

On two new and one little-known species of the centipede genus *Geophilus* Leach, 1817 from Kirghizia (Chilopoda: Geophilida: Geophilidae)

Два новых и один малоизвестный виды губоногих рода *Geophilus* Leach, 1817 из Киргизии (Chilopoda: Geophilida: Geophilidae)

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KEY WORDS: Chilopoda, *Geophilus*, taxonomy, new species, Kirghizia, Central Asia.

КЛЮЧЕВЫЕ СЛОВА: Chilopoda, *Geophilus*, таксономия, новые виды, Киргизия, Средняя Азия.

ABSTRACT: Fresh material of *Geophilus* from Kirghizia contains three species, including two new, *G. readae* sp.n. and *G. rouncei* sp.n., and one poorly-known, *G. parthorum* Pocock, 1891. The latter species is redescribed, representing the first formal record in Kirghizia.

РЕЗЮМЕ: Свежий материал, представляющий род *Geophilus* в Киргизии, содержит три вида, включая два новых (*G. readae* sp.n. и *G. rouncei* sp.n.), а также один слабоизученный (*G. parthorum* Pocock, 1891). Последний вид переописан и формально впервые отмечается в Киргизии.

Introduction

Knowledge of the Central Asian myriapod fauna is still very scanty. Not too much of a surprise, any larger expedition to the region, especially to its huge high-montane systems, reveals new and poorly-known species.

In late May to early June of 1993, an international expedition went to the Tien-Shang and Kichik Alai Mountains focusing, among other things, on collecting myriapods [Read & Golovatch, 1994]. Among the centipedes taken by that expedition, only lithobiomorphs have been treated [Eason, 1997]. This, coupled with Zaleskaja's [1978] monograph on the Lithobiomorpha of the former Soviet Union, definitely makes the Central Asian fauna of this centipede order the best known among all Chilopoda.

The present paper puts on record three species of the prolific Holarctic geophilomorph genus *Geophilus* Leach, 1817, all collected in Kirghizia, while species of *Escaryus* Cook & Collins, 1891 will be dealt with at a later date. Amongst the three species concerned, two appear to be new to science while the third proves to be new to the fauna of Kirghizia.

All type and the bulk of non-type material is housed in the collection of the Zoological Museum of the Moscow State University (ZMUM), while some non-type duplicates are retained in the author's personal collection (RJ) and the British Museum of Natural History, London, (BMNH).

Systematics

Family Geophilidae

Genus *Geophilus* Leach, 1817

Pleurogeophilus Verhoeff, 1901

Taschkentia Verhoeff, 1930

Geophilus parthorum Pocock, 1891

Figs 1–11.

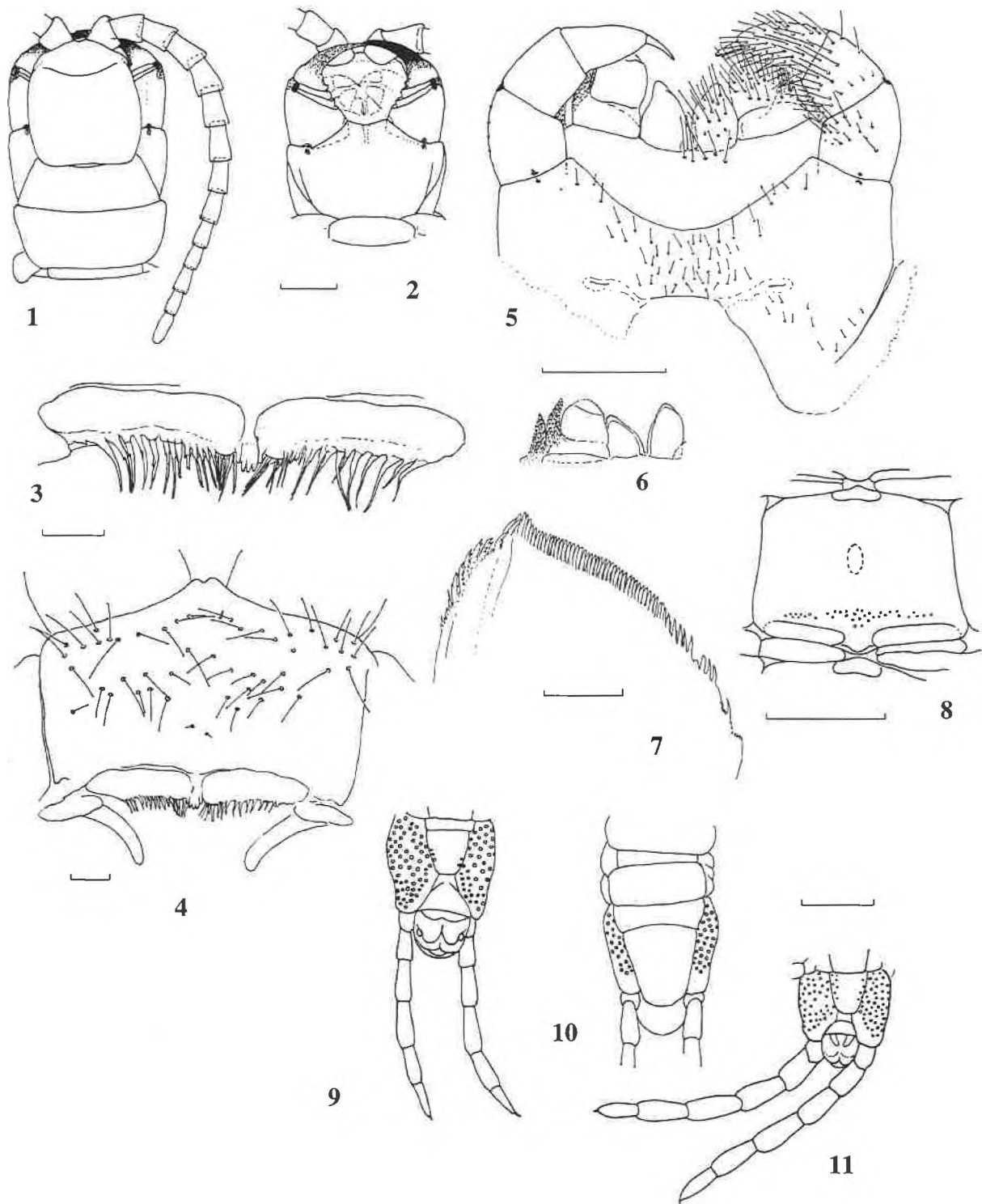
Pleurogeophilus(?) *procerus*(?) (L. Koch) — Lignau, 1929;

Taschkentia armata Verhoeff, 1930;

Taschkentia parthorum (Pocock, 1891) — Crabill, 1962.

Type *Geophilus parthorum* Pocock, 1891. British Museum (Natural History), accession No. [1889.3.28.9.]

Material examined: 1 ♀ (ZMUM 6966), Kirghizia, Tien-Shang Mts, Fergansky Mt. Ridge, Baubash-Ata Mts, near Yaredar, 1,400–1,700 m a.s.l., *Juglans regia* forest, litter & under bark 16–17.05.1993, S. Golovatch. — 1 ♀, 1 juv (RJ), same locality, Yaredar Research Station near Arslanbob, 72°58'E 41°22'N, *Juglans regia* woodland, ravine W of research station, under stones, 1,400 m a.s.l., 17.05.1993. — 1 ♀ (ZMUM 6967), same locality, mixed deciduous woodland behind research station, 72°58'E 41°22'N, 1,400 m a.s.l., 18.05.1993, all leg. H. Read. — 1 ♀ (RJ), same locality, 18.05.1993, leg. W. Schawaller. — 1 ♂ (ZMUM 6968), Fergansky Mt. Ridge, Alash-Tau Mts, ca. 6 km S of Alash, 1,250–1,550 m a.s.l., 25–26.5.1993, leg. S. Golovatch. — 1 ♂ (ZMUM 6969), Chatkalsky Mt. Ridge, Sary-Chelek Nature Reserve, 71°57'E 41°51'N, 1,500–1,950 m a.s.l., 28–31.05.1993, leg. D. Milko. — 1 ♂ (ZMUM 6970), same locality, 71°57'E 41°51'N, 1,500–1,600 m a.s.l., 27–31.05.1993, leg. W. Schawaller. — 1 ♂ (ZMUM 6962), same locality, 1,550–2,200 m a.s.l., forest, 29–31.05.1993, leg. S. Golovatch. — 1 ♂ (RJ), same locality, 71°57'E 41°51'N, 1,950 m a.s.l., close to Lake Sary-Chelek, in *Picea* litter,



Figs 1-11. *Geophilus parthorum* Pocock: 1 — head & antenna from above; 2 — head & forcipules from below; 3 — labrum; 4 — clypeus; 5 — 1st & 2nd maxillae; 6 — 1st maxillae; 7 — mandible; 8 — sternite of 10th segment; 9-11 — last segment: 9 — from below, ♀; 10 — from above, ♀; 11 — from below, ♂. Scale bar = 0.1 mm (3,4,7), 0.5 mm (1,2,5,6,8), 10 mm (9-11).

Рис. 1-11. *Geophilus parthorum* Pocock: 1 — голова и антенна сверху; 2 — голова и ногоочелюсти снизу; 3 — лабрум; 4 — клипеус; 5 — 1-я и 2-я максиллы; 6 — 1-я максилла; 7 — мандибула; 8 — стернит 10-го сегмента; 9-11 — последний сегмент: 9 — снизу, ♀; 10 — сверху, ♀; 11 — снизу, ♂. Масштаб 0,1 мм (3,4,7), 0,5 мм (1,2,5,6,8), 10 мм (9-11).

28.05.1993 — 1 ♂ (ZMUM 6971), same locality, 71°57'E 41°51'N, 1,200 m a.s.l., deciduous woodland between buffer zone + reserve, under stones 28.05.1993. — 1 ♂ (ZMUM 6972), same locality, 71°57'E 41°51'N, Tumanyak Valley, 1,500 m a.s.l., open *Juglans regia* woodland, under logs & stones, 29.05.1993. — 1 ♂ (ZMUM 6973), same locality, 71°57'E 41°51'N, Meteorological Station, 1,500 m a.s.l., *Juglans* & *Malus* woodland, under logs & in litter, 31.05.1993. — 1 ♂, 1 ♀ (BMNH Acq.-No. 2000-240), same locality, 71°57'E 41°51'N, Karagaily Valley, 1,500 m a.s.l., *Picea* stand, in *Picea* litter, 29.05.1993. — 1 ♀ (ZMUM 6974), Kichik Alai Mts, Karachoy, 72°38'E 40°3'N, upper reaches of Kirghizata River, W of research station, under stones on edge of meadow + in dry river bed, 2,400 m a.s.l., 21.05.1993, all leg. H. Read.

REDESCRIPTION: Length up to 89 mm. Number of segments: 63–75 (69–75 in this collection, Verhoeff gives 63–67, Lignau 69).

Antennae 4X length of head capsule, each antennomere long (ca. 2:1 length:width), last greatly exceeded by previous two. Covered with short dense hairs throughout.

Head capsule: Length ca. equalling width, sides convex, front edge slightly angled on each side (Fig. 1).

Forcipular tergite 3:1 trapezoid in shape, basal plate present. From above, forcipules very prominent and surrounding the head capsule (Fig. 1).

Forcipular segment broadly oval with coxosternite being broader than long, and femuroid short and unarmed. Concavity of poison claw smooth, basal node small. Poison claws reaching just beyond head capsule, chitin lines abridged (Fig. 2).

Clypeus: A row of 12+15 postantennal setae, 10+11 medial setae and 1+1 prelabral setae (Fig. 4).

Labrum divided into three parts, 4 blunt central teeth plus 1 on each side and 18+21 fimbriae on sides. Some of the fimbriae showing division along their length (possibly due to regrowth after breaking?) (Fig. 3).

First maxillae with long lappets on coxosternum and telopodite. Numerous setae on both telopodite and coxal projections of coxosternum, some on coxosternum proper as well (Figs 5 & 6).

Second maxillae with numerous setae on coxosternum and also on telopodite. Claw of telopodite simple (Fig. 5).

Mandible (Fig. 7) with pectinate lamellae, latter growing more complex at end of row.

Trunk: Carphophagus structure present until transition (at about segment 20) [Eason, 1964]. A slight depression in the centre of each segment. Pores in a transverse band at rear of each segment, the diagram in Verhoeff [1930: Abb. 13] being incorrect. 'Pores' shown over the rest of the segment are actually very small spines which look like pores if not seen in complete focus (Fig. 8). Pores extending to last segment though becoming fewer in number. Pores also present on precoxae and metacoxae.

Metatergite (Fig. 10) longer than broad, with a rounded end.

Metasternite (Figs 9 & 11) similar but much smaller. Coxopleuron containing numerous coxal glands covering the surface both dorsally and ventrally. Last legs of female long and thin (Fig. 9), last legs of male only slightly fatter (Fig. 11).

REMARKS: There is a small specimen 28 mm long, 75 pairs of legs but with only one pore in the centre of the coxae of the last legs. Everything else tallies with *G. parthorum* but has a juvenile feel about it. I submit that it is probably an early adolescens of *G. parthorum* but it will need more research into its life history to be sure.

Geophilus parthorum was described by Pocock [1891] from Samarkand, Russian Turkestan (now in Uzbekistan). Later, Lignau [1929] described rather inadequately what he thought to be *Pleurogeophilus(?) procerus(?)* (L. Koch) but he did not compare it to *G. parthorum*. Verhoeff [1930]

described a new genus and species, *Taschkentia armata*, but did not compare it to *G. parthorum* either. Crabill [1962], in a review of types in the British Museum (Natural History), concluded that *G. parthorum* was the same species as *Taschkentia armata* and called it *Taschkentia parthorum* (Pocock, 1891). I have decided to allocate the species in *Geophilus*, where Pocock originally placed his *G. parthorum*, as I can see no major differences between these species and other members of the genus.

This species is formally new to the fauna of Kirghizia.

Geophilus readae sp.n.

Figs 12–23.

Holotype ♀ (ZMUM 6964), Kirghizia, Tien-Shang Mts, Chatkalsky Mt. Ridge, Sary-Chelek Nature Reserve, 71°57'E 41°51'N, 1,500 m a.s.l., Karagaily Valley, *Picea* stand, in *Picea* litter, 29.05.1993, leg. H. Read. — **Paratypes:** 2♀♀ (ZMUM 6965), Fergansky Mt. Ridge, Baubash-Ata Mts, near Yarodar, 1,400–1,700 m a.s.l., *Juglans* forest, litter & under bark, 16–17.05.1993, leg. S. Golovatch.

NAME: Dedicated to Dr. Helen Read who, with Dr. Sergei Golovatch, collected most of the specimens.

DIAGNOSIS: 73–75 pairs of legs, chitin lines abridged, basal node of poison claw present, first maxilla with two large lappets, mandible pectinate, carphophagus pits present until the transition, lateral, proximal pore fields becoming fewer in numbers towards the end, coxopleural glands of last legs single, anal glands present.

DESCRIPTION: Length up to 28 mm. Number of segments 73–75.

Antennae just over 3X length of head capsule, 2nd antennomere slightly longer than wide, gradually reducing along antennae until penultimate, latter as long as wide, last antennomere equalling previous two (Fig. 17), setae moderate throughout.

Head capsule slightly longer than wide, with concave sides, front slightly narrower, rear concave (Fig. 12).

Forcipular tergite 2.5:1 roughly trapezoid, basal plate present.

Forcipules reaching the front of head capsule, unarmed and with a very small basal node, concavity of poison claws smooth, chitin lines abridged (Fig. 13).

Clypeus: 1+1 postantennal setae, 4+4 medial setae and 1+1 prelabral setae (Fig. 16).

Labrum divided into three parts, 3–5 blunt central teeth and about 10–13 fimbriae on sides, mostly at central end of side-pieces (Figs 14 & 15).

First maxillae with very long lappets on coxosternum and telopodite. Numerous setae on both telopodite and coxal projections of coxosternum, some on coxosternum proper as well (Figs 18 & 19).

Second maxillae with numerous setae on coxosternum and also telopodite. Claw of telopodite simple (Fig. 18).

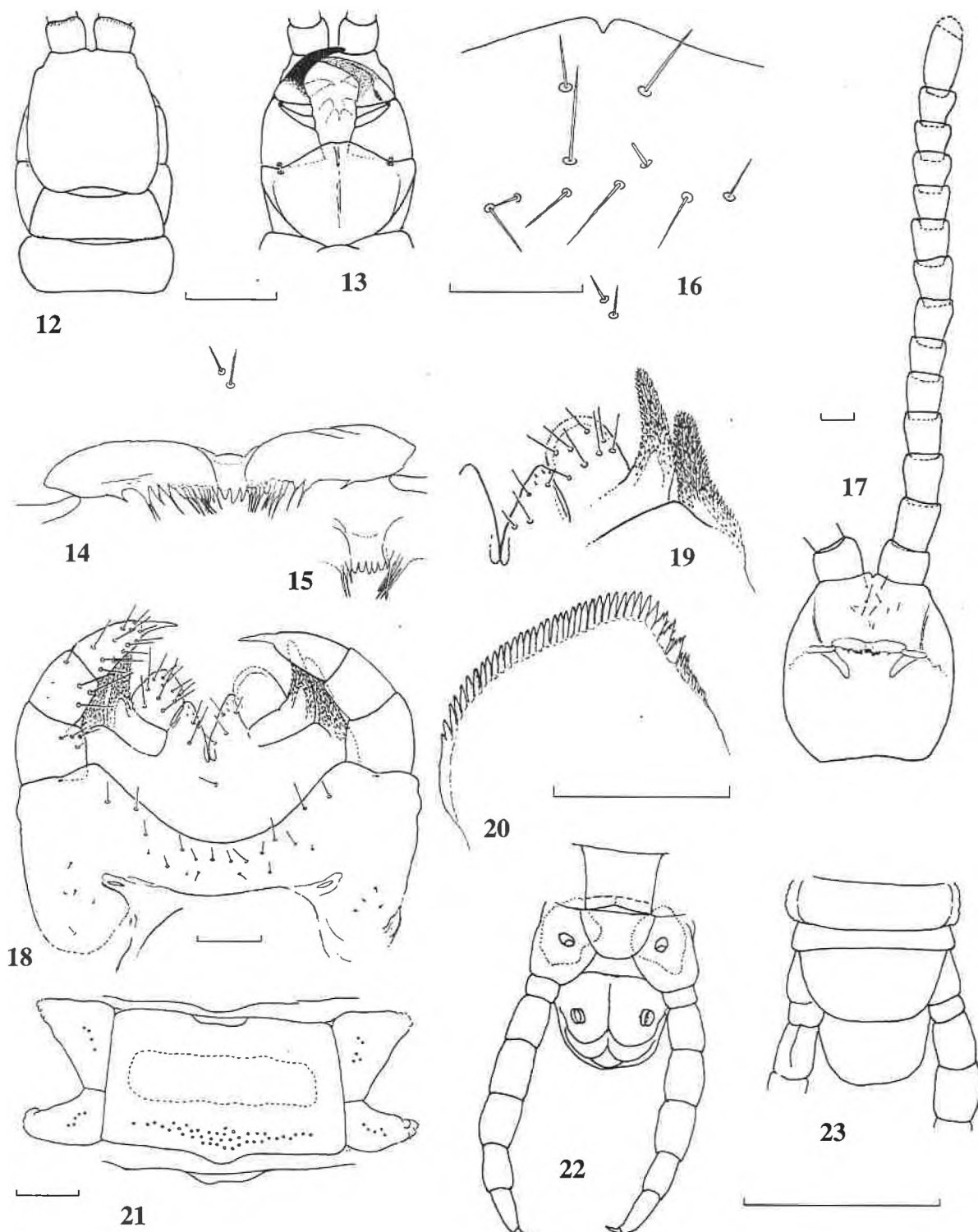
Mandible (Fig. 20) with pectinate lamellae, latter becoming more complex at end of row.

Trunk: Carphophagus structure present until transition and reduced reticulation in the centre of segments. Pores in a band at rear of each segment, extending to last segment though becoming fewer in number (Fig. 21). Pores also present on precoxae and metacoxae.

Metatergite (Fig. 23) broader than long (about 2:1), with rounded corners.

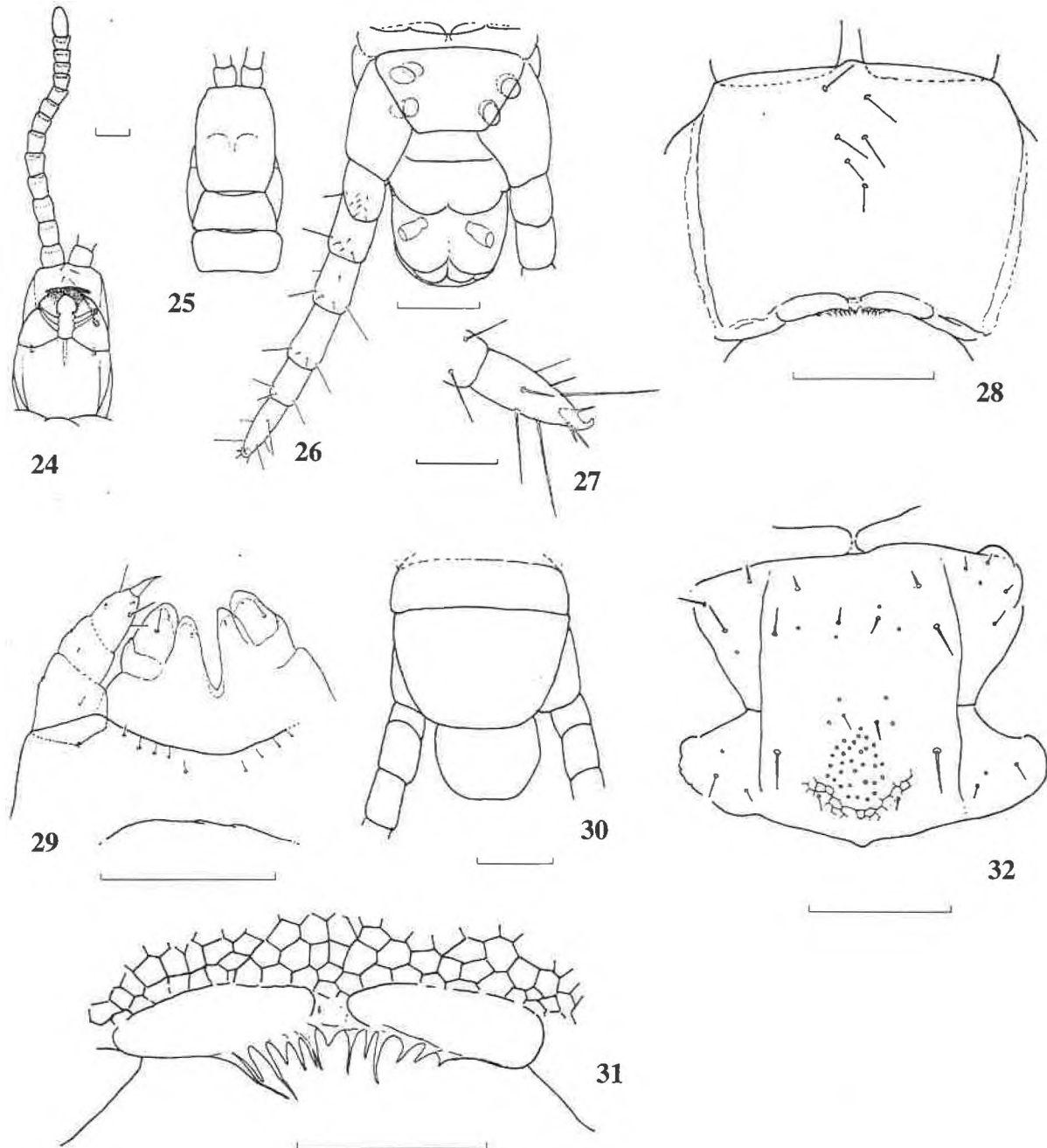
Metasternite (Fig. 22) similar but much smaller.

Last legs: Female slightly swollen, coxopleuron containing a large, single gland. Anal pores present and very large (Fig. 22), male unknown.



Figs 12–23. *Geophilus readae* sp.n.: 12 — head from above; 13 — head & forcipules from below; 14 — labrum; 15 — central labrum of second specimen; 16 — clypeus; 17 — head capsule and left antennae from below; 18 — 1st & 2nd maxillae; 19 — 1st maxilla; 20 — mandible; 21 — sternite of 10th segment; 22–23 — last segment: 22 — from below, ♀; 23 — from above. Scale bar = 0.1 mm (14–21), 0.5 mm (12,13,22,23).

Рис. 12–23. *Geophilus readae* sp.n.: голова сверху; 13 — голова и ногощелюсти снизу; 14 — лабрум; 15 — центральный лабрум 2-го экземпляра; 16 — клипеус; 17 — головная капсула и левая антенна снизу; 18 — 1-я и 2-я максиллы; 19 — 1-я максилла; 20 — мандибула; 21 — стернит 10-го сегмента; 22–23 — последний сегмент: 22 — снизу, ♀; 23 — сверху. Масштаб 0,1 мм (14–21), 0,5 мм (12,13,22,23).



Figs 24–32. *Geophilus rouncei* sp.n.: 24 — head, forcipules & antenna from below; 25 — head & forcipular segment from above; 26 — last segment from below, ♂; 27 — claw of the right, last leg; 28 — clypeus; 29 — 1st & 2nd maxillae; 30 — last segment from above; 31 — labrum; 32 — sternite of 10th segment. Scale bars = 0.05 mm (27, 31), 0.1 mm (24–26, 28–30, 32).

Рис. 24–32. *Geophilus rouncei* sp.n.: 24 — голова, ногощелюсти и антенна снизу; 25 — голова и сегмент ногощелюстей сверху; 26 — последний сегмент снизу, ♂; 27 — коготок правой последней ноги; 28 — клипеус; 29 — 1-я и 2-я максиллы; 30 — последний сегмент сверху; 31 — лабрум; 32 — стернит 10-го сегмента. Масштаб 0,05 мм (27, 31), 0,1 мм (24–26, 28–30, 32).

Geophilus rouncei sp.n.

Figs 24–32.

Holotype ♀ (ZMUM 6963), Kirghizia, Tien-Shang Mts, Chatkalsky Mt. Ridge, Sary-Chelek Nature Reserve, 71°57'E 41°51'N, Karagaily Valley, 1,500 m a.s.l., *Picea* stand, in *Picea* litter, 29.05.1993, leg. H. Read.

NAME: Dedicated to Mr. Rounce, the estate agent who does my photocopying.

DIAGNOSIS: 39 pairs of legs, basal node of poison claw present, very small lappet on telopodite of first maxilla, mandible pectinate, pores in roughly circular grouping until segment 14, coxopleural glands of last legs 2 + 2, anal glands present.

DESCRIPTION: Length up to 12 mm. Number of segments 39.

Antennae 3X length of head capsule, antennomeres about 1.5:1 length to breadth (2nd antennomere) to 1:1 in penultimate, last antennomere equalling previous two (Fig. 24), setae sparse.

Head capsule equalling roughly 3:4 breadth to length, with concave sides, rear being almost straight (Fig. 25).

Forcipular tergite just over 2:1, roughly trapezoid with front edge curved to show basal plate (Fig. 25).

Forcípules with abridged chitin lines and basal nodes on poison claws, reaching to under one quarter of head capsule approximately when closed (Fig. 24).

Clypeus with 1+1 postantennal setae and 2+2 medial setae (Fig. 28).

Labrum tripartite with 7+6 fimbriae on inner half of side-pieces and a large tooth on mid-piece (Fig. 31).

First maxillae with a small lappet on telopodite plus one seta and one microseta on each telopodite, and one microseta on coxal processes (Fig. 29).

Second maxillae with a few setae on telopodite and a sharp claw (Fig. 29).

Mandible of *Geophilus* type.

Trunk pores in a roughly circular grouping at rear of each sternite until transition (about segment 14) (Fig. 32). Also a few scattered pores across front end of sternite as well as a poorly visible pore or two on precoxae and metacoxae.

Metatergite (Fig. 30) broader than long (about 3:2) with rounded corners.

Metasternite (Fig. 26) trapezoid with a straight end. Coxopleuron containing 2+2 glands.

Last legs: Female not much fatter than walking legs (Figs 26 & 27), male unknown.

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