

## A new species of *Psammitis* Menge, 1876 (Aranei: Thomisidae) from southeastern Kazakhstan

### Новый вид пауков рода *Psammitis* Menge, 1876 (Aranei: Thomisidae) из юго-восточного Казахстана

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KEY WORDS: Araneae, spider, China, Mongolia, Trans-Ili Alatau, Tuva, *Xysticus*.

КЛЮЧЕВЫЕ СЛОВА: Araneae, паук, Заилийский Алатау, Китай, Монголия, Тува, *Xysticus*.

**ABSTRACT.** A new species, *Psammitis khamenkovae* sp.n., is described based on both sexes from the Trans-Ili Alatau mountains in the environs of Almaty, Kazakhstan. The new species is close to *P. gobiensis* (Marusik et Logunov, 2002) and *P. courti* (Marusik et Omelko, 2014) but differs in the shape of epigyne and male palp. Distribution records of three similar species: *Psammitis khamenkovae* sp.n., *P. gobiensis* and *P. courti* are mapped. Five species are transferred from *Xysticus* C.L. Koch, 1835 to *Psammitis* Menge, 1876 and five new combinations are established: *P. alpinistus* (Ono, 1978) comb.n., *P. atevs* (Mcheidze, 1971) comb.n., *P. marmorata* (Thorell, 1875) comb.n., *P. mugur* (Marusik, 1990) comb.n. and *P. parallela* (Simon, 1873) comb.n. Two generic names *Psammitis* and *Spiracme* Menge, 1876 are briefly discussed and it is shown that they are to be regarded as feminine in gender.

How to cite this paper: Marusik Yu.M. 2024. A new species of *Psammitis* Menge, 1876 (Aranei: Thomisidae) from southeastern Kazakhstan // *Arthropoda Selecta*. Vol.33. No.2. P.260–266. doi: 10.15298/arthsel.33.2.13

**РЕЗЮМЕ.** Описан новый вид пауков рода *Psammitis* Menge, 1876, *P. khamenkovae* sp.n., (♂♀) из высокогорий хребта Заилийский Алатау. Новый вид близок к *P. gobiensis* (Marusik et Logunov, 2002) и *P. courti* (Marusik et Omelko, 2014) и отличается формой копулятивных органов. Точки находок всех трёх близких видов (*P. khamenkovae* sp.n., *P. gobiensis* и *P. courti*) закартированы. Установлено 5 новых комбинаций для видов ранее рассматривавшихся в роде *Xysticus* C.L. Koch, 1835: *P. alpinistus* (Ono, 1978) comb.n., *P. atevs* (Mcheidze, 1971) comb.n., *P. marmorata* (Thorell, 1875) comb.n., *P. mugur* (Marusik, 1990) comb.n., *P. parallela* (Simon, 1873) comb.n. Кратко обсуждены два родовых названия *Psammitis*

и *Spiracme* Menge, 1876 и показано, что их нужно рассматривать как существительные женского рода.

### Introduction

Kazakhstan, with 1022 reported species of spiders, has third largest araneofauna among the countries previously belonging to the USSR, and surpassed in number of species only by Russia (2497 species) and Ukraine (1076 species) [Mikhailov, 2022]. The spiders of Kazakhstan are relatively well-studied in comparison to other countries in the Middle Asia and among them, *Xysticus sensu lato* is one of the best studied groups due to the publication of several revisions [Utochkin, 1968; Utochkin, Savelyeva, 1995; Marusik, Logunov, 1990, 1995] and faunistic studies. So far, 45 species previously considered in *Xysticus* are recorded in Kazakhstan [Mikhailov, 2022]. Currently 78 species of *Xysticus* s.l. are known in much larger Russia [Mikhailov, 2022]. Twenty-five species of *Xysticus* s.l. are known from Ukraine and 18 in adjacent to Kazakhstan — Uzbekistan [Mikhailov, 2022]. While studying spiders from the environs of Almaty I found one species very similar to those of *Psammitis gobiensis* (Marusik et Logunov, 2002). Detailed study of the specimens revealed that population from SE Kazakhstan belongs to a separate species and goal of this paper is to provide description of the new species and comments on some related species.

### Material and methods

Specimens were photographed using the following equipment: a Canon® EOS 7D camera attached to an Olympus SZX16 stereomicroscope. Digital images of different focal planes were stacked with Helicon Focus™ 8.1.1 and edited using CorelDraw® Graphics Suite X6 and Adobe® Photoshop CC. The endogynes were cleared and cleaned from soft tissues

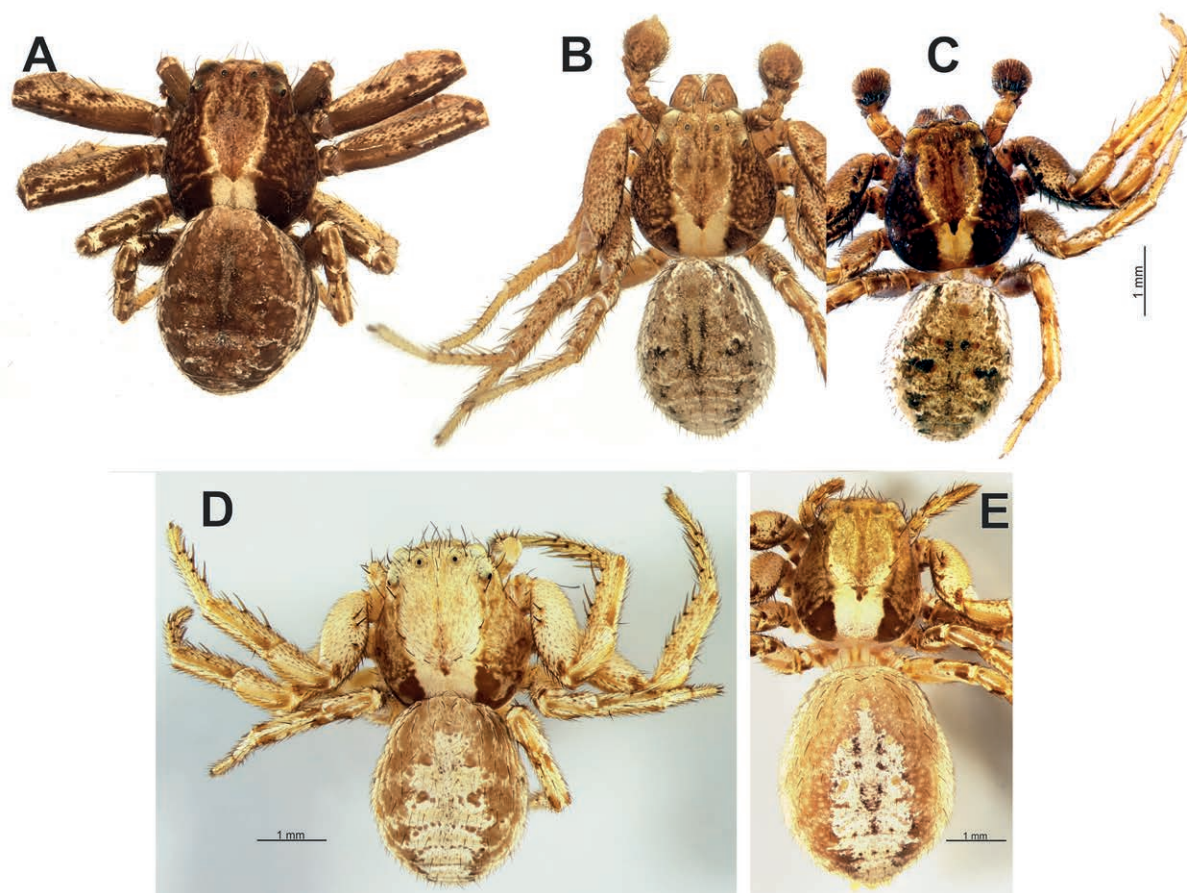


Fig. 1. Habitus of *Psammitis khamenkovae* sp.n. A–C — male; D–E — female. C — holotype.  
Рис. 1. Внешний вид *Psammitis khamenkovae* sp.n. A–C — самец; D–E — самка. C — голотип.

after treatment in a 10% KOH aqueous solution. Body measurements exclude the chelicerae and spinnerets. The measurements are given in mm. Lengths of leg segments were measured at the dorsal side. These measurements are listed as: total length (femur, patella, tibia, metatarsus, tarsus). The map was prepared using SimpleMappr [Shorthouse 2010].

Abbreviations: d — dorsal, Fe femur, Mt — metatarsus, Pa — patella, p — prolateral, r — retrolateral, Ta — tarsus, Ti — tibia, v — ventral.

Institutional acronyms: ZISP — Zoological Institute, St.Petersburg, Russia; ZMMU — Zoological Museum of Moscow State University, Russia.

## Taxonomic survey

### *Psammitis* Menge, 1876

*Psammitis* Menge, 1876: 448.

Type species: *Thomisus sabulosus* Hahn, 1832.

NOTE. Two species were originally included in *Psammitis*: *Thomisus sabulosus* Hahn, 1832 and *Psammitis abscondita* Menge, 1876 and type species was not selected by Menge [1876]. Instead, this was done by F.O. Pickard-Cambridge [1903] who selected *Thomisus sabulosus* as the type species. WSC [2024], following Breitling [2019], considered *Psammitis* as a noun of masculine gender, although Menge [1876] treated it as having feminine gender.

REMARKS. This genus was treated for a long time as a junior synonym of *Xysticus* C.L. Koch, 1835. Several attempts to split *Xysticus* into several genera and restore the genus rank of *Psammitis* based on morphological data [Wunderlich, 1987, 1995; Lehtinen, 2002] were ignored by arachnological community, while arguments for splitting *Xysticus* based on the molecular data [Breitling, 2019] have been accepted. In addition to *Psammitis*, Breitling [2019] resurrected *Spiracme* Menge, 1876 and *Bassaniodes* Pocock, 1903. Although Menge [1876] considered *Psammitis* and *Spiracme* as nouns of feminine gender all new combinations established by Breitling [2019] in these two genera were created as both generic names are masculine. WSC [2024] corrected the endings in species transferred to *Spiracme* but considered *Psammitis* as masculine. Breitling [2019] stated that he established new combinations for all species transferred to *Spiracme*, except for the genotype. However, it seems that *Spiracme striatipes* (L. Koch, 1870) is a new combination, because Menge [1876] described *Spiracme striata*, a species considered as junior synonym of *Xysticus striatipes*.

According to Breitling [2019], 32 species and subspecies have been transferred to *Psammitis* and 31 new combinations have been established by him, although previous transfers to *Psammitis* by Wunderlich and Lehtinen were not accounted for. In fact, combination was merely restored, not established, for *P. abramovi*, *P. lindbergi*, *P. tyshchenkoi*, *P. xysticiformis* and *P. zonsteini*. Two species originally placed to *Psammitis* were not mentioned or commented on: *Psammitis absconditus* Menge, 1876 and *P. doriai* Dalmás, 1922.



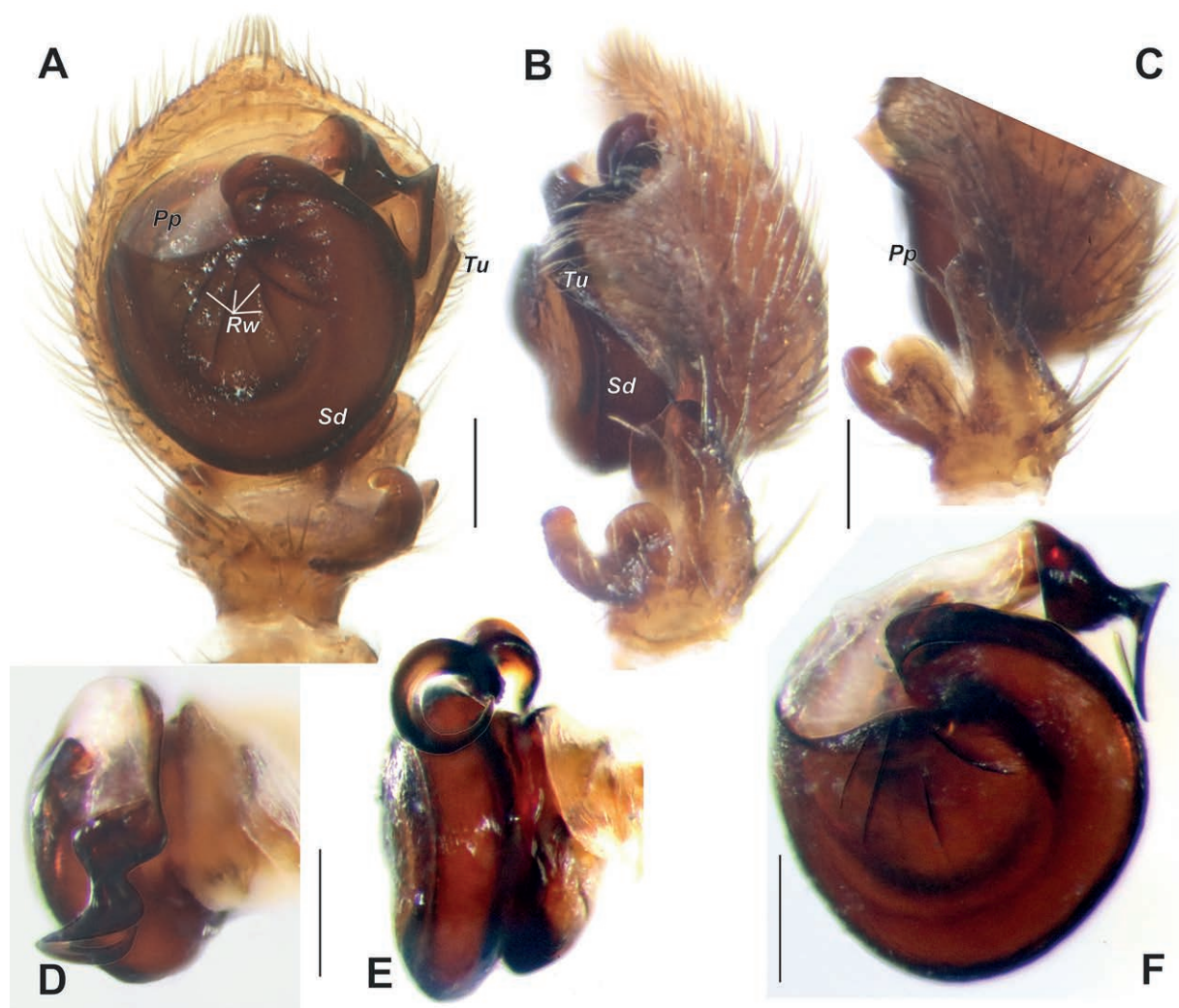


Fig. 2. Male palp of *Psammitis khamenkovae* sp.n. A–B — whole terminal part, ventral and retrolateral; C — tibia and cymbium, dorso-retrolateral; D–F — bulb, anterior, retrolateral and ventral. Scale 0.2 mm.

Abbreviations: *Pp* — pars pendula; *Rw* — radial wrinkles; *Sd* — sperm duct; *Tr* — retrolateral tibial apophysis; *Tu* — tutaculum; *Tv* — retroventral tibial apophysis.

Рис. 2. Пальпа самца *Psammitis khamenkovae* sp.n. А–В — терминальная часть, снизу и ретролатерально; С — голень и цимбиум, сверху-ретролатерально; D–F — бульбус, спереди, ретролатерально и снизу. Масштаб 0,2 мм.

Сокращения: *Pp* — pars pendula; *Rw* — радиальные складки; *Sd* — сперматический канал; *Tr* — ретролатеральный отросток голени; *Tu* — тутакулюм; *Tv* — ретроventральный отросток голени.

Several species that share similar morphology of the male palp, namely (i) tegulum lacking apophyses; (ii) embolus originating at 11 to 13 (01) o'clock position; (iii) pars pendula originating from 8 to 11 o'clock position; (iv) cymbium with triangle shaped pointed tutaculum; (v) retrolateral tibial apophysis not pointed; and (vi) the epigyne with its fovea shallow, lacking any outgrowth, were not transferred to *Psammitis* Menge, 1876. Therefore I am transferring five species that share joint characters with the generotype, *P. sabulosa*, from *Xysticus* to *Psammitis*: *P. alpinistus* (Ono, 1978) **comb.n.**, *P. atevs* (Mcheidze, 1971) **comb.n.**, *P. marmorata* (Thorell, 1875) **comb.n.**, *P. mugur* (Marusik, 1990) **comb.n.** and *P. parallela* (Simon, 1873) **comb.n.**

More than a dozen additional species can be transferred to *Psammitis* that lack tegular apophyses in the male, e.g. *X. luctuosus* (Blackwall, 1836), *X. pseudoluctuosus* Marusik et Logunov, 1995, *X. palpimirabilis* (Marusik et Chevrizov, 1990), etc. They differ from species currently placed in *Psammitis* by

having pointed retrolateral tibial apophysis not divided to flat ventral part and cylindrical dorsal part.

### *Psammitis khamenkovae* sp.n.

Figs 1–2, 3G, 4A–F, 5.

TYPES: Holotype ♂ (ZMMU) and paratypes 30♂♂ 19♀♀ (ZMMU) KAZAKHSTAN, Almaty Region, Bolshoye Almatinskoye Lake [=Big Almaty Lake], 43°05'N 76°59'E, 2600–3100 m, under stones on alpine meadows, 3–10.07.1995 (Y.M. Marusik). Paratypes: 11♂♂ 140♀♀ (ZMMU and ZISP), same locality, 2500–3450 m, 3–10.07.1995 (Yu.M. Marusik & O.A. Karacheva).

ETYMOLOGY. The new species is named after my colleague Yelena V. Khamenkova (Magadan, Russia) an expert in the taxonomy and ecology of aquatic insects.

DIAGNOSIS. The new species belongs to the *sibiricus*-subgroup of the *labradorensis*-group of species and has embolus coiled in one plane [Marusik, Omelko, 2014]. It is

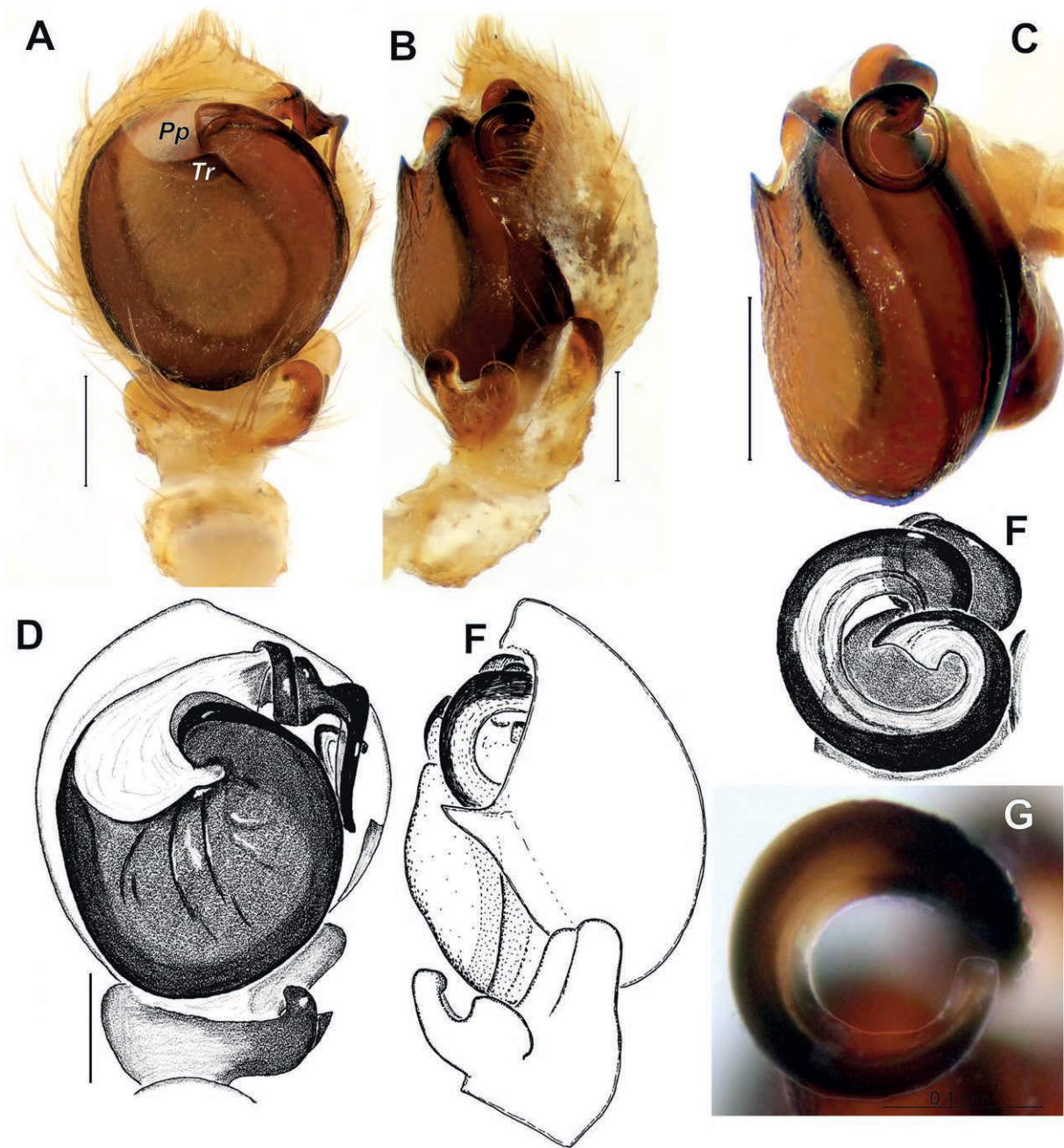


Fig. 3. Male palp of *Psammitis courti* (A–C), *P. gobiensis* (D–F) and *P. khamenkovae* sp.n. (G). A, D — terminal part, ventral; B, E — terminal part, retrolateral; C — bulb, retrolateral; F, G — embolus, retrolateral. Scale (if indicated) 0.2 mm.

Abbreviations: *Pp* — pars pendula; *Tr* — tegular ridge.

Рис. 3. Пальпы самцов *Psammitis courti* (A–C), *P. gobiensis* (D–F) и *P. khamenkovae* sp.n. (G). A, D — терминальная часть, снизу; B, F — терминальная часть, ретролатерально; C — бульбус, ретролатерально; F, G — эмболюс, ретролатерально. Масштаб (если указан) 0,2 мм. Сокращения: *Pp* — pars pendula; *Tr* — гребешок тегулюма.

most similar to *P. gobiensis* (Marusik et Logunov, 2002) and *P. courti* (Marusik et Omelko, 2014). The male of the new species differs from that of *P. courti* by having wrinkled tegulum and larger pars pendula (cf. Fig. 2A, F and Fig. 3A), as well as by relatively larger coil of embolus and tapering tip of embolus (vs. embolus forms smaller coil and its tip widened; cf. Figs 3G and 3C). The male of *P. khamenkovae* sp.n. differs from those of *P. gobiensis* by smaller pars pendula (*Pp*) and not widened tip of embolus (cf. Figs 2A, F and 3D, F). The female of the new species differs from that of *P. gobiensis* by having thinner septum

(width length/width ratio > 1.5 vs. 1.25), longer copulatory ducts (*Cd*) extending anterior margin of receptacles (*Re*) vs. shorter, relatively wider receptacles (*Re*) (length width ratio ca. 1.8 vs. 2.0; cf. Figs 4D, F and 4H), as well as anteriorly converging receptacles (vs. parallel).

**DESCRIPTION.** Male (holotype). Total length 4.95. Carapace 2.28 long, 2.05 wide; abdomen 2.8 long, 2.0 wide. Carapace with dark brown lateral parts, kind of light median band wider on anterior part, anterior part of band with wide and dark laceolate spot. Abdomen with pattern formed with white



Table 1. *Psammitis khamenkovae* sp.n., male, leg length.  
Таблица 1. *Psammitis khamenkovae* sp.n., самец, промеры ног.

	Fe	Pt	Ti	Mt	Ta	Total
I	2.0	0.88	1.32	1.32	0.92	6.44
II	1.84	0.88	1.32	1.32	0.88	6.24
III	1.48	0.72	0.96	0.96	0.64	4.76
IV	1.48	0.72	1.0	1.0	0.72	4.92

Table 2. *Psammitis khamenkovae* sp.n., male, leg spination.  
Таблица 2. *Psammitis khamenkovae* sp.n., самец, вооружение ног.

	Fe	Ti	Mt
I	3d 3p	3p 3r v3-3	1p 1r v2-2
II	3d	3p 3r v3-3	1p 1r v2-2
III	3d	2p 2r v1-1	2p 2r v1-1
IV	3d	2d 2p 2r	2p 2r v2-2

longitudinal lateral bands, and darker dorsum. Legs mottled, with darker femora and patellae; metatarsi and tarsi uniformly coloured. Leg length and spination as in Tables 1 and 2.

Palp (combined description based on several males) as in Figs 2, 3G: patella lighter than other joints, cymbium darker than tibia and femur. Tibia with retroventral (*Tv*) and retrolateral (*Tr*) apophyses; retroventral apophysis subdivided to digitiform ventral part and lamellate and rounded dorsal part; retrolateral apophysis subrectangular, about as long as tibia, with lamellar ventral half and conical dorsal part; cymbium about 1.2 times longer than wide; tutaculum (*Tu*) triangle shaped located at middle part of cymbium; tegulum round, as long as wide with several (4–7) radial wrinkles (*Rw*) originated from corner of pars pendula (*Pp*), sperm duct very broad especially in retrolateral part (about 1/3 of tegulum width); embolus (pars pendula) originates at ca. 10 o'clock position; tip of embolus males coiled almost in one plane and makes 360° loop, terminal part gradually tapering, but tip blunt.

Variations: total length 4.56–5.44; carapace 2.16–2.4 long. Pattern and intensity of coloration variable from almost pale to contrasting; abdomen from light to almost uniformly brown (Fig. 1A–C).

Female. Total length 4.88. Carapace 2.24 long, 2.0 wide. Body and legs lighter than in male. Carapace with wide light median band either uniformly coloured (Fig. 1D) or with darker anterior part (Fig. 1E); sides dark, from light to dark brown. Abdomen light brown with whitish lanceolate large spot in mid-posterior part. Leg length and spination as in Tables 3 and 4.

Table 3. *Psammitis khamenkovae* sp.n., female, leg length.  
Таблица 3. *Psammitis khamenkovae* sp.n., самка, промеры ног.

♀	Fe	Pt	Ti	Mt	Ta	Total
I	1.8	0.92	1.28	1.08	0.72	5.6
II	1.8	0.92	1.28	1.12	0.76	5.88
III	1.4	0.72	0.88	0.72	0.64	4.36
IV	1.6	0.72	1.04	0.88	0.72	4.96

Table 4. *Psammitis khamenkovae* sp.n., female, leg spination.  
Таблица 4. *Psammitis khamenkovae* sp.n., самка, вооружение ног.

♀	Fe	Ti	Mt
I	3p	V3-2	2p 2r v3-2
II	1d	1p v3-2	2p 2r v3-2
III	1d	1d 1p v2-1	2p 1r v1-1
IV	1d	2d v2-0	1p 1r v1-1

Epigyne as in Fig. 4A–F; epigynal plate about as long as wide; fovea (*Fo*) rectangular with rounded corners, about 2 times wider than long, with distinct septum (*Se*) about 1.5–1.8 times longer than wide, with subparallel margins; copulatory openings (*Co*) distinct, oval, ca. 1.4 times longer than wide; receptacles (*Re*) oval, ca. 1.8 longer than wide, converging anteriorly; copulatory ducts (*Cd*) extending receptacles anteriorly.

Variations: Total length 4.8–6.96; carapace 2.4–2.8 long.

DISTRIBUTION. Known only from the type locality, although the westernmost record of *P. gobiensis* from Xinjiang may refer to this species as located close to the type locality of the new species.

### *Psammitis courti* (Marusik et Omelko, 2014) Figs 3A–C, 5.

*Xysticus sibiricus*: Schenkel, 1963: 236, f. 132 (♂, misidentified).

*Xysticus courti* Marusik et Omelko, 2014: 283, f. 30–35 (♂).

*Psammitis courti*: Breitling, 2019: 203 (transferred from *Xysticus*).

DIAGNOSIS. This species is easily distinguished from *P. khamenkovae* sp.n. by having no tegular wrinkles, much smaller pars pendula (*Pp*), having a distinct tegular ridge (*Tr*) missing in *P. khamenkovae* sp.n. and the widened tip of embolus (vs. tapering, cf. Fig. 3A–C and Figs 2, 3G).

DESCRIPTION. See Marusik & Omelko [2014].

COMMENTS. This species was described based on the male holotype from Gansu. The record of *P. gobiensis* (sub. *Xysticus laticeps*) from Qinghai by Hu [2001] may also refer to this species.

### *Psammitis gobiensis* (Marusik et Logunov, 2002) Figs 3D–F, 4G–H, 5.

*Xysticus laticeps* Schenkel, 1963: 238, f. 133 (♀; preoccupied by Bryant, 1933).

*Xysticus laticeps*: Song, Haupt, 1996: 316, f. 5a–b (♀, may refer to *P. khamenkovae* sp.n.).

*Xysticus laticeps*: Song, Zhu, 1997: 93, f. 60A–B (♀, repetition of figs from Song & Haupt [1996]).

*Xysticus laticeps*: Song et al., 1999: 503, f. 286E (♀, repetition of figs from Song & Haupt [1996]).

*Xysticus laticeps*: Hu, 2001: 361, f. 222.1–3 (♀, may refer to *P. courti*).

*Xysticus gobiensis* Marusik et Logunov, 2002: 316, f. 1–5 (replacement name for *X. laticeps*, ♂♀).

*Xysticus gobiensis*: Marusik, Kovblyuk, 2011: 253, f. 37.21, 27 (♂♀ copies of figs from Marusik & Logunov [2002]).

*Xysticus gobiensis*: Marusik, Omelko, 2014: 280, f. 28–29, 36–38 (♀ holotype; ♂ copies of figs from Marusik & Logunov [2002]).

*Psammitis gobiensis*: Breitling, 2019: 203 (T from *Xysticus*).

DIAGNOSIS. *Psammitis gobiensis* is similar to *P. khamenkovae* sp.n. in having the tegulum with wrinkles, the epigyne with a distinct septum and copulatory openings, but differs by the embolus widened at the tip (vs. tapering), the shorter septum, and copulatory ducts not extending receptacles and parallel receptacles (vs. septum relatively longer, copulatory ducts with extending receptacles and receptacles converging, cf. Fig. 4G–H and A–F).

DESCRIPTION. See Marusik & Logunov [2002].

COMMENTS. So far, this species is known based on the holotype female redescribed by Marusik & Omelko [2014] and several localities in South Gobi Aimag and South Tuva. Record of this species from Qinghai may refer to *P. courti* and record from Western Xinjiang may refer to *P. khamenkovae* sp.n.

DISTRIBUTION. There are six records of this species with exact collecting localities (Fig. 5), the westernmost one from western Xinjiang may refer to *P. khamenkovae* sp.n.

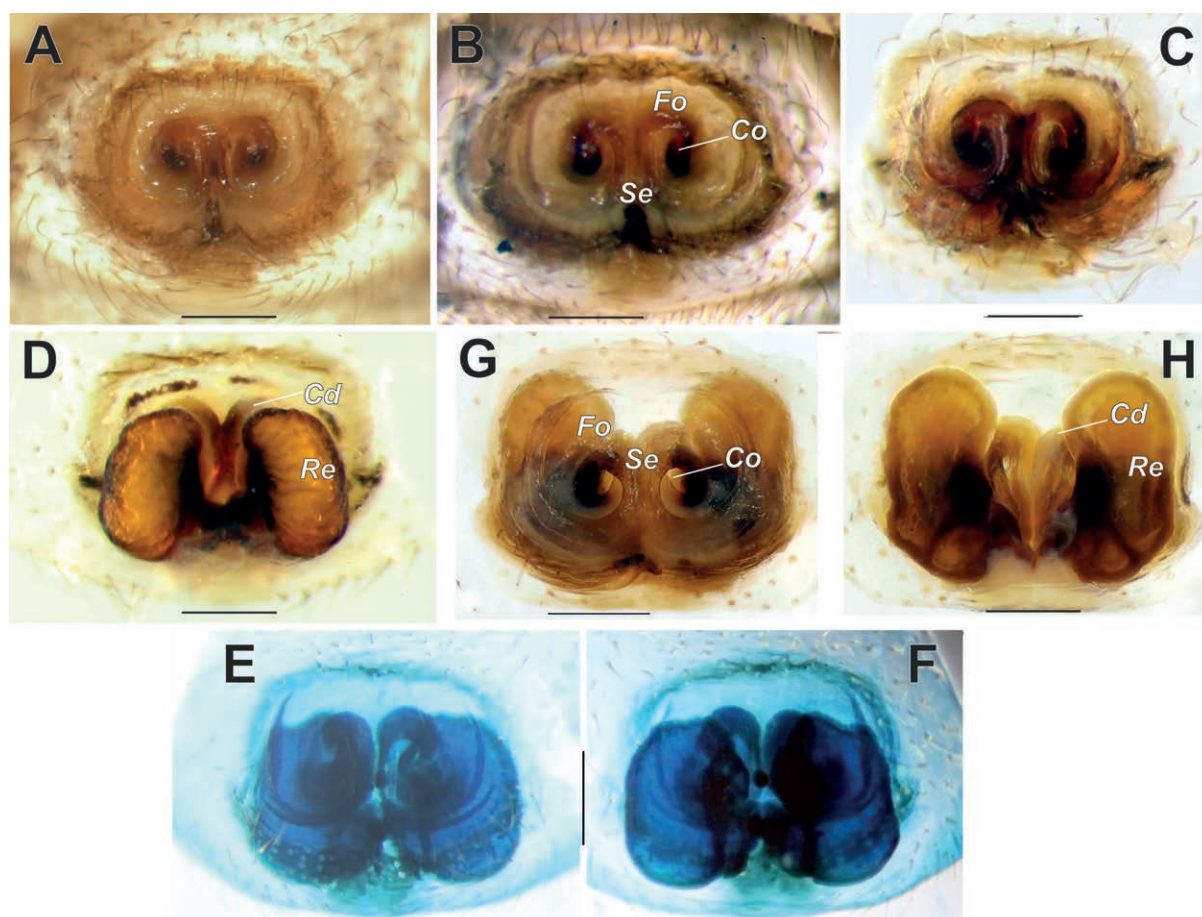


Fig. 4. Epigyne of *Psammitis khamenkovae* sp.n. (A–F) and *P. gobiensis* (G–H). A–C, E, G — ventral; D, H, F — dorsal. Scale 0.2 mm. Abbreviations: Cd — copulatory duct копулятивный канал; Co — copulatory opening; Fo fovea; Re — receptacle; Se — septum.  
Рис. 4. Эпигины *Psammitis khamenkovae* sp.n. (A–F) и *P. gobiensis* (G–H). A–C, E, G — снизу; D, H, F — сверху. Масштаб 0,2 мм. Сокращения: Cd — копулятивный канал; Co — копулятивное отверстие; Fo — ямка; Re — рецептакула; Se — септум.

**Acknowledgements.** I thank late Chingiz K. Tarabaev (Almaty, Kazakhstan) for his help in arranging trip to Almaty Lake; Seppo Koponen and Ilari Sääksjärvi (Turku, Finland) for arranging his stay in Turku and allowing him to use museum facilities; Alexander A. Fomichev (Altai State University, Barnaul, Russia), Mikhail M. Omelko (Vladivostok, Russia), Danniella Sherwood (Arachnology Research Association, London, UK) and Dmitri Logunov (St.-Petersburg, Russia) for reviewing my manuscript and comments which improved manuscript. Special thanks are to Daniella Sherwood and Victor Fet (Marshall University, Huntington, USA) for Editing English in the final draft.

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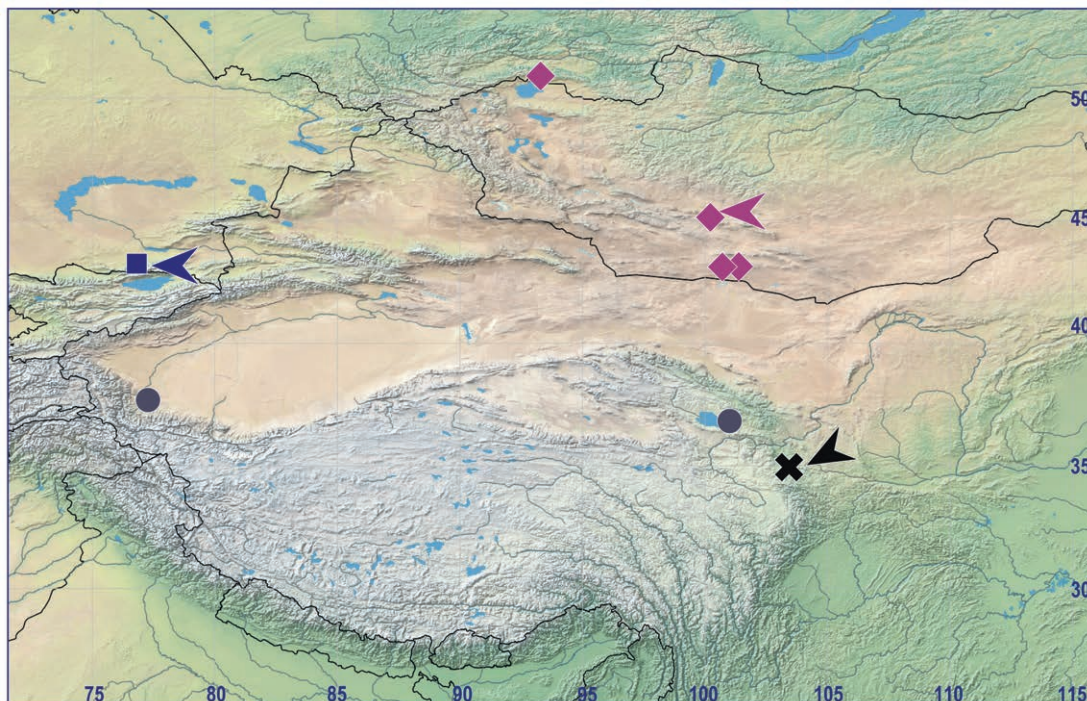


Fig. 5. Distribution records of *Psammitis khamenkovae* sp.n. (square), *P. gobiensis* (diamond — studied specimens, dot — literature data) and *P. courti* (x). Arrow indicates type localities.

Рис. 5. Точки находок *Psammitis khamenkovae* sp.n. (квадрат), *P. gobiensis* (ромб — изученные экземпляры, кружок — литературные данные) и *P. courti* (x). Стрелки указывают типовые местообитания.

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Responsible editor D.V. Logunov