apophysis of palea. Scale line (applies to all) 300 μ m.

Legs (Table 1). Yellowish brown. Fe dorsally more or less sooty with longitudinal yellowish markings. Leg I without deviant pilosity. TiI with 2 retrolateral spines.

Palp (Figs 83–87, 90–93). Pt 0.50, Ti 0.45, Cy 1.05. Fe and Ti sooty brown with longitudinal dusky yellowish streaks, Pt dorsally dusky yellowish, Cy in basal part sooty brown, in distal part brown. All segments with dark hairs. Tegular apophysis stout, long and evenly curved (Figs 83, 93). Terminal part with hooked terminal apophysis (Figs 85–87, 90–92). Conductor as in Figs 90–91. Basal paleal process small, triangle-shaped (Figs 85, 90–91). Embolus laminar, grooved along its length, ventral edge turned forwards except distally, tip truncated with shallow concavity (Figs 85–86, 90, 92).

Female (from Sichuan, Kangding County). Total length 5.4. Carapace 2.70 long, 2.05 wide.

Prosoma and opisthosoma (Fig. 6). Coloration lighter and pattern more contrasting than in the male. Carapace with bright yellow median band and yellow unbroken lateral bands. Clypeus yellow. Chelicerae yellow with slightly darker veins; retromargin with 2 teeth. Abdomen patterned as in the male, lanceolate stripe, median band (incl. spots) and venter yellowish.

Eyes. Width of row I 41 (slightly procurved when seen from in front), row II 56, row III 74, row II–III 56. Diameter of AME 9, ALE 8, PME 21, PLE 17. Distance between AMEs 6, between AME and ALE 2.

Legs (Table 1). Pt–Ta light brownish with very faint traces of annulation. Fe yellowish brown with dark blotches dorsally and very faint greyish tinge laterally and ventrally.

Epigyne (Figs 21, 27, 88–89). Septum elongated, amphoral-shaped, narrow in anterior half, abruptly widened in posterior half. Edges of lateral elevations marked. Spermathecae ovoid (Fig. 89).

Size variation. Carapace length: males 2.45–2.65 (n=3), females 2.55–2.85 (n=4).

Habitat. Not known.

Distribution (Fig. 116). According to Song *et al.* (1999, 2001), *P. tesquorumoides* should occur in Mongolia and China (Inner Mongolia, Beijing, Xinjiang, Qinghai, Tibet, Sichuan). However, this species seems to be confined to high altitudes, so records from Xinjiang and Beijing are questionable and need confirmation. Records of this species from Xinjiang may refer to *P. zyuzini* **sp. nov.** Records from Inner Mongolia (Song *et al.* 1999) and from Mongolia (Song & Yu 1990) probably refer to a misinterpretation of Schenkel's illustration (1963, fig. 208b), which in fact shows an epigyne of *P. zyuzini* **sp. nov.**

***Pardosa zyuzini* sp. nov.**

Figs 7–8, 22–23, 28, 31, 94–106, 116

Pardosa paratesquorum (misidentification, in part): Schenkel 1963: 360, fig. 208b (♀, not ♂).

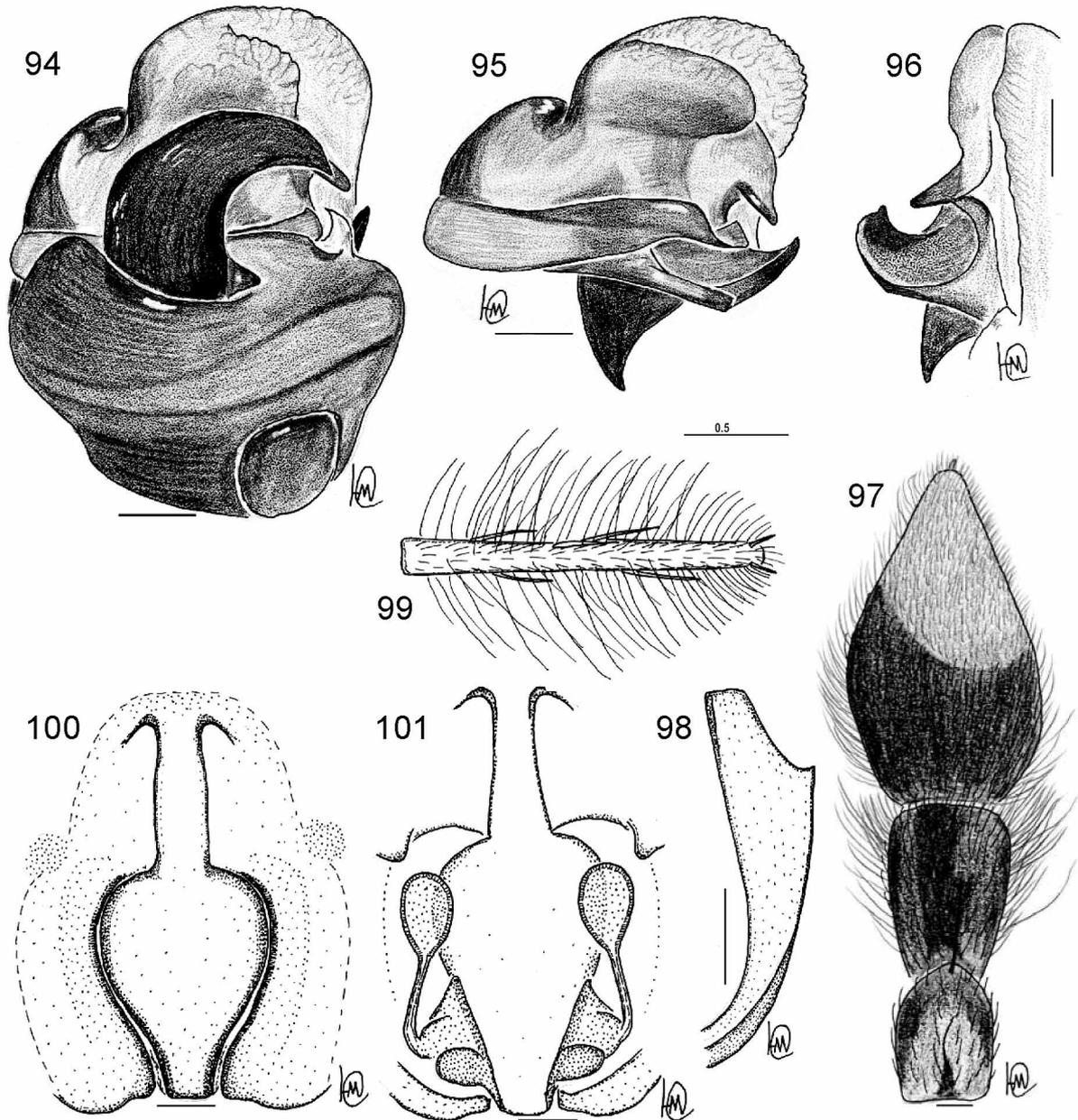
Pardosa paratesquorum (misidentification): Logunov & Marusik 1995: 115; Marusik *et al.* 1996: 35–36; Logunov *et al.* 1998: 139; Marusik & Logunov 1999: 247.

Pardosa cf. *paratesquorum*: Marusik *et al.* 2000: 84; Marusik & Buchar 2003: 157; Logunov & Marusik 2004: 63.

Pardosa sp. 2: Marusik & Logunov 2009: 151.

Type material. *Holotype* ♂ and *allotype* ♀ from MONGOLIA, Övörkhangai Aimag, Zuunbayan-Ulaan Somon, Zamtyn Davaa (46°43'N 102°51'E), 2000 m, 14–18 June 1997 (Y.M. Marusik) in ZMMU. – **Paratypes.** MONGOLIA. *Övörkhangai Aimag*: same data as holotype (CAS, ISEA, IZAS, NHRS, ZMMU), 110♂ 44♀. *Bayankhongor Aimag*: Gurvanbulag Somon, Lake Khokh-Nuur (47°32'N 98°32'E), 2600 m, 7–10 June 1997 (Y.M., IBPN), 10♂. Assonge, Tola (Tuul) River, 1909 (du Chazaud, MNHN), 1♀. *Arkhangai Aimag*: Uu-bulan, Saikhany saravi, 24 June 1976 (Tsug Enkhtuyaa, IBPN), 1♂ 1♀. – RUSSIA. *Altai*: 8 km S of Chagan-Uzun Village (50°04'N, 88°24'E), 1800m, grassy bank of Chuya River, 13 June 2009 (A.A. Fomichev, ISEA), 2♀; 2 km SE of Kosh-Agach, 27 June 1996 (A. & R. Dudko, ISEA), 1♂; 70–75 km W of Kosh-Agach, 40–45 km W of Bel'tir, Taltura (Chagan-Uzun) River canyon, 2300–2500 m, mountain stony steppe, 26–28 June 1999 (V.V. Glupov, ISEA), 2♂ 1♀; Kosh-Agach Village (50°01'N, 88°38'E), 1800m, saline swamps, 13 July 2009 (A.A. Fomichev, ISEA), 1♂ 2♀. *Tuva*: Mongun-Taiga Distr., 12 km downstream from Mugur-Aksy by Kargy River, 1800 m, river bank, 14 June 1989 (D.L., ISEA: SZM 001.1505), 2♂ 1♀; SE part of Kyzyl, steppe, 22–24 July 1996 (Y.M., IBPN), 3♂ 2♀; Ovyur Distr, pass between Sagly and Onachy rivers, 2200 m, ca 20–25 km W of Sagly Village, wet habitats, 13 June 1989 (D.L., ISEA: SZM 001.1506), 2♂; Ulug-Khem Dist., 6–7 km E of Choduraa, Chulaanych site, near creek, 10 May 1990 (D.L., ISEA: SZM 001.1514), 14♂; Tere-Khol' Lake, Sharlaa stand and around (50°1.47'N 95°3.45'E), 1050 m, 6–14 July 1996 (Y.M., ISEA), 19♂ 6♀; 30–35 km W of Erzin, Shara-Nur Lake (50°12'N, 94°32'E), 900 m, 8 June 1995 (Y.M., ISEA: SZM 001.1512), 5♂ 7♀; Erzin Distr., 20 km NW of Erzin Village, Dus-Khol' Lake, Tes-Khem River, 800 m, 31 May 1989 (D.L., ISEA: SZM 001.1515 & 001.1517), 39♂ 14♀; ~20 km WNW of Erzin, Dus-Khol' Lake shore (50°19'N, 95°01'E), among and under stones, 1050 m, 10 June 1992 (D.L., ISEA: SZM 001.1511), 1♀; Sangelen Mt. Range, nr Moren Village (50°20.53'N 95°22.92'E), 1150 m, pitfall traps in steppe, 14–18 July 1996 (D.O., IBPN), 130♂ 40♀; Sangelen Mt. Range, middle flow of Dzhen-Aryk Creek (50°24.31'N 95°26.28'E), 1450 m, pitfall traps, 14–18 July 1996 (Y.M. & D.O., IBPN), 9♂ 1♀. 3–5 km S of Erzin Village, Tes-Khem River valley, birch-willow-*Caragana* forest, 1100 m, 14 August 1989 (D.L., ISEA: SZM 001.1507), 2♀;

Erzin Distr., 3–5 km S of Erzin Village, Tes-Khem River valley 1100m, dried up bog, near water, 14–15 August 1989 (D.L., ISEA: SZM 001.1513), 16♀; Tes-Khem River valley (50°19'N, 95°01'E), 10.06.1995 (Y.M., ISEA 001.1510), 3♂ 2♀; Khol'-Oozhu River valley (50°41'N, 95°13'E), 16.06.1995, (Y.M., ISEA: SZM 001.1508), 3♂. *Chita Area*: Kyra Dist., ca 3 km E of Kyra Village, Kyra River valley, wet meadow, 850 m, 30 May 1991 (D.L., ISEA: SZM 001.1509), 5♂. Additional paratypes from Russia (sub *Pardosa paratesquorum*) are mentioned in the papers referred to above.

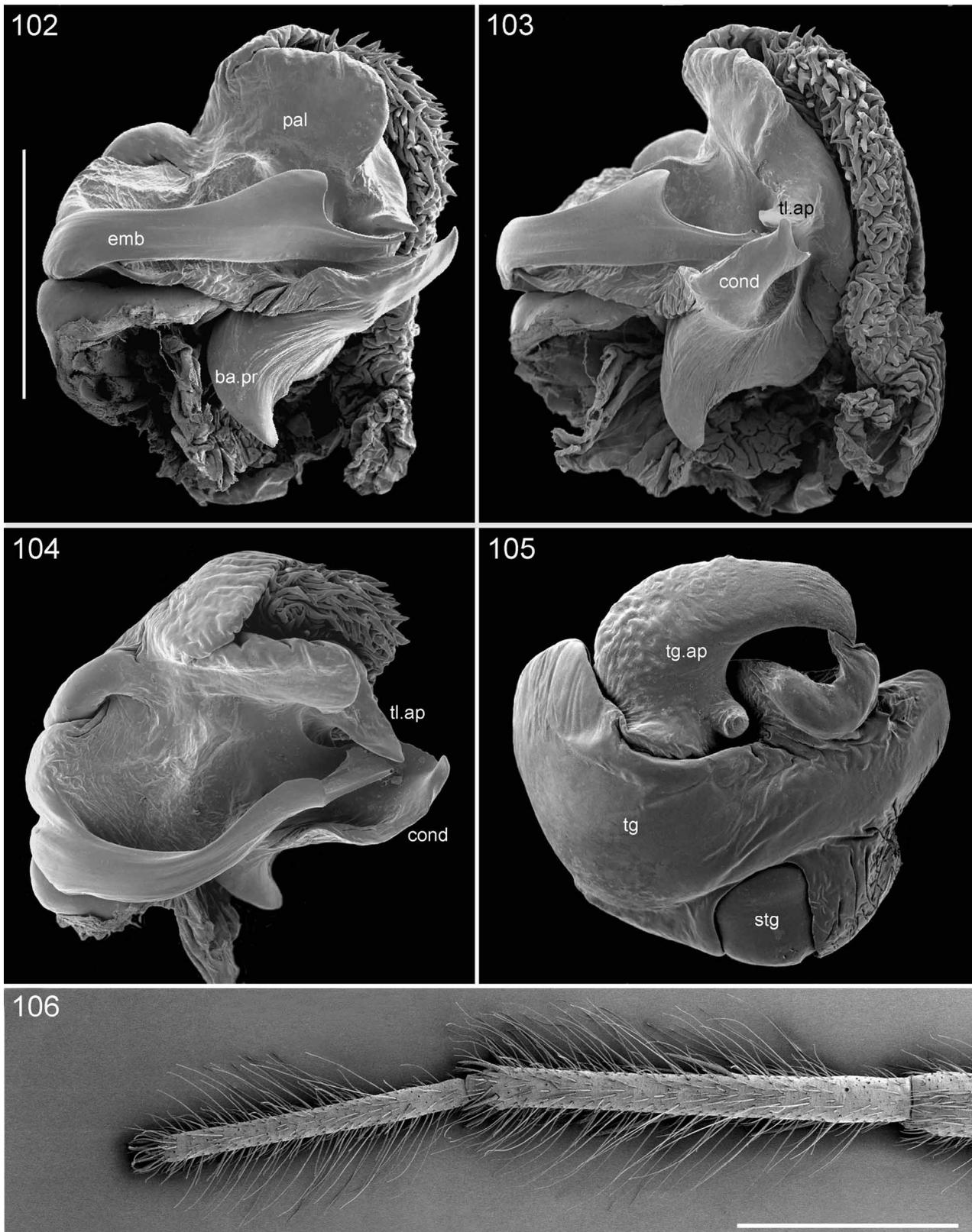


FIGURES 94–101. *Pardosa zyuzini* sp. nov. 94, left bulbus, ventral view. 95–96, left terminal part of bulbus in ventral (95) and retrolateral (96) view. 97, left male palp (patella, tibia and cymbium), dorsal view. 98, embolus of left palp, frontal view. 99, male metatarsus I. 100–101, epigyne in ventral (100) and dorsal (101) view. Scale lines 0.1 mm (94–98, 100–102), 0.5 mm (99).

Etymology. The specific name is a patronym in honor of our colleague and friend Alexey A. Zyuzin (Almaty) in recognition of his contribution to the knowledge of Palearctic wolf spiders.

Remark. The species described by Schenkel (1963) as *Pardosa paratesquorum* was based on a few males and a single female. The material originated from China (Gansu) and Mongolia. Schenkel (1963) explicitly selected a male as the type (=holotype), regrettably without locality information, and expressed doubts as to whether the female (from Mongolia) was conspecific with the described male. From the fresh material now available to us, and

after examining a part of the original material of *P. paratesquorum* (1♂, 1♀), it is evident that the female is not con-specific with the male but belongs to *P. zyuzini* **sp. nov.** as described here.



FIGURES 102–106. *Pardosa zyuzini* **sp. nov.**, male (from type locality). 99, terminal part of left bulbus in ventral (102), retro-lateral (103) and ventro-frontal (104) view. 105, left tegulum with tegular apophysis in ventral view. 106, tarsus and metatarsus of first leg in dorsal view. *ba.pr*, basal process of palea; *cond*, conductor; *emb*, embolus; *pal*, palea; *stg*, subtegulum; *tg*, tegulum; *tg.ap*, tegular apophysis; *tl.ap*, terminal apophysis of palea. Scale lines 300 μ m (102–105), 1000 μ m (106).

Diagnosis. Males can be distinguished from other members of the *tesquorum* group by long hairs on metatarsus and tarsus I (Fig. 106). In addition, males are distinguished by the widened embolus abruptly narrowing in apical part before truncate apex (Figs 98, 102), as well as the shape of the conductor and terminal apophysis (Figs 95, 96, 102–104). Females can be recognised by the amphoral shape of the epigynal septum, which fills out the epigynal cavities (cf. *P. tesquorumoides*) (Figs 22–23, 28).

Description. Male (holotype). Total length 5.4. Carapace 2.85 long, 2.05 wide.

Prosoma. Carapace (Fig. 7) blackish-brown with yellowish narrow median band in thoracic part and yellowish unbroken lateral bands, latter often darkened and hardly traceable. Thoracic part with recumbent black pubescence, in median band in addition with whitish hairs. Clypeus yellowish, at least in part (more or less sooty). Chelicerae yellow, more or less sooty, with sooty longitudinal veins, retromargin with 2 teeth. Sternum sooty brown with narrow lighter streak in front (may be absent).

Eyes. Width of row I 43 (slightly procurved when seen from in front), row II 63, row III 85, row II–III 61. Diameter of AME 10, ALE 8, PME 23, PLE 18. Distance between AMEs 8, between AME and ALE 2.

Opisthosoma. Dorsum (Fig. 7) dark greyish-brown with yellowish lanceolate spot followed rearwards by a series of yellowish spots in pairs (often obscured), each pair sometimes joined to a transverse bar, each spot with a dark dot in the middle (pattern darkened and obscured in presumably older males). Venter yellowish to dark greyish with light recumbent pubescence and scattered, more erect dark hairs.

Legs (Table 1). Yellowish. Femora, except distally, more or less sooty, Fe III and IV sometimes with pseudoannulation. Patellae and tibiae sometimes with faint darker longitudinal streaks or blotches dorsally. Mt+Ta I with numerous thin, long, dark, erect hairs (Figs 99, 106), notably laterally (fewer of these hairs also present in Mt+Ta II). Ti I with one retrolateral spine in distal half.

Palp (Figs 94–98, 102–105): Pt 0.50, Ti 0.45, Cy 1.05. Palp dark brownish-grey, more or less suffused with black and with dark pubescence, patella dorsally largely yellowish brown; cymbium dark in proximal part, lighter distally (Fig. 97). Tegular apophysis stout, rugose, curved retrolaterad, with small but distinct hooked process basally (Figs 94, 105). Conductor prominent, terminating in a sclerotized process slightly bent forwards (Figs 95–96, 102–103). Terminal apophysis directed obliquely ventrad, continuing into a sclerite that surrounds the conductor and extends backwards, ending in a sclerotized, triangular basal paleal process (Figs 95–96, 102–103). Embolus laminar, grooved, ventral edge turned forward; widening in distal half, then abruptly narrowing, tip truncated (Figs 95, 98, 102–104).

Female (allotype). Total length 5.3. Carapace 2.70 long, 1.95 wide.

Prosoma and opisthosoma (Fig. 8). Lighter than in male. Carapace brown with bright yellow median band distinctly widening in postocular area. Lateral bands bright yellow, jagged. Clypeus and chelicerae bright yellow, latter with thin brownish streaks. Abdomen with more contrasting pattern than in male. Palp yellow with darker blotches.

Eyes. Width of row I 41 (slightly procurved when seen from in front), row II 58, row III 79, row II–III 56. Diameter of AME 9, ALE 8, PME 20, PLE 16. Distance between AMEs 6, between AME and ALE 2.

Legs (Table 1). Yellow with dark streaks and blotches dorsally (pseudoannulation-like in femora).

Epigyne (Figs 22–23, 28, 31, 100–101). Comparatively narrow, with two separated anterior pockets and with amphora-like septum covering epigyneal cavities. Receptacles long, more or less parallel, with spermathecae ovoid (Figs 31, 101).

Size variation. Carapace length: males 2.50–2.95 (n=10), females 2.50–2.90 (n=10).

Habitat. In Mongolia the species has been collected in lake shores (lowlands below 1100 m), pebbly lake shores (highland 2500 m), pebbly river banks and adjacent overgrazed pasture, overgrazed swampy meadows, within stones in dry river beds, pitfall traps in forest opening (Marusik & Logunov 1999).

Distribution (Fig. 116). Mongolia and Russia (Siberia: Altai, Tuva, Chita Area). This species may occur in China (Xinjiang), which borders Altai.

***Pardosa paratesquorum* Schenkel, 1963**

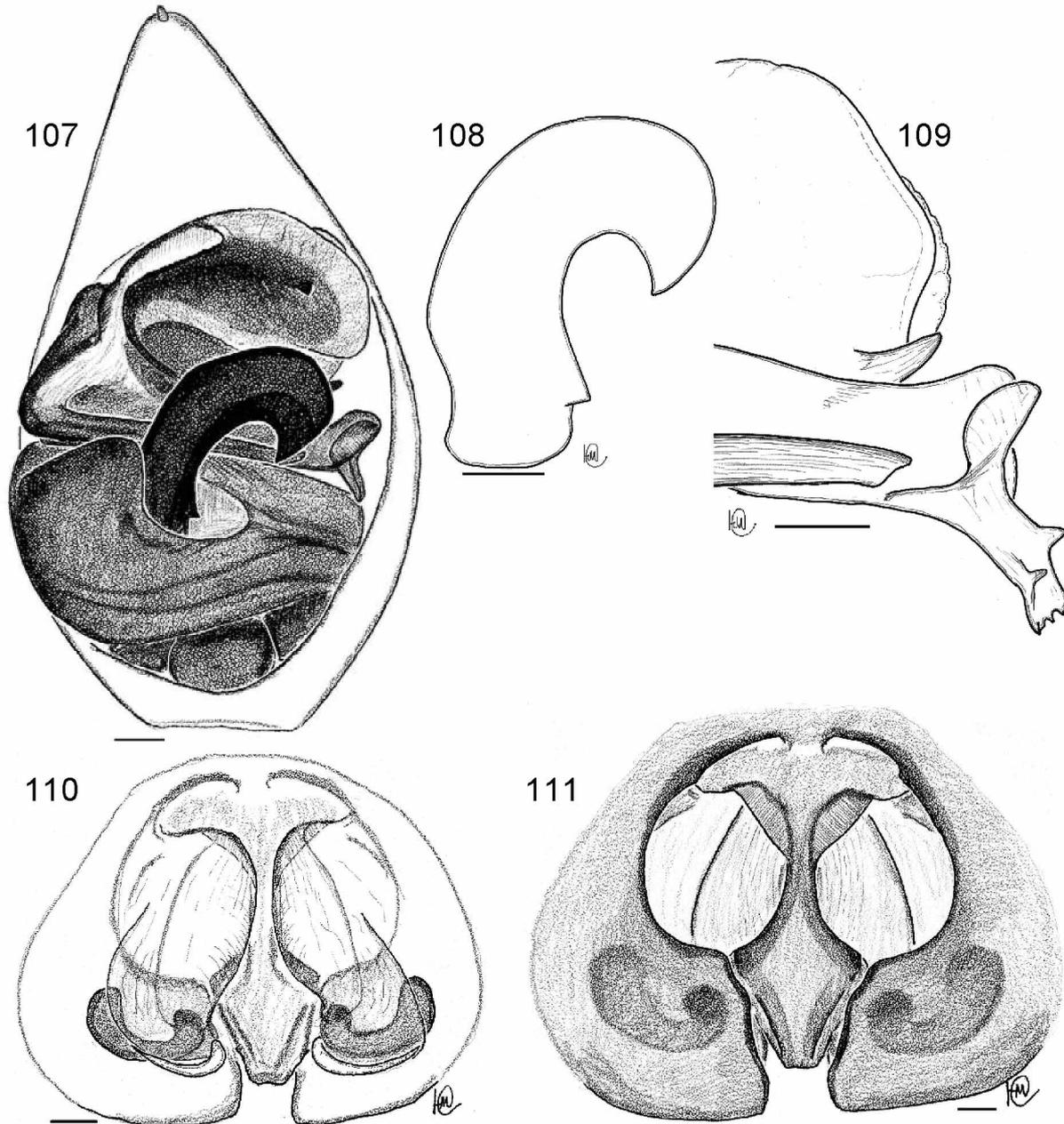
Figs 4, 24, 107–115, 116

Pardosa paratesquorum Schenkel, 1963: 360, fig. 208a (♂, not ♀); Yin *et al.* 1997: 204, figs 95a–f (♂♀); Song *et al.* 1999: 333, figs 197C, I (♀♂); Song *et al.* 2001: 254, figs 158A–E (♀♂).

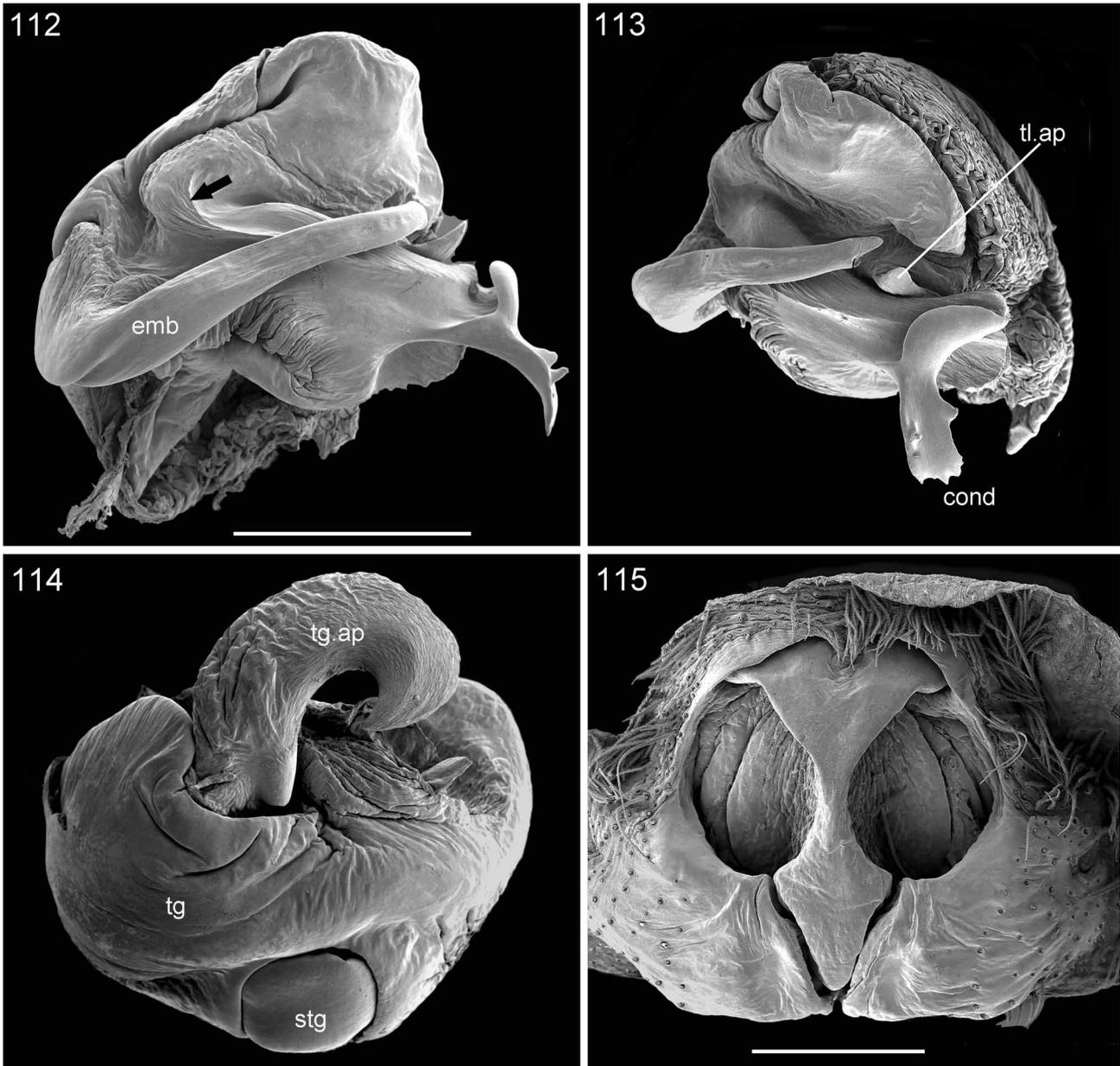
Pardosa daqingshanica Tang, Urita & Song, 1994: 11–13, figs 1–4 (♂♀). **Syn. n.**

Type material. *Pardosa paratesquorum*: **Lectotype** ♂ without specified locality, in MNHN, examined and here designated (see Comments below).

Pardosa daqingshanica: **Holotype** ♀ from CHINA, Inner Mongolia, Daqing Shan Mts. Originally placed in Dept of Zoology, Inner Mongolia Normal University, Huhhot, China, now in IZAS, not examined. **Paratypes** 2♂ 1♀ from CHINA, Inner Mongolia, Mt. Daqing Shan (40°36'N 110°42'E), 25 May 1993 (G. Tang), in IZAS, examined.



FIGURES 107–111. *Pardosa paratesquorum* Schenkel. 107, left male palp, ventral view (lectotype). 108, left tegular apophysis, ventral view. 109, retrolateral portion of terminal part of bulbus with distal part of conductor in ventral view. 110–111, epigyne in dorsal (110) and ventral (111) view. Scale lines 0.1 mm.



FIGURES 112–115. *Pardosa paratesquorum* Schenkel (male and female from Inner Mongolia: Mt Daqing Shan). 112–113, terminal part of left bulbus in ventral (112) and frontal (113) view. 114, left tegulum with tegular apophysis in ventral view. 115, epigyne in ventral view. *cond*, conductor; *emb*, embolus; *stg*, subtegulum; *tg*, tegulum; *tg.ap*, tegular apophysis; *tl.ap*, terminal apophysis of palea; *arrow* points at sclerotized ridge. Scale lines 300 μ m (same for 112–114).

Other material examined. CHINA. *Shanxi*: Hongtong County, Mt. Huo Shan (36°24'N 111°48'E), 12 May 1988 (W. Huang, IZAS), 1♂ 2♀.

Comments. This species is excluded from the *tesquorum* group because of lacking a basally directed paleal process as well as by deviant conformation of embolus and conductor. It is redescribed here because of previous confusion.

As stated above, the female that was originally (Schenkel 1963), with some doubt, assigned to *P. paratesquorum* in fact belongs to another species (here described as *P. zyuzini* **sp. nov.**). Yu *et al.* (1987) already described and illustrated the proper female of *P. paratesquorum*.

The type material of *P. paratesquorum* in MNHN consists of two glass vials, one with a male having the right palp detached and the left palp intact, as well as another with a female having the epigyne intact. The detached male palp has now been studied (Fig. 107) and found to be consistent with Schenkel's (1963, fig. 208a) illustration of *P. paratesquorum*. The male is placed in a small glass vial with a label "35". This vial is kept in a larger glass

vial with labels "Pardosa paratesquorum Schkl Type", "Assongue du Chajaud" [sic, recte: "Chazaud"], "Potanin 35", and "Schenkel det 1946". The labels in the vial indicate two different places of origin, cf. Schenkel 1963, pointing at some confusion in the material: Assongue is likely to be situated at river Tuul in Mongolia, where one male and the single (non-conspecific) female were captured, while "Potanin 35" is likely to refer to a locality in Gansu, China (Schenkel 1963). It is probable that the label "Assongue du Chajaud" has been misplaced and should belong to the vial with the female specimen. The latter vial now only contains the label "Pardosa paratesquorum Schkl Type (♀)". The male we examined certainly belongs to the original material, and we designate it as the lectotype of *P. paratesquorum* Schenkel.

Diagnosis. Males are distinguished by the configuration of the bulbus, notably the complex shape of the apical part of the conductor (Fig. 109); females by the configuration of the epigyne (Fig. 111).

Description. Male (from Inner Mongolia). Total length 5.8. Carapace 3.05 long, 2.30 wide.

Prosoma. Carapace (Fig. 4) sooty brown with lighter median band and lateral bands broken into lighter patches. Thoracic part with recumbent dark pubescence (light hairs seem to have gone in the specimens at hand). Clypeus yellowish. Chelicerae brownish with sooty streaks, inner side lighter, retromargin with 3 teeth (in lectotype the inner and middle one nearly fused). Sternum brownish grey to blackish.

Eyes. Width of row I 50 (slightly procurved when seen from in front), row II 72, row III 94, row II–III 70. Diameter of AME 10, ALE 9, PME 25, PLE 22. Distance between AMEs 8, between AME and ALE 2.

Opisthosoma. Dorsum (Fig. 4) more or less sooty brown, with lighter brown lanceolate stripe followed by a series of transversally arranged light patches, posterior confluent to bars, each patch with a black dot. Venter light to greyish brown with light recumbent pubescence.

Legs (Table 1). Yellow with sooty pseudoannulation dorsally on all femora (Fe I with confluent sooty patch dorsally in proximal half). Hairiness in leg I similar to that of the other legs. Ti I retrolaterally with two spines or only one in proximal half.

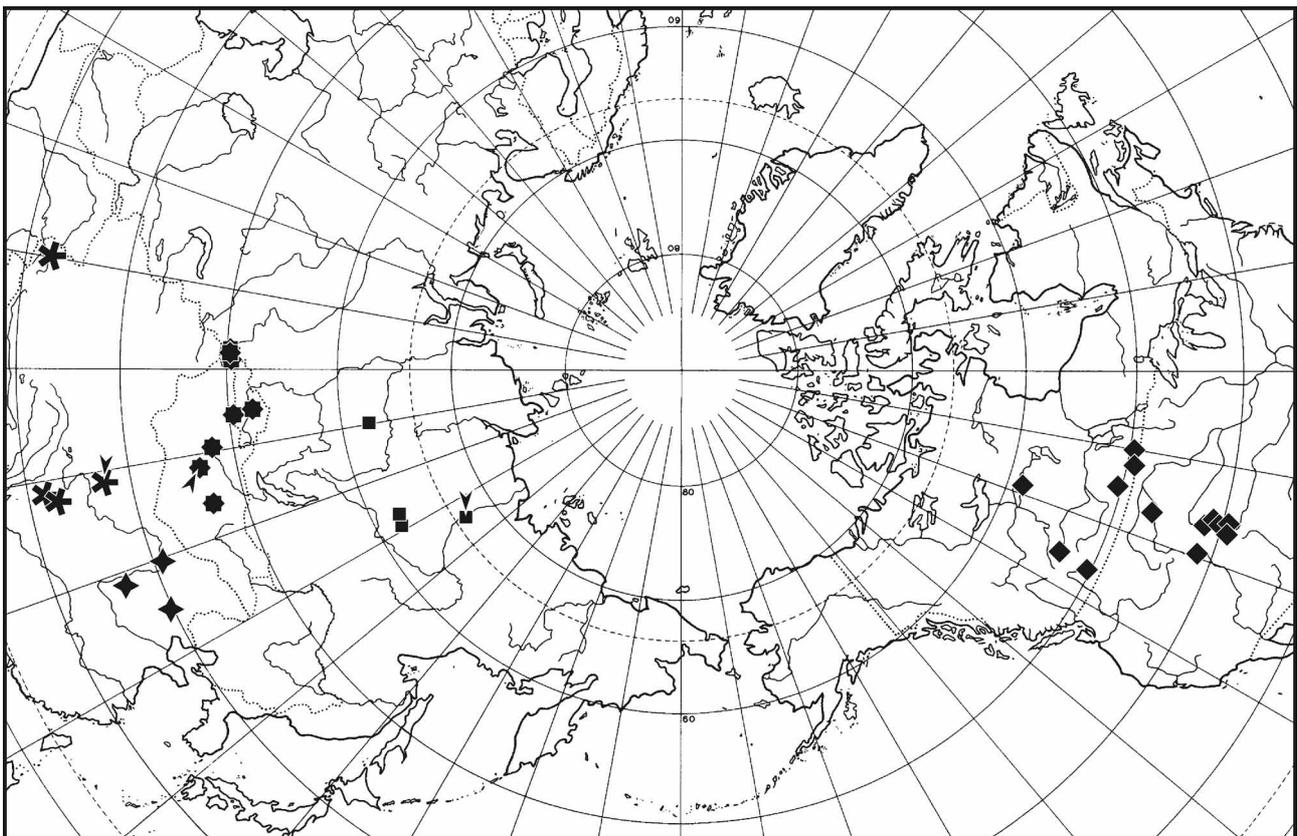


FIGURE 116. Distribution of *Pardosa eskovi* sp. nov. (■), *P. mulaiki* (◆), *P. paratesquorum* (◈), *P. tesquorumoides* (★) and *P. zyuzini* sp. nov. (★). One symbol may refer to more than one collecting locality. Arrows indicate type localities (if known). For *P. eskovi* sp. nov. and *P. zyuzini* sp. nov. known localities are shown. For *P. tesquorumoides*, *P. mulaiki* only selected literature records are shown, and for *P. paratesquorum* only localities from which we examined material are shown.

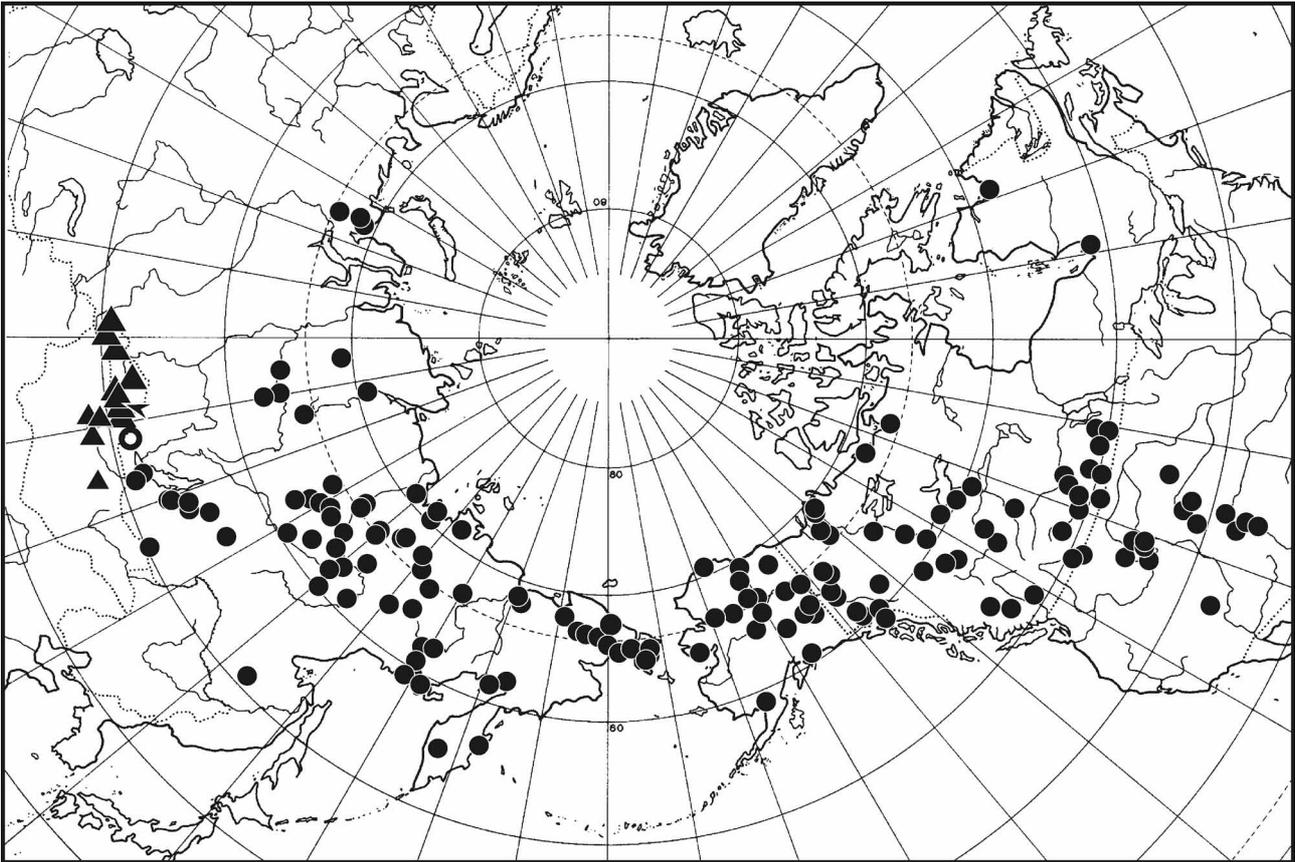


FIGURE 117. Distribution of *Pardosa logunovi* sp. nov. (▲) and *P. tesquorum* (●). One symbol may refer to more than one collecting locality. Arrow indicates type locality for *P. logunovi* sp. nov., open ring indicates doubtful record in Izmailova (1989).

Palp (Figs 107–109, 112–114). Pt 0.60, Ti 0.60, Cy 1.35. Femur and tibia mostly sooty with dark yellowish longitudinal streaks. Patella dorsally mostly yellowish. Cymbium dark brownish, distally lighter. Tibia with dense dark pubescence. Tegular apophysis stout, evenly and strongly bent backwards (Figs 108, 114). Terminal part with curved, strongly sclerotized ridge in the palea (Fig. 112, *arrow*), continuing into conductor. Latter with uniquely complex apical portion (Figs 109, 112–113). Embolus long and comparatively stout (Figs 112–113).

Female (from Shanxi). Total length 7.0. Carapace 3.80 long, 2.90 wide.

Prosoma and opisthosoma. Carapace brownish with lighter median band narrowing at thoracic/cephalic junction, then widening in postocular area. Light lateral bands broken into patches, posterior one longest. Opisthosoma dorsally dark greyish, lanceolate stripe brownish.

Eyes. Width of row I 59 (slightly procurved when seen from in front), row II 90, row III 120, row II–III 87. Diameter of AME 12, ALE 11, PME 36, PLE 30. Distance between AMEs 8, between AME and ALE 3.

Legs (Table 1). Yellowish-brown. Femora with darker pseudoannulation. Ti retrolaterally with one spine in proximal half.

Epigyne (Figs 110–111, 115). Cavity deep, divided by septum. Anterior part of septum wider than posterior. Receptacula unusually short. Spermathecae not reaching level of cavity.

Size variation. Carapace length: males 2.95–3.10 (n=3), females 3.40–3.80 (n=3).

Habitat. Not known.

Distribution (Fig. 116). China (Inner Mongolia, Beijing, Hebei, Shanxi, Gansu, Qinghai (Song *et al.* 2001)). Because of previous confusion with *P. zyuzini* sp. nov. some records need to be verified.

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References

- Dondale, C.D. & Redner, J.H. (1986) *The coloradensis, xerampelina, lapponica*, and *tesquorum* groups of the genus *Pardosa* (Araneae: Lycosidae) in North America. *Canadian Entomologist*, 118, 815–835.
- Dondale, C.D. & Redner, J.H. (1990) *The Wolf Spiders, Nursery Web Spiders, and Lynx Spiders of Canada and Alaska (Araneae: Lycosidae, Pisauridae, and Oxyopidae)*. The Insects and Arachnids of Canada. Part 17. Agriculture Canada, Ottawa. Publication 1856, 383 pp.
- Emerton, J.H. (1915) Canadian spiders, II. *Transactions of the Connecticut Academy of Arts and Sciences*, 20, 145–160.
- Eskov, K.Y. (1988) [Spiders (Aranei) of Central Siberia.] In: Rogacheva, E. V. (ed.) *Papers on the Fauna of Central Siberia and Adjacent Regions of Mongolia*. A. N. Severtsov Institute of Evolutionary Animal Morphology and Ecology, Moscow, pp. 101–155 (In Russian with English summary).
- Eskov, K.Y. & Marusik, Y.M. (1995) On the spiders from Saur Mt. Range, Eastern Kazakhstan (Arachnida: Araneae). *Beiträge zur Araneologie*, 4 [1994], 55–94.
- Gertsch, W.J. (1934a) Notes on American Lycosidae. *American Museum Novitates*, 693, 1–25.
- Hu, J.L. (2001) *Spiders in Qinghai-Tibet Plateau of China*. Henan Science and Technology Publishing House, 658 pp. (In Chinese with English abstract).
- Izmailova, M.V. (1989) [The spider fauna of southern East Siberia.] Irkutsk University Press, Irkutsk, 180 pp. (In Russian).
- Kronstedt, T. (1975) Studies on species of Holarctic *Pardosa* groups (Araneae, Lycosidae). I. Redescription of *Pardosa albo-maculata* Emerton and description of two new species from North America, with comments on some taxonomic characters. *Zoologica Scripta*, 4, 217–228.
- Kronstedt, T. (1988) Studies on species of Holarctic *Pardosa* groups (Araneae, Lycosidae). IV. Redescription of *Pardosa tetonensis* Gertsch and descriptions of two new species from the western United States. *Entomologica Scandinavica*, 18, 409–424.
- Kronstedt, T. 2010. *Draposa*, a new wolf spider genus from South and Southeast Asia (Araneae: Lycosidae). *Zootaxa*, 2637, 31–54.
- Kulczyński, W. (1908) Araneae et Oribatidae. Expeditionum rossicarum in insulas Novo-Sibiricas annis 1885–1886 et 1900–1903 susceptarum. *Zapiski imperatorskoi Akademii nauk St. Petersburg*, (8) 18 (7), 1–97.
- Lobanova, T.V. (1985) [Materials on the fauna of wolf spiders (Aranei, Lycosidae) of Amur Area.] In: *Chlenistonogiye Sibiri i Dal'nego Vostoka*. Nauka Press Siberian Branch, Novosibirsk, pp. 10–13 (In Russian).
- Logunov, D.V. & Marusik, Y.M. (1995) Spiders of the family Lycosidae (Aranei) from the Sokhondo Reserve (Chita area, east Siberia). *Beiträge zur Araneologie*, 4 [1994], 109–122.
- Logunov, D.V. & Marusik, Y.M. (2004) [Order Araneae – spiders.] In: Dubatolov, V.V. et al. *Biodiversity of the Sokhondo Nature Reserve. Arthropoda*. Novosibirsk-Chita, pp. 41–80 (In Russian).
- Logunov, D.V., Marusik, Y.M. & Koponen, S. (1998) A check-list of the spiders in Tuva, South Siberia with analysis of their habitat distribution. *Berichte des naturwissenschaftlich-medizinischen Vereins in Innsbruck*, 85, 125–159.
- Marusik, Y.M. & Buchar, J. (2003) A survey of the East Palaearctic Lycosidae (Aranei). 3. On the wolf spiders collected in Mongolia by Z. Kaszab in 1966–1968. *Arthropoda Selecta*, 12, 149–158.
- Marusik, Y.M. & Logunov, D.V. (1999) On the spiders (Aranei) collected in central Mongolia during a joint American-Mongolian-Russian expedition in 1997. *Arthropoda Selecta*, 7 [1998], 233–254.
- Marusik, Y.M. & Logunov, D.V. (2009) New faunistic records of spiders collected from the mountain Altai (Arachnida: Aranei). *Arthropoda Selecta*, 18, 145–152.
- Marusik, Y.M., Azarkina, G.N. & Koponen, S. (2003) A survey of East Palaearctic Lycosidae (Aranei). II. Genus *Acantholycosa* F. Dahl, 1908 and related new genera. *Arthropoda Selecta*, 12, 101–148.
- Marusik, Y.M., Eskov, K.Y. & Kim, J.P. (1992) A check list of spiders (Aranei) of Northeast Asia. *Korean Arachnology*, 8, 129–158.

- Marusik, Y.M., Eskov, K.Y., Koponen, S., & Vinokurov, N.N. (1993) A check-list of the spiders (Aranei) of Yakutia, Siberia. *Arthropoda Selecta*, 2(2), 63–79.
- Marusik, Y.M., Hippa, H. & Koponen, S. (1996) Spiders (Araneae) from the Altai area, southern Siberia. *Acta zoologica fennica*, 201, 11–45.
- Marusik, Y.M., Logunov, D.V. & Koponen, S. (2000) *Spiders of Tuva, South Siberia*. Institute for Biological Problems of the North, Russian Academy of Sciences Far East Branch, Magadan, 252 pp.
- Mikhailov, K.G. (1997) *Catalogue of the spiders of the territories of the former Soviet Union (Arachnida, Aranei)*. Zoological Museum of the Moscow State University, 416 pp.
- Odenwall, E. (1901) Araneae nonnullae Sibiriae transbaicalensis. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, 43, 255–273.
- Paquin, P. & Dupérré N. (2003) Guide d'identification des araignées du Québec. *Fabriques, Suppl.* 11, 1–251.
- Platnick, N.I. (2011) *The World Spider Catalog*, Version 12.0. American Museum of Natural History, online at <http://research.amnh.org/entomology/spiders/catalog/index.html> (accessed 24 August 2011).
- Schenkel, E. (1963) Ostasiatische Spinnen aus dem Muséum d'Histoire naturelle de Paris. *Mémoires de la Muséum national d'Histoire naturelle, Paris*, (N. S.) (A, Zool.) 25 (1), 1–288, (2), 289–494.
- Song, D.X. & Yu, L.M. (1990) On three species of wolf spiders from China (Araneae: Lycosidae). *Sinozoologia*, 7, 77–81 (In Chinese and English).
- Song, D.X., Zhu, M.S. & Chen, J. (1999) *The Spiders of China*. Hebei Science and Technology Publishing House, Shijiazhuang, 640 pp.
- Song, D.X., Zhu, M.S. & Chen, J. (2001) *The Fauna of Hebei, China: Araneae*. Hebei Science and Technology Publishing House, Shijiazhuang, 508 pp. (In Chinese with English abstract).
- Šternbergs, M.T. (1988) [Materials on the spider fauna of Primorye Province.] In: *Fauna i ekologija paukoobraznykh*. Perm University, Perm, pp. 92–97 (In Russian).
- Tang, G.M., Urita & Song, D.X. 1994. A new species of the wolf spiders of *Pardosa* from Mt. Daqingshan, Inner Mongolia, China (Araneae: Lycosidae). *Acta arachnologica sinica* 3, 11–13 (In Chinese with English abstract).
- Vogel, B.R. (2004) A review of the spider genera *Pardosa* and *Acantholycosa* (Araneae, Lycosidae) of the 48 contiguous United States. *Journal of Arachnology*, 32, 55–108.
- Yin, C.M., Peng, X.J., Xie, L.P., Bao, Y.H. & Wang, J.F. (1997) *Lycosids in China*. Hunan Normal University Press, Changsha, 317 pp. (In Chinese with English title).
- Yu, L.M. & Song, D.X. (1988) A revision of the Chinese spiders of the family Lycosidae (Araneae). *Sinozoologia*, 6, 113–121 (In Chinese with English summary).
- Yu, L.M., Song, D.X. & Ma, C.H. (1987) [Description of the female of the wolf spider *Pardosa paratesquorum* Schenkel, 1963.] *Sichuan Journal of Zoology*, 6(4), 12 (In Chinese).
- Zyuzin, A.A. (1979) A taxonomic study of Palearctic spiders of the genus *Pardosa* (Aranei, Lycosidae). Part 1. The taxonomic structure of the genus. *Entomologicheskoye Obozrenie*, 58, 431–447 (In Russian with English summary). (English translation in *Entomological Review, Washington*, 58 [1980], 165–185.)