

An enigmatic new genus of spiders (Aranei: Dionycha) from the highlands of Pamir Mountains, Middle Asia

Загадочный новый род пауков (Aranei: Dionycha) из высокогорий Памира, Средняя Азия

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КЛЮЧЕВЫЕ СЛОВА: Araneae, биоразнообразие, Центральная Азия, эcribellатные пауки, Miturgidae, новый вид, Таджикистан, Zoropsidae.

ABSTRACT. A new spider genus, *Pamiropsis* gen.n., is described, comprising only one species, *P. murghob* sp.n. (♀) collected in the Pamir Mountains, Tajikistan. The new genus has an uncertain taxonomic position and is tentatively placed in Zoropsidae Bertkau, 1882. The absence of the male does not allow a solid taxonomic classification. Description, figures and diagnosis are provided, and the taxonomic position of the new genus is discussed.

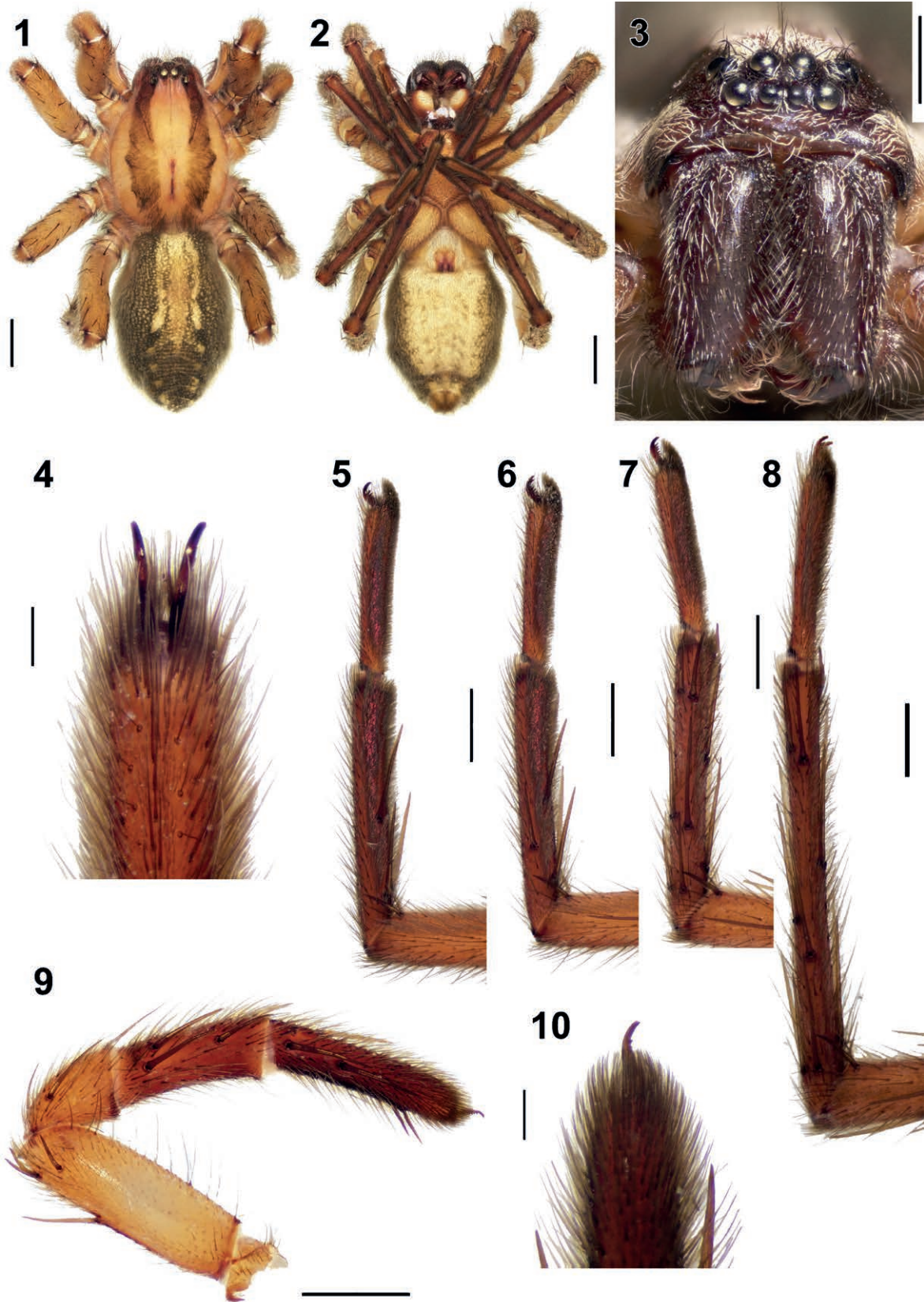
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РЕЗЮМЕ. Описывается новый род пауков, *Pamiropsis* gen.n., включающий только один вид, *P. murghob* sp.n. (♀), собранный на Памире в Таджикистане. Новый род имеет неясное таксономическое положение и предварительно отнесён к Zoropsidae Bertkau, 1882. Отсутствие самца не позволяет провести надёжную таксономическую классификацию. Приводятся описание, рисунки и диагноз, обсуждается таксономическое положение нового рода.

Introduction

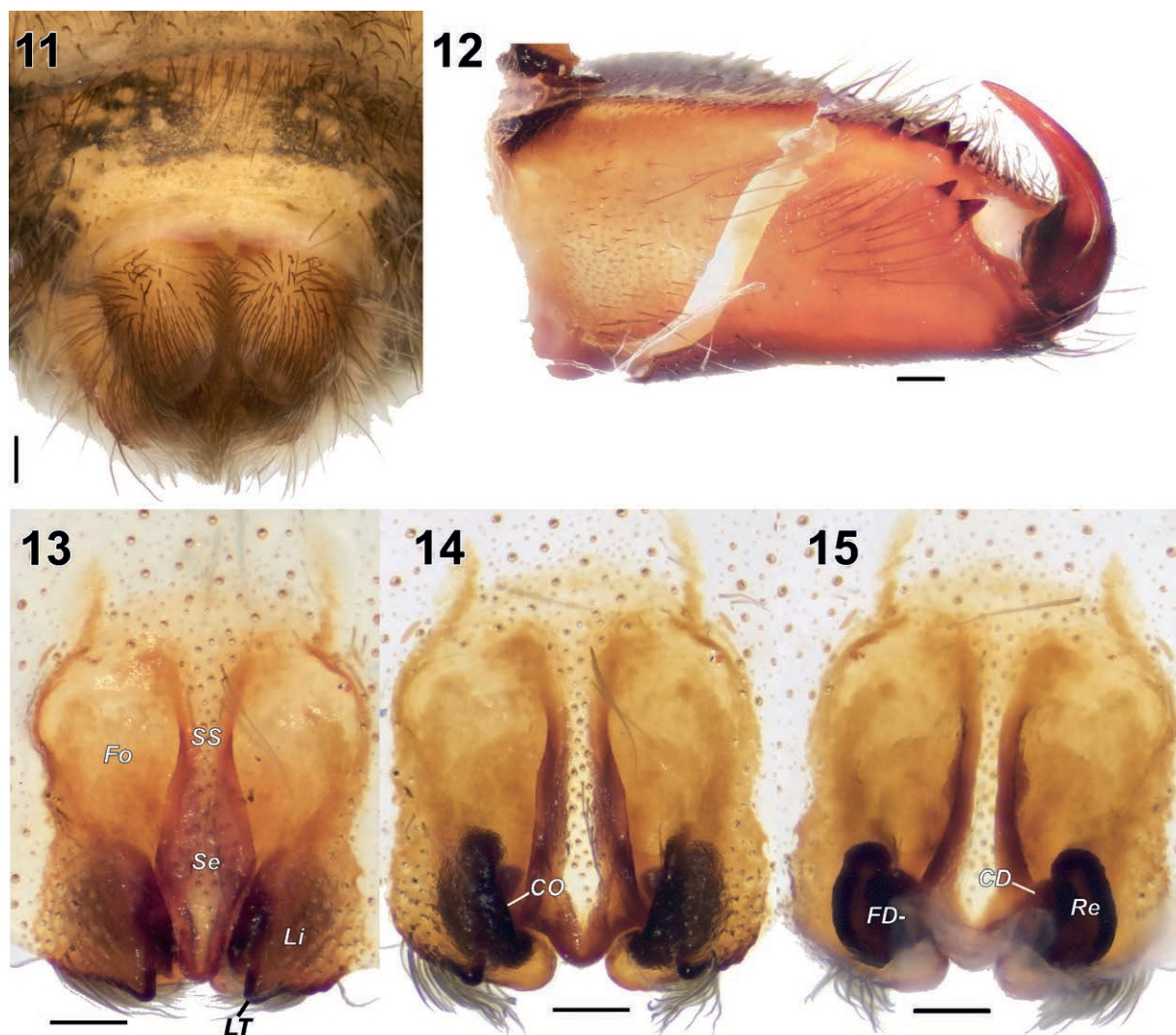
Zoropsidae Bertkau, 1882 is a relatively small spider family with 180 extant species belonging to 27 genera distributed almost worldwide [WSC, 2024]. The family is poorly delimited and contains genera that have been

transferred from one family to another [Bosselaers, 2002; Jocqué, Dippenaar-Schoeman, 2006]. According to a recent study [Kulkarni *et al.*, 2023], Zoropsidae is not monophyletic. Two centers of diversity are known for this family: the southern part of the Nearctic (82 species in 7 genera) and Australia (32 species in 6 genera) [WSC, 2024]. Only three zoropsid genera are known in the Palaearctic: the monotypic *Akamasia* Bosselaers, 1997 endemic to Cyprus [Bosselaers, 1997]; *Takeoa* Lehtinen, 1967, with two named species, distributed from eastern China through Japan and Far East of Russia [Yaginuma, 1963; Song *et al.*, 1999; Fomichev, Omelko, 2024]; and *Zoropsis* Simon, 1878, a widespread genus in the Mediterranean, with one species in Central Asia and several species in eastern China [Thaler *et al.*, 2006; Li *et al.*, 2015; Wang *et al.*, 2020]. Tajikistan, with 352 reported spider species, is the least studied country in Central Asia [Mikhailov, 2021]. Most of the species known from this country are known from the western parts, while only a few are recorded from the Pamir Mountains in the east. Andreeva [1976] reported only 19 species from the Pamir, and none of them are endemic to these mountains. Recently, the second author had the opportunity to take part in an expedition to the Pamir Mountains, where he collected several female specimens of spiders resembling zoropsids. Studies on these specimens revealed that they belong to an undescribed species from an undescribed genus with an unclear taxonomic position. The goal of this paper is to describe this new species and genus which are preliminary placed in Zoropsidae.



Figs 1–10. General appearance (1–2), cephalic part (3), tip of leg tarsus (4), legs I–IV (5–8), palp (9) and tip of palpal tarsus (10) of female of *Pamiropsis murghob* sp.n. 1, 4, 10 — dorsal; 2 — ventral; 3 — anterior; 5–9 — prolateral. Scale bars: 1–2 — 2 mm; 3, 5–9 — 1 mm; 4, 10 — 0.2 mm.

Рис. 1–10. Внешний вид (1–2), головная часть (3), кончик лапки ноги (4), ноги I–IV (5–8), палпы (9) и кончик лапки пальпы (10) самки *Pamiropsis murghob* sp.n. 1, 4, 10 — дорсально; 2 — вентрально; 3 — спереди; 5–9 — пролатерально. Масштаб: 1–2 — 2 мм; 3, 5–9 — 1 мм; 4, 10 — 0,2 мм.



Figs 11–15. Spinnerets (11), chelicera (12) and epigyne (13–15) of female of *Pamiropsis murghob* sp.n. 11 — ventral; 12 — posterior; 13 — intact, ventral; 14 — macerated, ventral; 15 — macerated, dorsal. Scale bars: 0.2 mm. Abbreviations: *CD* — copulatory duct, *CO* — copulatory opening, *FD* — fertilization duct, *Fo* — fovea, *Li* — lip of epigyne, *LT* — teeth of lip, *Re* — receptacle, *Se* — septum; *SS* — septal stem.

Рис. 11–15. Паутинные бородавки (11), хелицера (12) и эпигина (13–15) самки *Pamiropsis murghob* sp.n. 11 — вентрально; 12 — сзади; 13 — интактная, вентрально; 14 — мацерированная, вентрально; 15 — мацерированная, дорсально. Масштаб: 0,2 мм. Сокращения: *CD* — копулятивный проток, *CO* — копулятивное отверстие, *FD* — оплодотворительный проток, *Fo* — ямка, *Li* — губа эпигины, *LT* — зубец губы, *Re* — рецептакула, *Se* — септум, *SS* — стебель септума.

Material and methods

The specimen was photographed using an Olympus DP74 camera attached to an Olympus SZX16 stereomicroscope at the Altai State University (Barnaul, Russia). Photographs were taken in dishes with white cotton at the bottom, filled with ethanol. Digital multifocus images were montaged using “Zerene Stacker”. Epigyne was cleared in KOH/water solution for a day. All measurements are in millimeters (mm). Length of leg segments was measured on the dorsal side. Data about spination of legs are based on examination of one side of the body of one specimen. The distribution map was produced using SimpleMapp [Shorthouse, 2010]. The studied material is deposited in the Institute of Systematics and Ecology of Animals SB RAS (ISEA; curator G.N. Azarkina) and in the Zoological Museum of Moscow State University (ZMMU; curator K.G. Mikhailov).

Abbreviations: ALE — anterior lateral eye, AME — anterior median eye, d — dorsal, Fe — femur, Mt — metatarsus, p — prolateral, Pa — patella, PLE — posterior lateral eye, PME — posterior median eye, r — retrolateral, Ti — tibia, v — ventral.

Taxonomy

Family Zoropsidae Bertkau, 1882

Pamiropsis gen.n.

TYPE SPECIES. *Pamiropsis murghob* sp.n. from Tajikistan.

ETYMOLOGY. The generic name is derived from the type locality of the type species, the Pamir Mountains, with the ending *-opsis*, to emphasize its affinity to Zoropsidae, with the type genus *Zoropsis* Simon, 1878. Gender is masculine.

DIAGNOSIS. *Pamiropsis* gen. n. differs from other Zoropsidae known in the Palaearctic by the lack of cribellum. From the cribellate *Zoropsis* it differs by having epigynal teeth (*Et*), and in addition by either having a septum (vs. scape), or if septum is present in *Zoropsis*, it is not as long as fovea.

RELATIONSHIPS. By having 2 tarsal claws and a lycosoid habitus, the new genus may be placed in either Miturgidae or Zoropsidae. Both families include cribellate and ecribellate taxa and are poorly delimited (see [Ramírez, 2014]). We placed the new genus in Zoropsidae due to the presence of a septum lacking in *Miturga* Thorell, 1870 and other miturgid genera.

DESCRIPTION. As for the type species.

COMPOSITION. Only the type species.

Pamiropsis murghob sp.n.
Figs 1–18.

TYPES. TAJIKISTAN: *Gorno-Badakhshan* Region: holotype ♀ (ISEA, 001.9052), North Alichur Mountain Range, 23 km SSW from Murghob Vill. (37°58.093'N, 73°52.491'E), stony mountain desert with rocks, 4000 m, 16.07.2023, A.A. Fomichev. Paratypes: 1♀ (ISEA, 001.9053), together with the holotype; 4♀ (ZMMU) same region, North Alichur Mountain Range, 25 km SSW from Murghob Vill. (37°57.575'N, 73°50.790'E), stony mountain steppe with rocks and screes, 4100 m, 20.07.2023, A.A. Fomichev, Y.V. Dyachkov.

ETYMOLOGY. The specific epithet is derived from Murghob Village, the capital of the eastern Pamirs, in the vicinity of which the types were collected.

DIAGNOSIS. See genus diagnosis.

DESCRIPTION. Female (holotype). General appearance as in Figs 1–2. Total length 14.6. Carapace: 6.8 long, 5.0 wide. Abdomen: 7.9 long, 4.7 wide. Carapace yellow-brown with two longitudinal brown stripes. Fovea long, ca. 1/3 of carapace width and equal to PLE span. Clypeus, chelicerae and labium dark brown. Endites brown, light yellow anteromesally. Sternum yellow-brown, darker at edges. Coxae light brown. Legs and palps light brown, metatarsi and tarsi dark brown, without annulations. Abdomen dorsally dark brown with yellow specks and yellow leaf-shaped pattern. Venter of abdomen dirty-yellow. Spinnerets yellow. Eyes in two rows (Fig. 3). Eye sizes and interdistances: AME 0.2, ALE 0.33, PME 0.31, PLE 0.31; ALE–PME 0.2, AME–ALE 0.1, AME–AME 0.13, ALE–PLE 0.31, AME–PME 0.23, PME–PME 0.13, PLE–PME 0.31. Clypeus height at AME 0.36. Chelicerae with 3 anterior and 2 posterior teeth (Fig. 12). Palp with one claw (Figs 9–10). Tarsi with 2 claws (Fig. 4). Tarsi and metatarsi of all legs and tibiae of legs I–II with scopula (Figs 5–8). Scopula in tarsi and metatarsi of legs I–II more developed. Spinnerets as in Fig. 11. Colulus absent. For measurements of legs, see Table 1. For spination, see Table 2.

Epigyne as in Figs 13–15. Epigyne ca. 1.3 times longer than wide. Fovea (*Fo*) heart-shaped, ca. 1.5 times wider than long. Septum (*Se*) elongated, diamond-shaped, ca. 3.6 times longer than wide, with well-developed stem (*SS*) and triangle-shaped

Table 1. Palp and legs measurements of female of *Pamiropsis murghob* sp.n.

Таблица 1. Промеры пальпы и ног самки *Pamiropsis murghob* sp.n.

	Fe	Pa	Ti	Mt	Ta	Total
Palp	2.3	1.2	1.45	–	2.0	6.95
Leg I	5.4	2.8	4.7	3.65	2.2	18.75
Leg II	5.25	2.75	4.35	3.6	2.2	18.15
Leg III	5.1	2.5	4.05	3.95	2.2	17.8
Leg IV	6.5	2.7	5.8	6.15	2.65	23.8

outgrowths in posterior part hidden by lips in intact epigyne. Lips of epigyne (*Li*) almost parallel in intact epigyne, each with tooth-like outgrowth (*LT*). Copulatory openings (*CO*) hidden beneath lips. Receptacles (*Re*) kidney-shaped, separated by 2 their widths, small, as long as posterior width of septum. Copulatory ducts (*CD*) very short, poorly visible.

Male. Unknown.

BIOLOGY. *Pamiropsis murghob* sp.n. inhabits screes at the base of rocks (Fig. 16). This species does not build any webs. Some of the collected females were guarding egg cocoons. The female encloses herself and a single egg cocoon in a large (ca. 5 cm in diameter), white, irregularly shaped silken sac located under a stone. The females do not carry egg cocoons with their chelicerae and do not attach it to their spinnerets. The new species has a nocturnal lifestyle and is active at low night temperatures at altitudes of 4000 meters. Eyes of *P. murghob* sp.n. reflect light from a torch.

DISTRIBUTION. Known only from the type locality (Figs 17–18).

Compliance with ethical standards

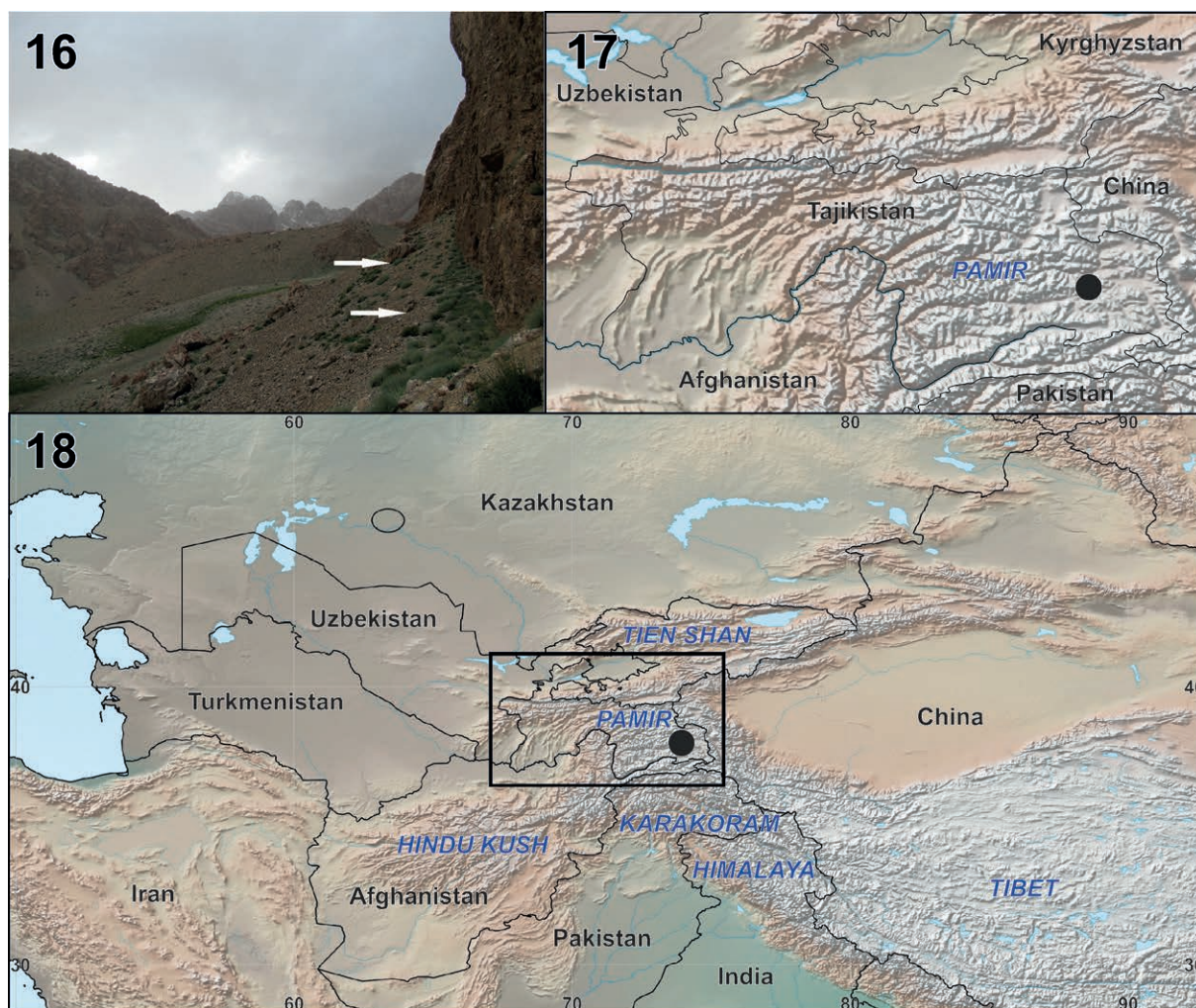
CONFLICT OF INTEREST: The authors declare that they have no conflict of interest.

Ethical approval: No ethical issues were raised during our research.

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Table 2. Palp and legs spination of female of *Pamiropsis murghob* sp.n.
Таблица 2. Шипование пальпы и ног самки *Pamiropsis murghob* sp.n.

	Fe	Pa	Ti	Mt
Palp	d0-1-2 p0-0-1 r0-0-1	d2 p1	d1-0-1 p2-0-2	–
Leg I	d1-0-1-1 p0-0-1-1 r1-1-1-1	–	v2-2-2	v2-2-0
Leg II	d1-0-1-1 p1-1-1-1 r1-1-1-1	–	p1-0-1 v2-2-2	p1-0-0 v2-2-0
Leg III	d1-0-1-1 p1-1-1-1 r1-1-1-1	p1 r1	d2-1-0 p1-0-1 r1-0-1 v2-2-2	d2-2-2 p1-1-1 r1-1-1 v2-2-1
Leg IV	d1-0-1-1 p1-1-1-1 r0-0-1-1	p1 r1	d2-1-1 p1-0-1 r1-0-1 v2-2-2	d2-2-2 p1-1-1 r1-1-1 v2-2-1



Figs 16–18. Habitat (16) and collection locality (17) of *Pamiropsis murghob* sp.n. The frame in Fig. 18 refers to the content of Fig. 17.
 Рис. 16–18. Биотоп (16) и точка сбора (17) *Pamiropsis murghob* sp.n. Рамка на рис. 18 соответствует содержанию рис. 17.

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