

A survey of East Palaearctic Gnaphosidae (Aranei). 9. New data on the *Parasyrisca potanini*-group from Central Asia

Обзор Гнафосиде (Аранеи) Восточной Палеарктики. 9. Новые данные о группе *Parasyrisca potanini* Центральной Азии

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KEY WORDS: Araneae, ground spiders, Kazakhstan, Mongolia, South Siberia, new species, taxonomy.

КЛЮЧЕВЫЕ СЛОВА: Araneae, Казахстан, Монголия, Южная Сибирь, новые виды, систематика.

ABSTRACT: Both sexes of three new species of *Parasyrisca* are described from Eastern Kazakhstan and Western Mongolia: *P. kosachevi* sp.n., *P. sulaki* sp.n., and *P. tronovorum* sp.n. All new species were collected in highlands at elevations from 2700 to 3700 m. The female of *P. volynkini* Fomichev, 2016 from the Altai Mountains (South Siberia, Russia) is described for the first time. Descriptions, differential diagnoses, illustrations, and maps of distribution records are provided. The distribution and species composition of the all four *Parasyrisca* groups (*potanini*, *vinosa*, *guzeripli*, and *breviceps*) are discussed.

How to cite this article: Fomichev A.A., Marusik Yu.M., Sidorov V.V. 2018. A survey of East Palaearctic Gnaphosidae (Aranei). 9. New data on the *Parasyrisca potanini*-group from Central Asia // Arthropoda Selecta. Vol.27. No.2. P.155–168. doi: 10.15298/arthscl. 27.2.07

РЕЗЮМЕ: Из Восточного Казахстана и Западной Монголии по обоим полам описываются три новых вида: *Parasyrisca kosachevi* sp.n., *P. sulaki* sp.n. и *P. tronovorum* sp.n. Все новые виды были собраны в высокогорьях на высотах от 2700 до 3700 м. Впервые описывается самка *P. volynkini* Fomichev, 2016 из Алтайских гор (Южная Сибирь, Россия). Приводятся описания, иллюстрации и карты распространения. Обсуждается объединение видов в группы и распространение всех четырех групп видов (*potanini*, *vinosa*, *guzeripli* и *breviceps*).

Introduction

Parasyrisca Schenkel, 1963 is a Holarctic genus of ground spiders with 52 valid species, 51 distributed in the Palaearctic and one in the Western Nearctic [World Spider Catalog, 2017]. Almost all species inhabit the alpine zone in high mountains. Some species live at very high altitudes, up to 3500 m in the Caucasus, 3300 m in South Siberia, and 4900 m in the Pamirs [Ovtsharenko *et al.*, 1995; Fomichev, 2015]. Moreover two *Parasyrisca* species are known in the Subarctic (in the Magadan Region) at 63°N latitude [Ovtsharenko, Marusik, 1988, 1996]. Only three species are known from lowland or low mountains habitats: *P. arrabonica* Szinetár et Eichardt, 2009 from Hungary, *P. marusiki* Kovblyuk, 2003 from Crimea and *P. golyakovi* Marusik et Fomichev, 2016 from the western Altai Mountains (South Siberia). The majority of species are local endemics found only in one mountain range [Ovtsharenko *et al.*, 1995].

Ovtsharenko *et al.* [1995] assigned all *Parasyrisca* species into four species groups: *potanini*, *vinosa*, *guzeripli* and *breviceps*. The most species-rich group, *potanini*, encompasses 36 species. During expeditions to the Dzhungarian Alatau Mountains in Southeastern Kazakhstan, the Mongolian Altai in Western Mongolia, and the Russian part of the Altai we collected males and females of three undescribed species of *Parasyrisca* as well as the previously unknown female of *P. volynkini* Fomichev, 2016. The goal of this paper is to describe the three new species and the female of *P. volynkini*.

Material and methods

Specimens were photographed at the Zoological Museum (University of Turku, Finland) with a Canon EOS 7D camera attached to an Olympus SZX16 stereomicroscope and at the Institute of Systematics and Ecology of Animals (Novosibirsk, Russia) with an AxioCamMRC 5 (Zeiss) camera attached to a Stemi 2000-C stereomicroscope. Digital images were montaged using CombineZP and Helicon focus 3.10 image stacking software. Epigynes were cleared in a KOH/water solution until soft tissues were dissolved. Photographs were taken in dishes with paraffin on the bottom holding the specimens in position. All measurements are given in millimeters. Lengths of leg segments were measured on the dorsal side. Spination data are based on examination of legs on one side of the body of one specimen of each species. All apical spines on metatarsi III and IV were counted. The format of description and terminology follows Ovtsharenko *et al.* [1995] and Szinetar *et al.* [2009] with some modification.

Abbreviations

Museums: ISEA — Museum of the Institute of Systematic and Ecology of Animals, Novosibirsk, Russia. ZMMU — Zoological Museum of the Moscow State University, Russia.

Leg segments: Fe — femur, Mt — metatarsus, Pt — patella, Ta — tarsus, Ti — tibia.

Spination: d — dorsal, p — prolateral, r — retrolateral, v — ventral.

Taxonomic survey

Parasyrisca potanini group

Parasyrisca potanini group: Ovtsharenko *et al.*, 1995: 5.

DIAGNOSIS. Males belonging to this group can be recognized by the presence of a short, narrow, prolaterally directed embolus, medially or retrolaterally situated on the genital bulb and in close proximity to an elongate, transparent conductor (conductor sometimes absent) and a flat, quadrangular retrolateral tibial apophysis. Females can be recognized by the deep epigynal fovea with a long posterior hood and elongate, curved receptacles that are widened medially or anteriorly [Ovtsharenko *et al.*, 1995].

COMPOSITION. Ovtsharenko *et al.* [1995] placed 31 species in this group, the majority known from Kyrgyzstan, Tuva, Tajikistan, Mongolia and the Altai. Currently the *potanini* group is considered to contain 36 species distributed from Hungary to Northeastern Siberia.

COMMENTS. Whereas males of the species in the *potanini*-group are clearly distinguishable on the basis of unique, species-specific morphology of the palp, females of many species can be very difficult to differentiate because they have very similar epigynes as well as strong intraspecific variation in epigynal morphology.

Parasyrisca kosachevi sp.n.

Figs 2, 5–6, 11–12, 17–18, 22, 27–28, Map 1.

TYPES. MONGOLIA: *Bayan-Ölgii* Aimag: holotype ♂ (ISEA) and paratypes 9 ♀♀ (ISEA) 9 ♀♀ (ZMMU) Cengel-Khairkhan-Nuruu Mt. Range, 3 km W from Yolt-Uul Mt. (48°09'N, 89°14'E), scree under rock, 2700 m, 11.07.2015 (A.A. Fomichev).

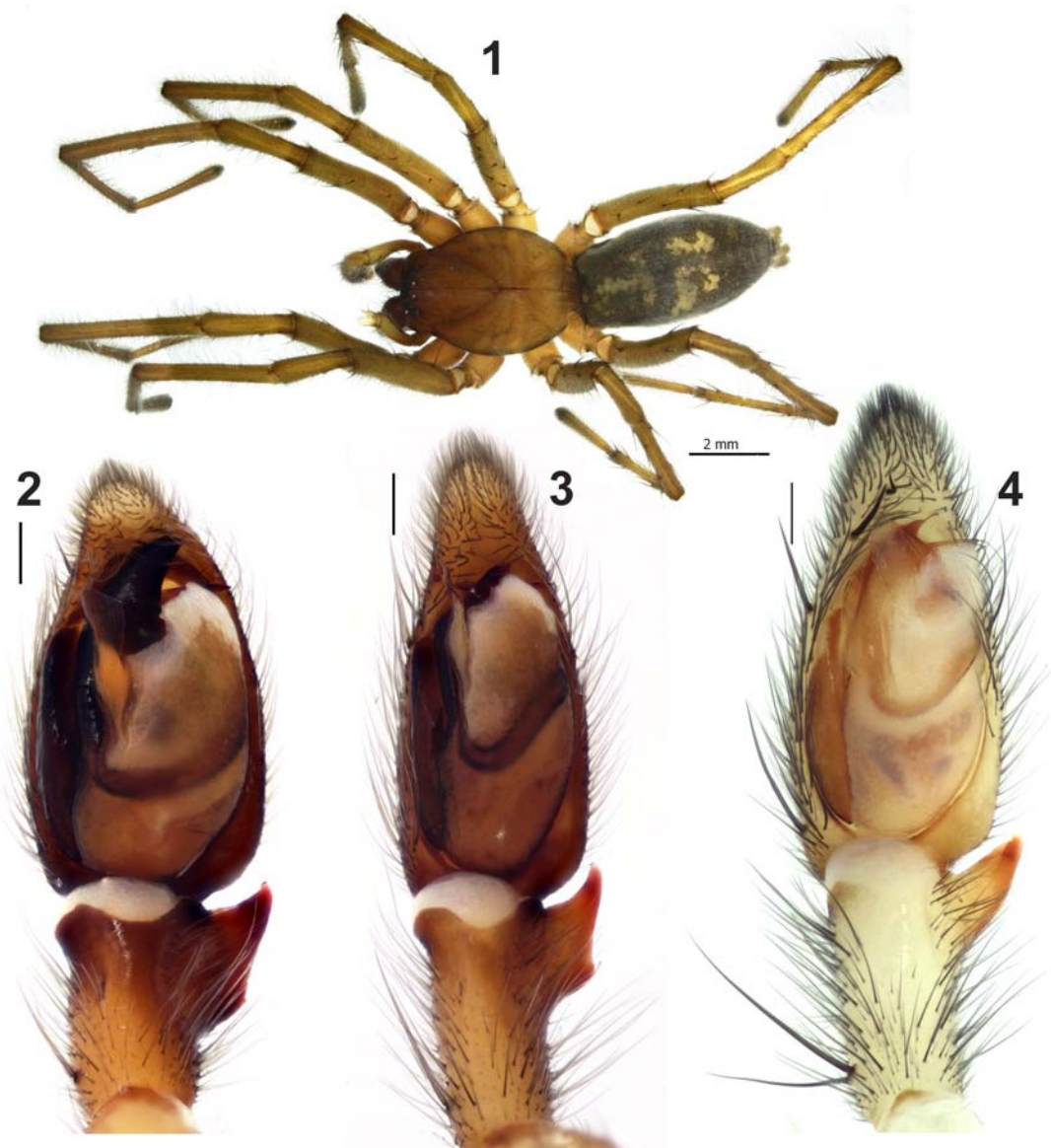
ETYMOLOGY. The specific name is a patronym in honour of botanist Petr A. Kosachev (Barnaul, Russia) who helped to organize an expedition to Mongolia in which specimens of new *Parasyrisca* species were collected.

DIAGNOSIS. The new species is related to three Siberian species: *P. asiatica* Ovtsharenko *et al.*, 1995, *P. logunovi* Ovtsharenko *et al.*, 1995, and *P. bucklei* Marusik et Fomichev, 2010 (see Ovtsharenko *et al.* [1995]: figs 57–61, 62–66; Marusik, Fomichev [2010]: figs 1–15). The male of the new species can be easily distinguished from males of the sibling species by its relatively broad nail-shaped embolus (narrow and sharply pointed in the sibling species). The female of the new species differs from the females of the sibling species by its relatively wide anterior hood about 3/4 of the width of the posterior hood (2–3 times narrower than the posterior hood in the sibling species).

DESCRIPTION. Male (holotype). Total length 8.5. Carapace 3.8 long, 3.1 wide. Coloration. Carapace light-brown. Chelicerae dark-brown. Sternum, labium and endites brown. Legs and palps yellow-brown. Abdomen and spinnerets yellow-gray. Leg measurements: I 15.3 (3.95 + 2.1 + 4.1 + 3.2 + 1.95); II 12.6 (3.45 + 1.85 + 3.2 + 2.45 + 1.65); III 11.1 (3.2 + 1.6 + 2.65 + 2.15 + 1.5); IV 14.4 (4.0 + 1.75 + 3.8 + 3.1 + 1.75). Leg spination: I Fe d1-1-0, p0-0-1 Ti v2-2-0 Mt v2-0-0, II Fe d1-1-0 p0-0-1 Ti v1-2-0 Mt v2-0-0, III Fe d1-1-0 p0-1-1 r0-1-1 Ti p1-1-1 r1-0-1 v2-2-2 Mt d0-1-0-2 p0-1-0-1 r0-1-0-1 v2-0-0-2, IV Fe d1-1-0 r0-0-1 Ti p1-0-3 r1-0-1 v1-2-2 Mt d1-1-0-2 p0-1-0-1 r0-2-0-1 v2-0-0-3.

Palp as in Figs 2, 5–6, 11–12, 17–18, 22. Tibia relatively short, about 2 times longer than wide; retrolateral tibial apophysis as long as tibia width; apophysis with several small tubercles basally. Cymbium 1.7 times longer than wide. Tegulum almost 2 times longer than wide (ratio 11/6). Conductor straight and broad, tip truncate, tip wider than base. Terminal apophysis broad, gradually bent, not hidden by membranous part of tegulum. Embolus wide, nail-shaped.

Female. Total length 9.7. Carapace 4.5 long, 3.5 wide. Coloration. Carapace brown. Chelicerae, labium, endites and sternum dark-brown. Legs, palps, abdomen and spinnerets as in male. Leg measurements: I 12.65 (3.5 + 2.0 + 3.05 + 2.3 + 1.8); II 11.55 (3.25 + 1.8 + 2.7 + 2.05 + 1.75); III 10.55 (3.05 + 1.6 + 2.35 + 1.9 + 1.65); IV 14.15 (4.0 + 1.85 + 3.45 + 2.95 + 1.9). Leg spination: I Fe d1-1-0, p0-0-1 Ti v1-2-0 Mt v2-0-0, II Fe d1-1-0 p0-0-1 Ti v1-1-0 Mt v2-0-0, III Fe d1-1-0 p0-1-1 r0-0-1 Ti p0-1-1 r0-1-1 v1-1-2 Mt d1-0-0-2 p0-1-0-1 r0-1-0-1 v2-0-0-2, IV Fe d1-1-0 r0-0-1 Ti p1-0-1 r1-0-1 v1-2-2 Mt d2-0-0-2 p0-1-0-1 r0-1-0-1 v0-2-0-2.



Figs 1–4. Habitus and ventral view of left male palp of *Parasyrisca tronovorom* sp.n. (1, 3), *P. kosachevi* sp.n. (2), and *P. sulaki* sp.n. (4). 1 — male habitus, dorsal; 2–4 — palp. Scale = 0.2 mm if not otherwise indicated.

Рис. 1–4. Внешний вид и вентральный вид левой пальпы *Parasyrisca tronovorom* sp.n. (1, 3), *P. kosachevi* sp.n. (2) и *P. sulaki* sp.n. (4). 1 — внешний вид самца, дорсально; 2–4 — пальпа. Масштаб 0,2 мм, если не указано иначе.

Epigyne as in Figs 27–28; as long as wide. Fovea as long as wide, lateral margins almost parallel. Anterior hood wide, about 3/4 of the width of the posterior hood. Copulatory openings located in anterior 1/3 of fovea, openings separated by a distance equal to entire width of posterior hood. Posterior hood anchor-shaped. Receptacles straight, nearly parallel. Head of receptacles separated by 2 diameters, terminating level with anterior hood.

Size variation. Females vary from 9.2 to 10.6 in the body length, carapace 4.0–4.9 long and 3.1–3.9 wide (n=4).

DISTRIBUTION. Known from the type locality only.

Parasyrisca tronovorom sp.n.

Figs 1, 3, 7–8, 13–14, 20–21, 23–24, 29–30, Map 1.

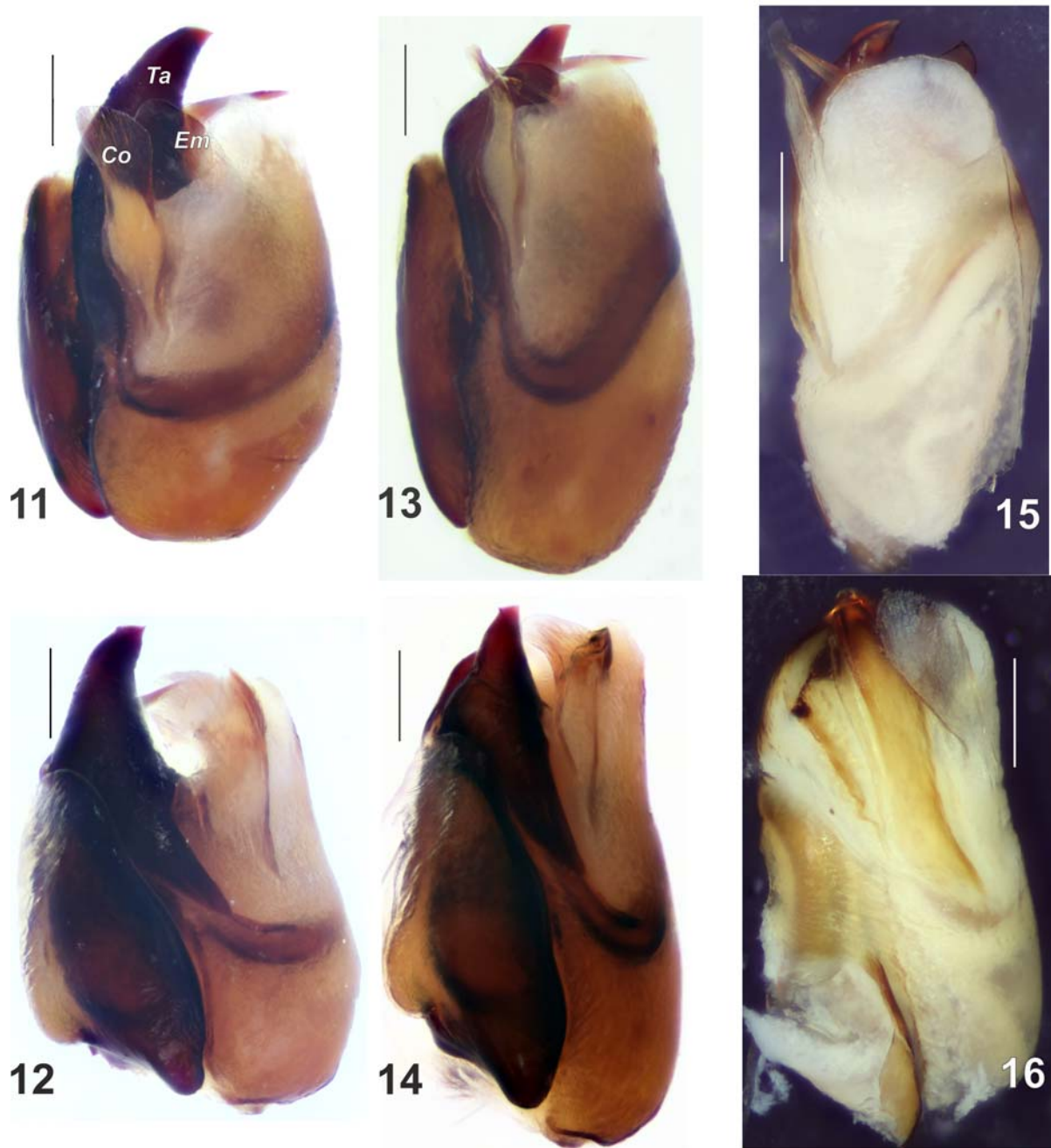
TYPES. MONGOLIA: *Khovd* Aimag: holotype ♂ (ISEA) and paratypes 4 ♀♀ (ISEA), Dzhargalant-Khairkhan Mt. Range, watershed of Ar-Shaatyn-Gol River and Dund-Uliastain-Gol River (47°42'N, 92°30'E), scree, 3300–3700 m, 25.06.2015 (A.A. Fomichev).

ETYMOLOGY. The species is dedicated to brothers Boris V. and Mikhail V. Tronov, famous mountaineers who initiated a systematic study of the highlands of the Altai Mountains.



Figs 5–10. Left male palp of *Parasyrisca kosachevi* sp.n. (5–6), *P. tronovorum* sp.n. (7–8), and *P. sulaki* sp.n. (9–10). 5, 7, 9 — dorsal; 6, 8, 10 — retrolateral. Scale = 0.2 mm.

Рис. 5–10. Левая пальпа самца *Parasyrisca kosachevi* sp.n. (5–6), *P. tronovorum* sp.n. (7–8) и *P. sulaki* sp.n. (9–10). 5, 7, 9 — дорсально; 6, 8, 10 — ретролатерально. Масштаб 0,2 мм.

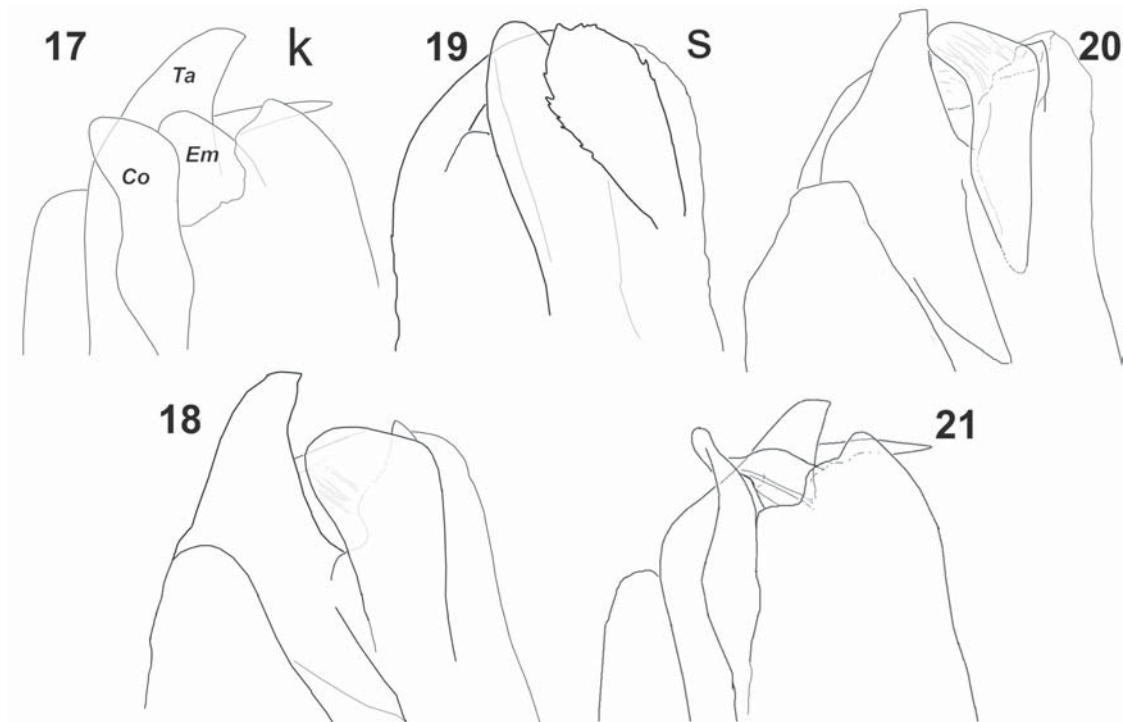


Figs 11–16. Left bulb of *Parasyrisca kosachevi* sp.n. (11–12), *P. tronovorum* sp.n. (13–14) and *P. sulaki* sp.n. (15–16). 11, 13, 15 — ventral; 12, 14, 16 — pro-lateral. Scale = 0.2 mm.

Рис. 11–16. Левый бульбус *Parasyrisca kosachevi* sp.n. (11–12), *P. tronovorum* sp.n. (13–14) и *P. sulaki* sp.n. (15–16). 11, 13, 15 — вентрально; 12, 14, 16 — пролатерально. Масштаб 0,2 мм.

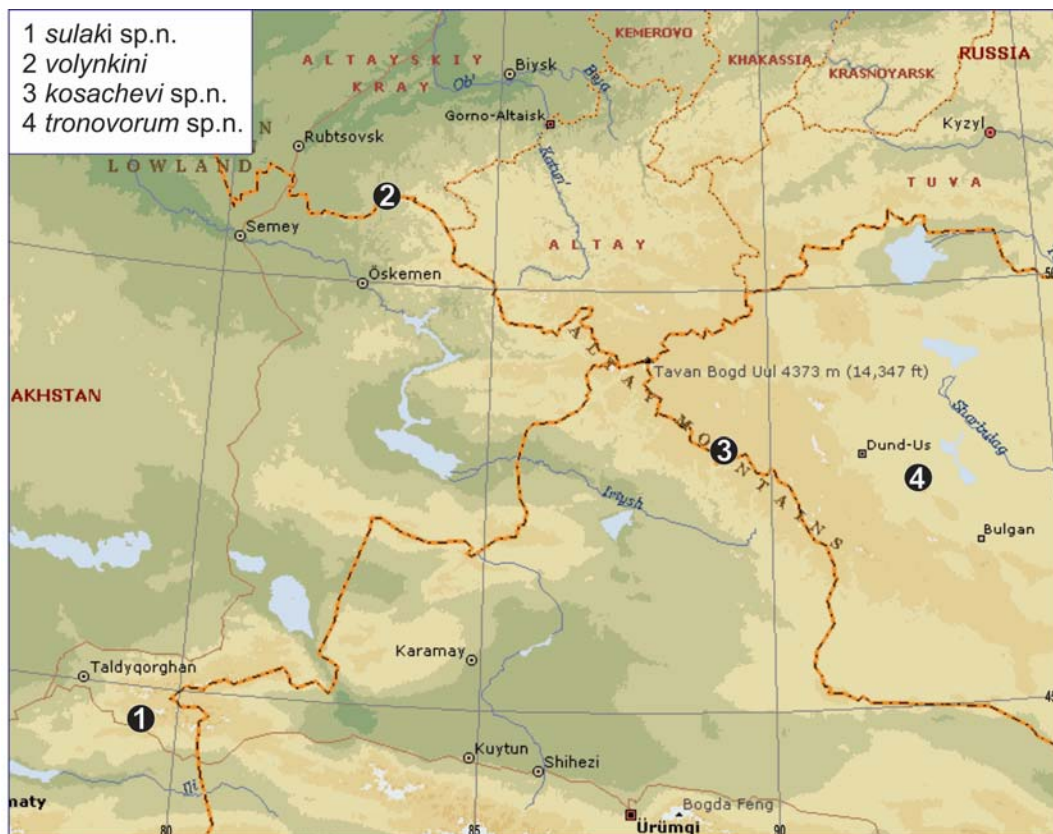
DIAGNOSIS. This species is most similar to *P. tyshchenkoi* Ovtsharenko *et al.*, 1995 (Figs 35, 38, 43). The male of *P. tronovorum* sp.n. can be separated from the male of the sibling species by its widened embolus with pro-laterally curved tip (straight in *P. tyshchenkoi*) as well as by its relatively longer tibia, narrower cymbium, and broader conductor. The female of the new species can be distinguished from the female of *P.*

tyshchenkoi by its relatively thin posterior epigynal hood (about 2 times thicker in *P. tyshchenkoi*). The female of *P. tronovorum* sp.n. is also similar to the females of some other species of the *potanini*-group: *P. asiatica*, *P. sulaki* sp.n. and *P. helanshan* Tang *et Zhao*, 1998. From *P. asiatica* and *P. sulaki* sp.n. the female of *P. tronovorum* sp.n. can be distinguished by its outwardly stretched atrial epigynal pockets. From



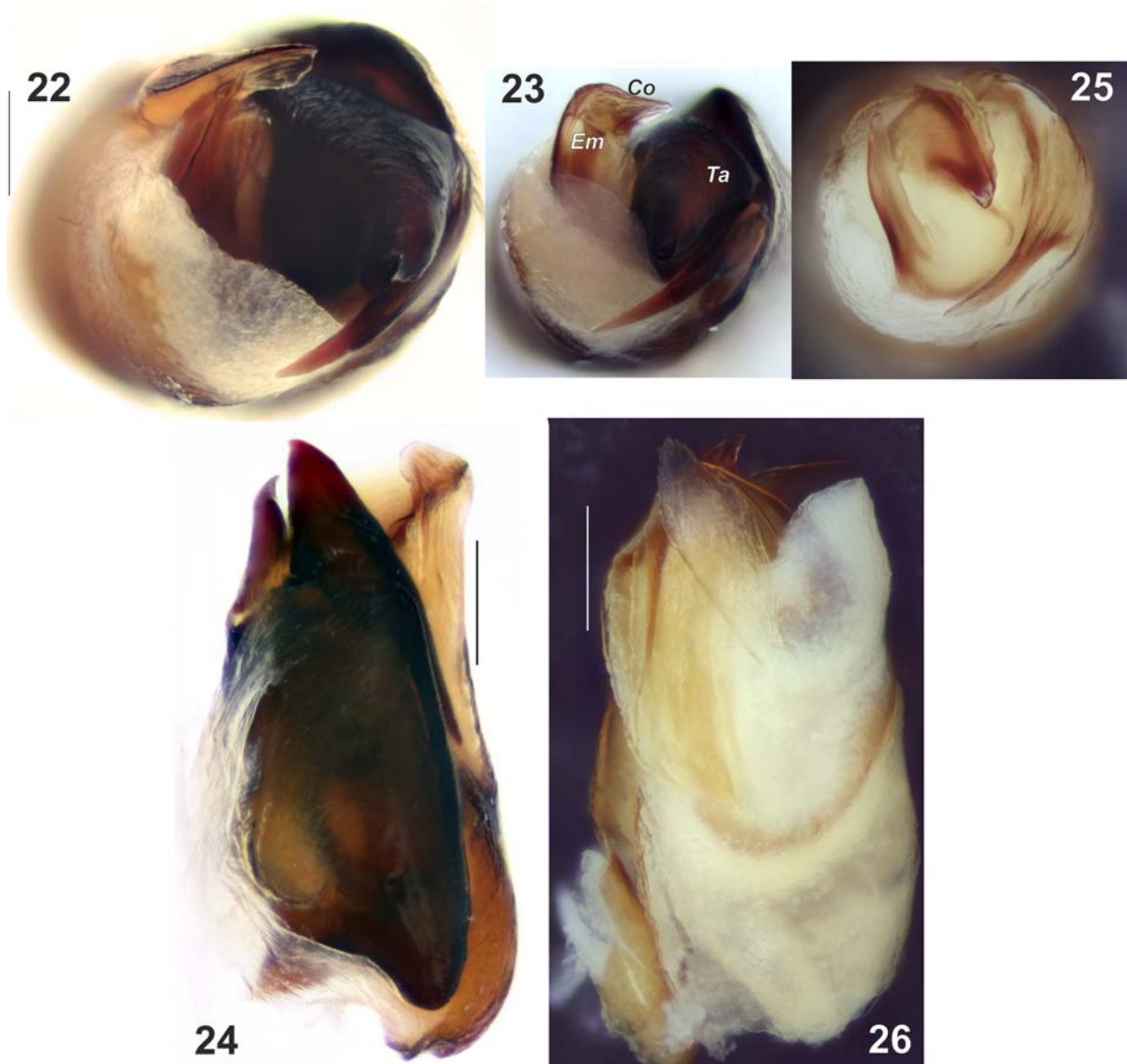
Figs 17–21. Terminal part of left bulb of *Parasyrisca kosachevi* sp.n. (17–18), *P. sulaki* sp.n. (19) and *P. tronovorum* sp.n. (20–21). 17, 21 — ventral; 18–20 — prolateral.

Рис. 17–21. Верхняя часть левого бульбуса *Parasyrisca kosachevi* sp.n. (17–18), *P. sulaki* sp.n. (19) и *P. tronovorum* sp.n. (20–21). 17, 21 — вентрально; 18–20 — пролатерально.



Map 1. Type localities of *Parasyrisca sulaki* sp.n. (1), *P. volynkini* (2), *P. kosachevi* sp.n. (3) and *P. tronovorum* sp.n. (4).

Карта 1. Типовые местообитания *Parasyrisca sulaki* sp.n. (1), *P. volynkini* (2), *P. kosachevi* sp.n. (3) и *P. tronovorum* sp.n. (4).



Figs 22–26. Left bulb of *Parasyrisca kosachevi* sp. n. (22), *P. tronovorum* sp.n. (23–24) and *P. sulaki* sp.n. (25–26). 22–23, 25 — apical; 24 — dorso-prolateral; 26 — ventral. Scale = 0.2 mm.

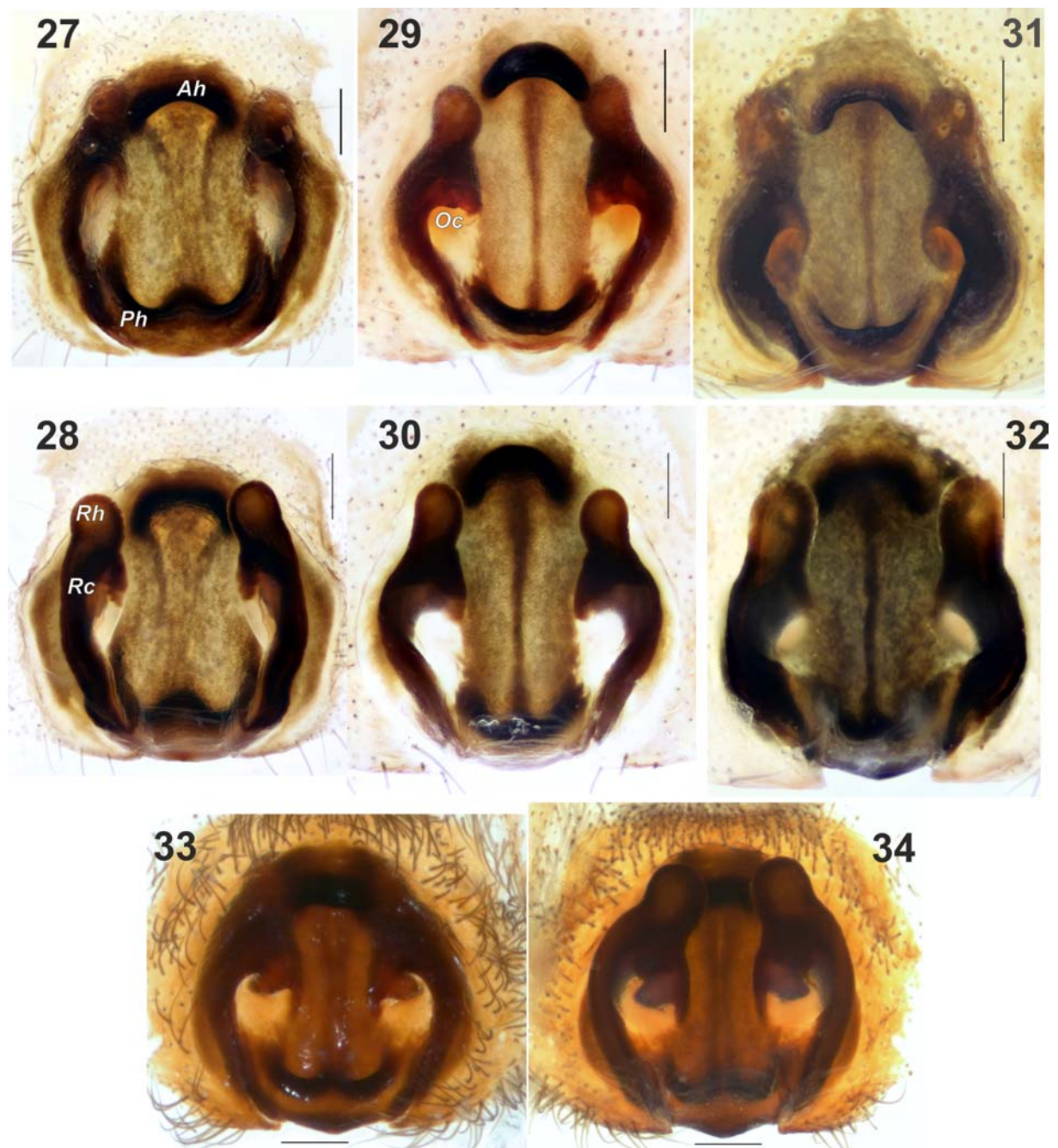
Рис. 22–26. Левый бульбус *Parasyrisca kosachevi* sp. n. (22), *P. tronovorum* sp.n. (23–24) и *P. sulaki* sp.n. (25–26). 22–23, 25 — апикально; 24 — спереди; 26 — вентрально. Масштаб 0,2 мм.

P. helanshan the female of the new species can be differentiated by its relatively thin posterior epigynal hood and wide anterior epigynal hood (about twice as thick and half as wide, respectively, in the female of *P. helanshan*).

DESCRIPTION. Male (holotype). Total length 9.7. Carapace 4.2 long, 3.3 wide. Coloration. Carapace brown. Chelicerae, labium, endites, and sternum dark-brown. Legs and palps yellow-brown. Abdomen gray dorsally, yellow-gray ventrally. Spinnerets yellow-gray. Leg measurements: I 17.55 (4.5 + 2.45 + 4.6 + 3.7 + 2.3); II 14.3 (3.95 + 2.15 + 3.55 + 2.75 + 1.9); III 12.6 (3.55 + 1.8 + 3.0 + 2.5 + 1.75); IV 16.85 (4.6 + 2.05 + 4.35 + 3.8 + 2.05). Leg spination: I Fe d1-1-0 p0-0-1

Ti v2-2-0 Mt v2-0-0 II Fe d1-1-0 p0-1-1 Ti v1-2-0 Mt v2-0-0, III Fe d1-1-0 p0-1-1 r0-1-1 Ti p2-0-1 r1-0-1 v2-2-2 Mt d2-0-0-2 p0-1-0-1 r1-0-0-1 v2-0-0-2, IV Fe d1-1-0 p0-0-1 r0-0-1 Ti p1-1-1 r2-1-1 v2-2-2 Mt d2-0-0-2 p0-1-0-1 r1-1-0-1 v1-1-0-2.

Palp as in Figs 3, 7–8, 13–14, 20–21, 23–24. Tibia elongate, 2.5 time longer than wide; tibial apophysis about half as long as tibia; tibial apophysis straight and flat in lateral view, with 1 basal tooth. Cymbium 2.35 times longer than wide. Conductor with bent tip, width of tip subequal to width of conductor base. Embolus widened, tip prolaterally curved. Terminal apophysis bent at angle of about 120 degrees.



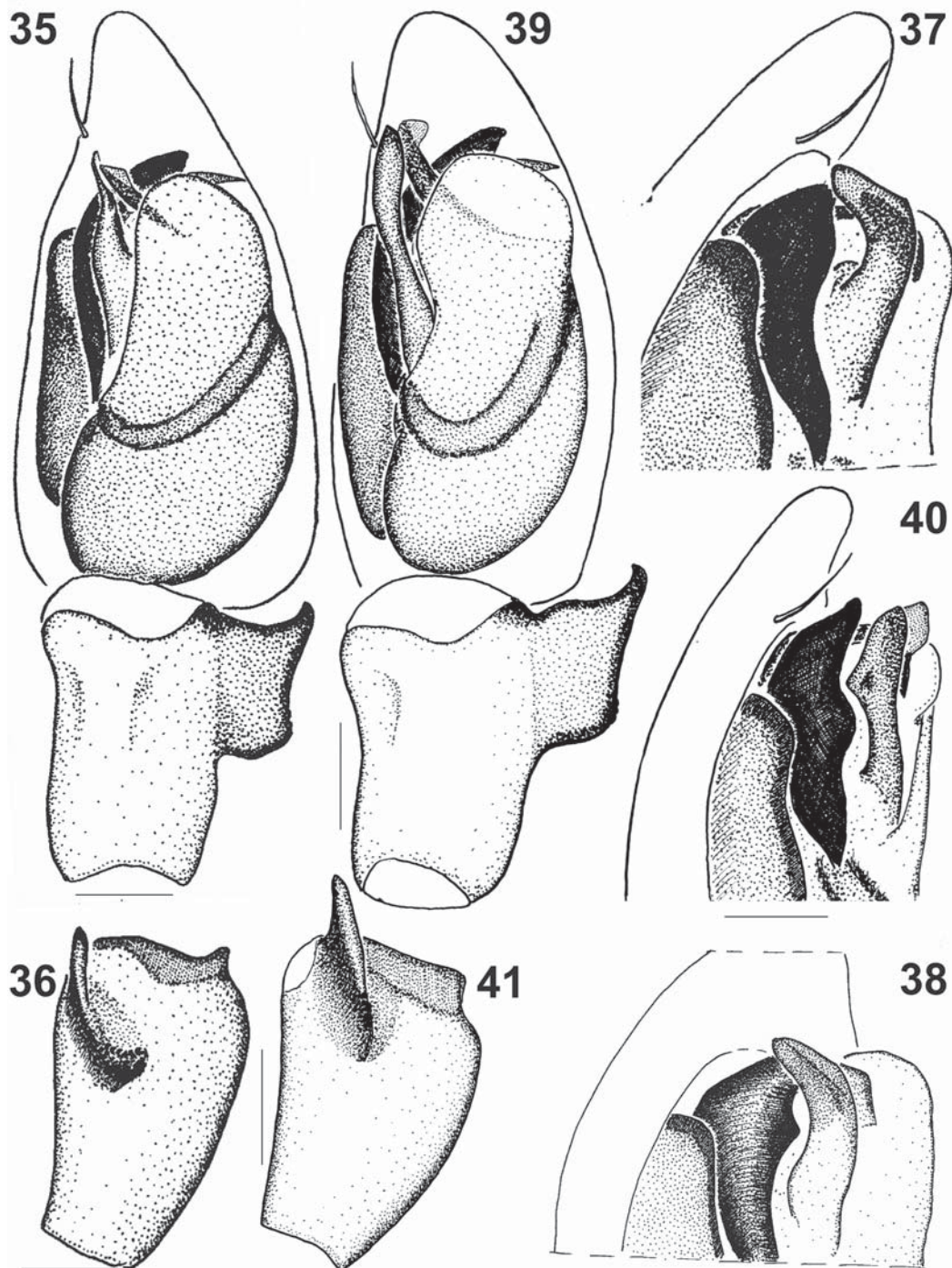
Figs 27–34. Epigyne of *Parasyrisca kosachevi* sp.n. (27–28), *P. tronovorum* sp.n. (29–30), *P. sulaki* sp.n. (31–32) and *P. volynkini* (33–34). 27, 29, 31, 33 — ventral; 28, 30, 32, 34 — dorsal. Scale = 0.2 mm.

Рис. 27–34. Эпигина *Parasyrisca kosachevi* sp.n. (27–28), *P. tronovorum* sp.n. (29–30), *P. sulaki* sp.n. (31–32) и *P. volynkini* (33–34). 27, 29, 31, 33 — вентрально; 28, 30, 32, 34 — дорсально. Масштаб 0,2 мм.

Female. Total length 10.7. Carapace 4.7 long, 3.6 wide. Coloration as in male, but abdomen fully yellow-gray. Leg measurements: I 14.6 (4.05 + 2.3 + 3.6 + 2.7 + 1.95); II 13.5 (3.85 + 2.15 + 3.2 + 2.5 + 1.8); III 12.4 (3.6 + 1.85 + 2.9 + 2.35 + 1.7); IV 16.65 (4.6 + 2.15 + 4.25 + 3.7 + 1.95). Leg spination: I Fe d1-1-0 p0-0-1 Ti v2-2-0 Mt v2-0-0, II Fe d1-1-0 p0-1-1 Ti v1-2-0 Mt v2-0-0, III Fe d1-1-0 p0-1-1 r0-1-1 Ti p1-1-1 r1-0-1

v2-2-2 Mt d2-0-0-2 p0-1-0-1 r0-1-0-1 v2-0-0-2, IV Fe d1-1-0 p0-0-1 r0-1-1 Ti p1-1-1 r2-1-1 v2-2-2 Mt d2-0-0-2 p0-1-0-1 r0-1-0-1 v1-1-0-2.

Epigyne as in Figs 29–30, plate and fovea about 1.1 times longer than wide. Anterior hood almost as wide as posterior hood. Posterior hood horseshoe-shaped. Copulatory openings located about half way between anterior and posterior hoods, distance between open-



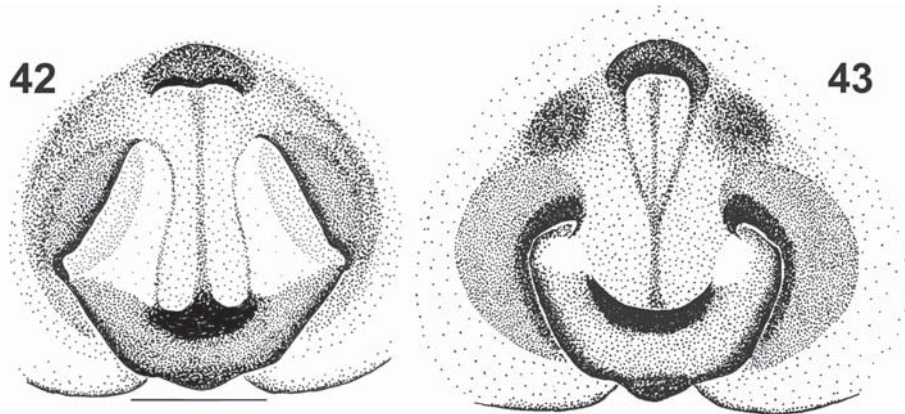
Figs 35–41. Male palp of *Parasyrisca tyshchenkoi* (35–38) and *P. holmi* (39–41). 35, 39 — ventral; 36, 41 — tibia, retrolateral; 37, 40 — terminal part of palp, prolateral; 38 — terminal part of palp, ventro-prolateral. Scale = 0.2 mm.

Рис. 35–41. Пальпа самца *Parasyrisca tyshchenkoi* (35–38) и *P. holmi* (39–41). 35, 39 — вентрально; 36, 41 — голень, ретролатерально; 37, 40 — верхняя часть пальпы, пролатерально; 38 — верхняя часть пальпы, вентро-пролатерально. Масштаб 0,2 мм.

ings 1.5 longer than entire width of posterior hood. Atrial epigynal pockets stretched outwardly. Receptacles not parallel, ectally rounded medially. Heads of receptacles separated by 2.5 diameters, terminating just posterior to anterior hood.

Size variation. Females vary from 8.6 to 10.7 in the body length, carapace 4.2–5.2 long, 3.3–4.1 wide (n=4).

DISTRIBUTION. Known from the type locality only.



Figs 42–43. Ventral view of epigyne of *Parasyrisca holmi* (42) and *P. tyshchenkoi* (43). Scale = 0.2 mm.
Рис. 42–43. Эпигина *Parasyrisca holmi* (42) и *P. tyshchenkoi* (43). Масштаб 0,2 мм.

COMMENTS. Collected at elevations from 3300 to 3700 m, *P. tronovorum* sp.n. appears to occur at the highest elevation of all temperate zone species of *Parasyrisca*. Other species of *Parasyrisca* have been found at higher elevations only in the subtropics, 7° to 13° south of the type locality of *P. tronovorum* sp.n., in the Alay, Pamir, and Karakoram Mountains. The new species is likely to be an endemic species of the orographically isolated Dzhargalant-Khairkhan Mt. Range.

Parasyrisca sulaki sp.n.

Figs 4, 9–10, 15–16, 19, 25–26, 31–32, Map 1.

TYPES. KAZAKHSTAN: *Almaty* Region: holotype ♂ (ISEA) and paratype 1 ♀ (ISEA) watershed of the Ermenesai and Koksai Rivers (44°43'N, 79°19'E), stony alpine meadow with screes, 2900–3000 m, 3.07.2016 (A.A. Fomichev).

ETYMOLOGY. The specific name is a patronym in honour of entomologist Harold Sulak (Munich, Germany) who helped to organize the expedition to Kazakhstan during which this new species was collected.

DIAGNOSIS. The male of the new species is similar to that of *P. holmi* Ovtsharenko *et al.*, 1995, but differs from it by the longer tibia, narrower cymbium, and the shape of the tibial apophysis (cf. Figs 4, 9–10 and 39, 41) as well as by much broader conductor and tapering, prolaterally curved embolus (conductor long and thin and embolus wide and medially curved embolus in *P. holmi*). The epigyne of *P. sulaki* sp.n. is similar to the epigynes of several other species such as *P. asiatica*, *P. bucklei*, *P. logunovi*, *P. tronovorum* sp.n., and *P. tyshchenkoi*. The female of *P. sulaki* sp.n. can be separated from those of *P. asiatica* and *P. bucklei* by the head of receptacles terminating level with the anterior hood, from those of *P. logunovi* and *P. tyshchenkoi* by narrower posterior hood, and from *P. tronovorum* sp. n. by the epigynal pockets not being stretched outward.

DESCRIPTION. Male (holotype). Total length 9.2. Carapace 4.1 long, 3.2 wide. Coloration (recently molted specimen). Prosoma, all limbs and spinnerets daffodil. Sternum and labium slightly darker. Abdomen yellow-

gray. Leg measurements: I 17.25 (4.45 + 2.2 + 4.6 + 3.75 + 2.25); II 13.95 (3.8 + 1.9 + 3.6 + 2.8 + 1.85); III 12.3 (3.55 + 1.7 + 3.1 + 2.35 + 1.6); IV 16.2 (4.45 + 1.95 + 4.35 + 3.6 + 1.85). Leg spination: I Fe d1-1-0 p0-0-1 Ti v1-2-0 Mt v2-0-0, II Fe d1-1-0 p0-1-1 Ti v0-2-1 Mt v2-0-0, III Fe d1-1-0 p0-1-1 r0-1-1 Ti p1-0-1 r1-0-1 v1-2-2 Mt d2-0-0-2 p1-0-0-1 r1-0-0-1 v2-0-0-2, IV Fe d1-1-0 p0-0-1 r0-0-1 Ti p1-0-1 r1-1-1 v2-2-2 Mt d2-0-0-2 p0-1-0-1 r1-0-0-1 v1-1-0-2.

Palp as in Figs 4, 9–10, 15–16, 19, 25–26. Tibia 2.5 times longer than wide, length of tibial apophysis equal to width of tibia, apophysis gradually tapering in ventral and dorsal views. Cymbium 2.19 times longer than wide. Conductor petal-like, broad near tip, narrower near base. Embolus narrow, sharply pointed.

Female. Total length 13.0. Carapace 5.0 long, 3.9 wide. Coloration. Carapace brown, darker in the cephalic part. Chelicerae, labium, endites and sternum dark-brown. Legs and palps yellow-brown, darker distally. Abdomen dirty cream-colored. Spinnerets yellow-brown. Leg measurements: I 15.5 (4.25 + 2.3 + 3.95 + 3.0 + 2.0), II 14.35 (4.05 + 2.15 + 3.6 + 2.7 + 1.85), III 13.35 (3.9 + 2.0 + 3.25 + 2.5 + 1.7), IV 17.3 (4.85 + 2.25 + 4.5 + 3.7 + 2.0). Leg spination: I Fe d1-1-0 p0-0-1 Ti v0-2-0 Mt v2-0-0, II Fe d1-1-0 p0-1-1 Ti v0-2-1 Mt v2-0-0, III Fe d1-1-0 p0-1-1 r0-1-1 Ti p2-0-1 r1-0-1 v1-2-2 Mt d0-2-0-2 p0-1-0-1 r0-1-0-1 v2-0-0-2, IV Fe d1-1-0 p0-0-1 r0-0-1 Ti p1-2-1 r1-1-1 v2-2-2 Mt d2-0-0-2 p0-1-0-1 r0-1-0-1 v2-0-0-2.

Epigyne as in Figs 31–32; epigynal plate longer than wide; fovea almost 2 times longer than wide. Anterior hood almost as wide as posterior hood. Posterior hood thickened, horseshoe-shaped. Copulatory openings located in posterior half of fovea. Receptacles almost parallel, slightly curved outwards posteriorly. Heads of receptacles nearly 2 diameters apart and terminating level with anterior hood.

DISTRIBUTION. Known from the type locality only.

COMMENTS. The holotype male is a recently molted and weakly chitinized.

Parasyrisca volynkini Fomichev, 2016
Figs 33–34, Map 1.

Parasyrisca volynkini Fomichev, 2016: 120, figs 5–9, 13–14 (♂).

MATERIAL EXAMINED. RUSSIA: *Altai* Province: holotype ♂ (ISEA, 001.6269) Tigirek Mt. Range, Razrabotnaya Mt. (51° 01'N, 83°01'E), kurum (scree formed by huge boulders), 1800–1960 m, 31.07.2014 (A.A. Fomichev); 2 ♀♀ (ISEA) same place (51°02'N, 83°01'E), kurum, 1700–1960 m, 13.07.2016 (V.V. Sidorov).

DIAGNOSIS. The male of *P. volynkini* is similar to those of three south-Siberian species: *P. altaica* Ovtsharenko *et al.*, 1995, *P. bucklei* and *P. logunovi*, but can be separated from the latter two by the curved distal part of its conductor (straight in the sibling species) and from *P. altaica* by the parallel margins of the conductor when viewed prolaterally (conductor with an extended terminal part in the male of *P. altaica*). The females of *P. volynkini* and *P. altaica* can be separated by the thinner posterior hood and more closely spaced heads of the receptacles in the former. From *P. bucklei* and *P. asiatica* it differs by the heads of the receptacles being separated by about one diameter (separated by 2 and 3 diameters in *P. bucklei* and *P. asiatica*, respectively). The females of *P. volynkini* and *P. belukha* Ovtsharenko *et al.*, 1995 are also similar but can be distinguished by the thicker lateral parts of the posterior hood and the heads of receptacles terminating anteriorly to the anterior hood in *P. volynkini*. From *P. logunovi* the female of *P. volynkini* is separated by the ectal curving of the medial part of its receptacles.

DESCRIPTION. Female. Total length 11.1. Carapace 4.5 long, 3.8 wide. Coloration: carapace brown; chelicerae, labium, endites, and sternum dark-brown; legs and palps yellow-brown, darker distally; abdomen and spinnerets yellow-gray. Leg measurements: I 13.6 (3.9 + 1.95 + 3.55 + 2.55 + 1.65); II 12.5 (3.7 + 1.8 + 3.05 + 2.4 + 1.55); III 11.7 (3.45 + 1.75 + 2.9 + 2.15 + 1.45); IV 14.45 (4.15 + 1.9 + 3.55 + 3.15 + 1.7). Leg spination: I Fe d1-1-0 p0-0-1 Ti v2-2-0 Mt v2-0-0, II Fe d1-1-0 p0-1-1 Ti 2-2-0 Mt v2-0-0, III Fe d1-1-0 p0-1-1 r0-1-1 Ti p2-0-1 r1-0-1 v2-2-2 Mt d0-2-0-2 p0-1-0-1 r0-1-0-1 v1-1-0-2, IV Fe d1-1-0 r0-0-1 Ti p1-0-1 r1-1-1 v1-2-2 Mt d2-0-0-2 p0-1-0-1 r0-1-0-1 v0-2-0-2.

Epigyne as in Figs 33–34; plate as long as wide; fovea wider than long. Anterior hood about half as wide as posterior hood. Posterior hood horseshoe-shaped. Copulatory openings located in anterior 1/3 of fovea. Medial part of receptacles curved outwards. Heads of receptacles separated by about one diameter and terminating slightly anterior of the anterior hood.

Size variation. Total length 11.1–11.3; carapace 4.05–4.5 long and 3.5–3.8 wide (n=2).

DISTRIBUTION. Known from the type locality only.

Species grouping

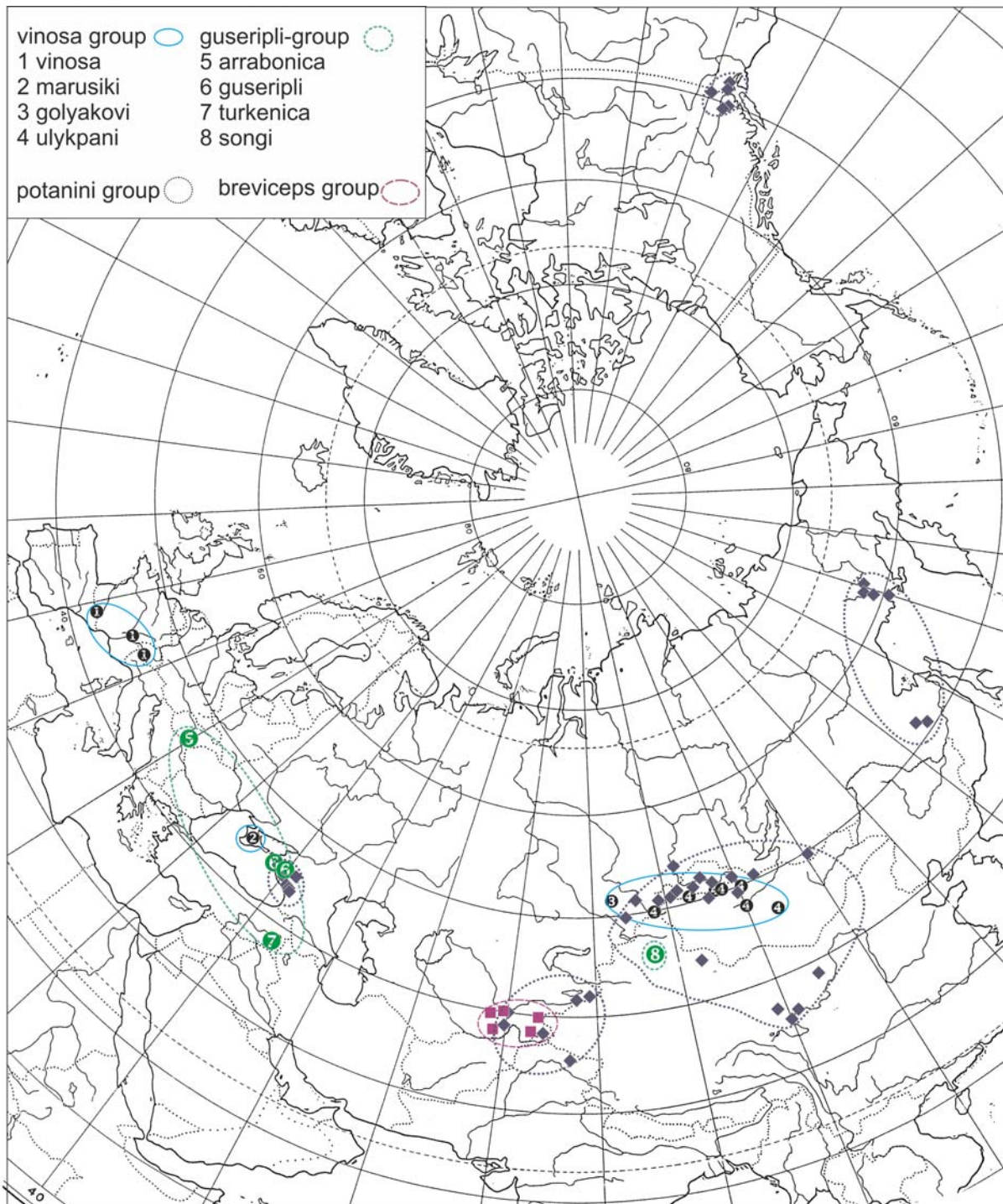
In his revision of *Parasyrisca* Ovtsharenko *et al.* [1995] recognized 44 species in four species groups: *potanini*, *vinosa*, *guzeripli* and *breviceps*. Subsequently the number of named species has risen to 54 and the accumulation of new data on morphology and distribution allow us to reconsider species groupings within the genus.

The *vinosa*-group. Recently, the *vinosa*-group was revised and rediagnosed [Marusik, Fomichev, 2016] with four species recognized in the group: *P. golyakovi*, *P. marusiki*, *P. vinosa* (Simon, 1878), and *P. ulykpani* Ovtsharenko *et al.*, 1995. Although a small group, it has a wide and disjunct range from the Pyrenees (2°E) to Central Mongolia (115°E) (Map 2).

The *breviceps*-group. This group, diagnosed only in Ovtsharenko *et al.* (1995), includes 10 species: *P. andreevae* Ovtsharenko *et al.*, 1995, *P. anzobica* Ovtsharenko *et al.*, 1995, *P. breviceps* (Kroneberg, 1875), *P. chikatunovi* Ovtsharenko *et al.*, 1995, *P. gissarika* Ovtsharenko *et al.*, 1995, *P. iskander* Ovtsharenko *et al.*, 1995, *P. koku* Ovtsharenko *et al.*, 1995, *P. paironica* Ovtsharenko *et al.*, 1995, *P. shakhristanica* Ovtsharenko *et al.*, 1995, and *P. vorobica* Ovtsharenko *et al.*, 1995. Although it is the second largest species group, its distribution is restricted to a small area of the Gissar-Alai and Pamir Mountains and, unlike the other species groups, has no disjunction in its distribution (Map 2).

The *guzeripli*-group. This group, originally suggested for a single species, *P. guzeripli* Ovtsharenko *et al.*, 1995, now may contain (with some reservations) three more species: *P. turkenica* Ovtsharenko *et al.*, 1995, *P. arrabonica* Szinetár et Eichardt, 2009, and *P. songi* Marusik et Fritzén, 2009. The two former species were considered previously in the *potanini*-group. All three share a conical tibial apophysis, a much longer than wide epigyne, a very small fovea (atrium), and short receptacles not reaching the anterior hood. Alternatively, the position of the embolus in these species suggest that they may belong to a new *turkenica*-group. Here we take the conservative approach and place them provisionally in the *guzeripli*-group. This group has a wide but strongly disjunct range in the West Palaearctic from Hungary (20°E) to Xinjiang (90°E) (Map 2).

The *potanini*-group. This, the largest of the *Parasyrisca* species groups, contains 36 species (Table 1): *P. alai* Ovtsharenko *et al.*, 1995, *P. alexeevi* Ovtsharenko *et al.*, 1995, *P. altaica*, *P. andarbag* Ovtsharenko *et al.*, 1995, *P. asiatica*, *P. balcarica* Ovtsharenko *et al.*, 1995, *P. belengish* Ovtsharenko *et al.*, 1995, *P. belukha*, *P. birikchul* Ovtsharenko *et al.*, 1995, *P. bucklei*, *P. caucasica* Ovtsharenko *et al.*, 1995, *P. heimeri* Ovtsharenko *et al.*, 1995, *P. helanshan*, *P. hippai* Ovtsharenko *et al.*, 1995, *P. holmi*, *P. khubsugul* Ovtsharenko *et al.*, 1995, *P. kosachevi* sp.n., *P. kurgan* Ovtsharenko *et al.*, 1995, *P. kyzylart* Ovtsharenko *et al.*, 1995, *P. logunovi*, *P. mikhailovi* Ovtsharenko *et*



Map 2. Distribution records of the four species groups of *Parasyrisca*.

Карта 2. Распространение четырёх групп видов *Parasyrisca*.

al., 1995, *P. narynica* Ovtsharenko *et al.*, 1995, *P. orites* (Chamberlin et Gertsch, 1940), *P. otmek* Ovtsharenko *et al.*, 1995, *P. pamirica* Ovtsharenko *et al.*, 1995, *P. potanini* Schenkel, 1963, *P. pshartica* Ovtsharenko *et al.*, 1995, *P. schenkeli* Ovtsharenko et Marusik, 1988, *P. sollers* (Simon, 1895), *P. sulaki*

sp.n., *P. susamyr* Ovtsharenko *et al.*, 1995, *P. terskei* Ovtsharenko *et al.*, 1995, *P. tronovorum* sp.n., *P. tyshchenkoi*, *P. vakhanski* Ovtsharenko *et al.*, 1995 and *P. volynkini*. It was well diagnosed by Ovtsharenko *et al.* (1995). Its range is of a similar size to the range of the *vinosa*-group: from Western Caucasus (40°E) to north-

Table 1. List of species belonging to the *Parasyrisca potanini*-group and their distribution.
 Таблица 1. Таксономический состав *Parasyrisca potanini*-group и распространение включаемых видов.

Species	Known sexes	Distribution and elevation (if known)	Latitude and longitude
<i>P. alai</i>	♂	Alay Mountains (3615 m), Karakoram (3900–4200 m)	35–40°N, 73–75°E
<i>P. alexeevi</i>	♀	W Caucasus	43°N, 44°E
<i>P. altaica</i>	♂♀	Altai Mountains (1327 m)	45–48°N, 84–87°E
<i>P. andarbag</i>	♀	Pamir (2000 m)	38°N, 72°E
<i>P. asiatica</i>	♂♀	Altai Mountains (1800–3000 m), Tuva (1500–3300 m)	49–50°N, 88–91°E
<i>P. balcarica</i>	♂♀	W Caucasus (2500–3500 m)	43–44°N, 42–43°E
<i>P. belengish</i>	♀	Tuva (1200–1900 m)	50–51°N, 94–96°E
<i>P. belukha</i>	♀	Altai Mountains	50°N, 87°E
<i>P. birikchul</i>	♂♀	Kusnetsk Alatau Mountains	53°N, 90°E
<i>P. bucklei</i>	♂♀	Altai Mountains (2180–3300 m)	50°N, 88–89°E
<i>P. caucasica</i>	♂♀	Caucasus (2300–3000 m)	44°N, 40°E
<i>P. heimeri</i>	♀	Altai Mountains	44°N, 103°E
<i>P. helanshan</i>	♀	Helan Mountains (central Inner Mongolia)	39°N, 106°E
<i>P. hippai</i>	♀	Altai Mountains (2000 m), Tuva (600–2100 m)	50–52°N, 86–94°E
<i>P. holmi</i>	♂♀	Upper Kolyma Upland (600–1300 m), Magadan (20 m), Badzhal Mt. Range (1700 m)	50–63°N, 135–151°E
<i>P. khubsugul</i>	♂	Khangai Mountains (2100–2600 m)	48–49°N, 99–100°E
<i>P. kosachevi</i> sp.n.	♂♀	Altai Mountains (2700 m)	48°N, 89°E
<i>P. kurgan</i>	♀	Tian Shan Mountains	41°N, 74°E
<i>P. kyzylart</i>	♀	Pamir (4280 m)	39°N, 73°E
<i>P. logunovi</i>	♂♀	Tuva (3100–3300 m)	50°N, 90°E
<i>P. mikhailovi</i>	♀	W Caucasus (1700–3000 m)	43°N, 44°E
<i>P. narynica</i>	♂♀	Tian Shan Mountains, Pamir	38–42°N, 74–78°E
<i>P. orites</i>	♂♀	Coastal and Cascade Mountains (1800–2400 m)	47–51°N, 120–122°W
<i>P. otmek</i>	♀	Tian Shan Mountains	42°N, 73°E
<i>P. pamirica</i>	♀	Pamir (4200 m)	39°N, 72°E
<i>P. potanini</i>	♂♀	Tuva (600–1500 m), Khangai Mountains (1000–2150 m), Khentii Mountains (1200–1600 m), Inner Mongolia, Tibet	34–52°N, 93–110°E
<i>P. pshartica</i>	♀	Pamir (4500–4900 m)	38°N, 74°E
<i>P. schenkeli</i>	♂♀	Altai Mts (2500 m), Tuva (900–1350 m), Great Lake Depression (1350 m), Khangai Mts (1620–1650 m), Khentii Mts (1380 m), Gobi Desert (1480–1700 m), Gansu	38–50°N, 83–114°E
<i>P. sollers</i>	♀	Altai Mountains, Tian Shan Mountains (2065 m)	44–48°N, 92–93°E
<i>P. sulaki</i> sp.n.	♂♀	Dzhungarian Alatau (2900–3000 m)	45°N, 79°E
<i>P. susamyr</i>	♂♀	Tian Shan Mountains (3000 m)	42°N, 72–74°E
<i>P. terskei</i>	♀	Tian Shan Mountains (2500 m)	42°N, 78°E
<i>P. tronovororum</i> sp.n.	♂♀	Altai Mountains (3300–3700 m)	48°N, 93°E
<i>P. tyshchenkoi</i>	♂♀	Upper Kolyma Upland, Tuva (900–1200 m), Chita Oblast (1700–1800 m)	50–63°N, 93–150°E
<i>P. vakhanski</i>	♂	Pamir (4400 m)	37°N, 74°E
<i>P. volynkini</i>	♂♀	Altai Mountains (1800–1960 m)	51°N, 83°E



Map 3. Distribution records of the *Parasyrisca potanini*-group in the Caucasus.
Карта 3. Находки видов группы *Parasyrisca potanini* на Кавказе.

ern Cisokhotia (150°E). A single species, *P. orites*, occurs in a small area of the Western Nearctic in the Coast and Cascade Mountains of southwestern British Columbia and northwestern Washington. Whereas the longitudinal gradient of the range of the *potanini*-group is somewhat smaller than in the *vinosa*-group, it has the widest latitudinal range: from 35°N to 63°N (Map 2).

Currently all of the records for the *potanini*-group in the Caucasus are from within Russia in the western part of the Caucasus Major (Map 3).

Like the *vinosa*- and *guseripli*-groups, the *potanini*-group has a strongly disjunct range (Map 2): the Caucasus, the mountains of Central Asia, adjacent regions of Russia and China, Northeastern Siberia and northwestern North America. Probably the range of the *potanini*-group is continuous in Siberia and the apparent disjunction is caused by a lack of knowledge. There are four centers of species diversity within the range of the *potanini*-group: the Altai (7 endemic species of 11 known from the region), Pamir (5/6), Caucasus (4/4), and Tian Shan Mountains (3/6).

There are several large mountain ranges and upland areas which are suitable for *Parasyrisca* but where no specimens have yet been found. Among them are the Stanovoy Uplands, the Western and Eastern Sayan Mountains, the Saur and Tarbagatai Mountain Ranges, the Hindu Kush Mountains, the Iranian Plateau, and the Himalayas. Serious spider inventory work in those regions in the future likely will reveal more new species of *Parasyrisca*.

ACKNOWLEDGEMENTS

We thank R.V. Yakovlev, A.I. Shmakov, A.N. Cherepanov, A. Korablin, T.M. Krugova, A.E. Naidev, A.S. Slep'kov (all from Barnaul, Russia), H. Sulak (Munich, Germany), L. Stoppel' (Taldykorgan, Kazakhstan), U. Beket (Bayan-Ölgii, Mongolia) for organizing the expeditions to Altai, Kazakhstan, and

Mongolia during which the material treated in this paper was collected. We are grateful to Seppo Koponen (Zoological Museum, University of Turku) for providing museum facilities as well as to Mykola M. Kovblyuk (Simferopol, Ukraine) and an anonymous reviewer for commenting our manuscript. English of an earlier draft was kindly checked by Robb Bennett (Victoria, British Columbia).

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Responsible editor K.G. Mikhailov