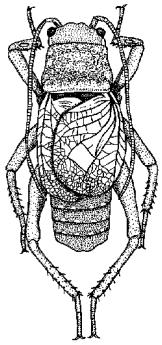

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A NEW TRIBE OF ACARID MITES OF THE SUBFAMILY RHIZOGLYPHINAE (ACARIFORMES, ACARIDAE)

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Thyreophagini **trib. n.** is proposed for the genera *Thyreophagus* Rondani, 1874, *Michaelopus* Fain et Johnston, 1974, *Boletoglyphus* Volgin, 1953 and *Capillaroglyphus* Klimov **gen. n.** *Capillaroglyphus polypori*, **gen. et sp. n.** is described (all stages) from the Far East of Russia and Japan. New synonymy and combination are established: *Thyreophagus* Rondani, 1874 =*Fumouzea* Zachvatkin, 1953, **syn. n**; *Michaelopus lignieri* (Zachvatkin, 1953), **comb. n.** from *Monieziella*. Keys to tribes of the subfamily Rhizoglyphinae and genera of new tribe are given.

KEY WORDS: Acari, Acariformes, Acaridae, Rhizoglyphinae, new taxa, Russian Far East, Japan.

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Обосновано выделение новой трибы Thyreophagini **trib. n.** для родов *Thyreophagus* Rondani, 1874, *Michaelopus* Fain et Johnston, 1974, *Boletoglyphus* Volgin, 1953 и *Capillaroglyphus* Klimov **gen. n.** Установлена новая синонимия: *Thyreophagus* Rondani, 1874 =*Fumouzea* Zachvatkin, 1953, **syn. n.**; предложена новая комбинация *Michaelopus lignieri* (Zachvatkin, 1953), **comb. n.** из *Monieziella*. Описан *Capillaroglyphus polypori*, **gen. et sp. n.** (все стадии) из

России (Дальний Восток) и Японии. Даны определительные таблицы триб подсемейства Rhizoglyphinae и родов новой трибы.

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INTRODUCTION

In 1937 Zachvatkin changed status of the family Caloglyphidae Oudemans, 1932 [=Rhyzoglyphinae, Oudemans 1923 (part.)] to subfamily of the family Tyroglyphidae (=Acaridae); two tribes, Rhizoglyphini and Caloglyphini, had been separated in this subfamily (characters of adults were used only). Later, the name of the tribe Caloglyphini was unnecessary changed to Acotyledonini (Zachvatkin, 1941). Türk & Türk (1956) supported such subdivision. Samšińák (1982) resurrected the name Caloglyphini and gave new diagnosis (both adults and hypopi) of the tribe. This author pointed out that tribes of the subfamily differ each other by seta *aa* on tarsus I which being present in Caloglyphini and absent in Rhizoglyphini.

Genera of the tribe Rhizoglyphini (adults) form two groups on a basis of development of *ba* on tarsi I–II: 1) *Acarotalpa* Volgin, 1966, *Boletacarus* Volgin et Mironov, 1980, *Histiogaster* Berlese, 1883, *Mezorhizoglyphus* Kadzhaya, 1966, *Rhizoglyphus* Claparede, 1869, *Rhizoglyphoides* Volgin, 1978, *Schwiebea* Oudemans 1916, *Troglocoptes* Fain, 1966 and some others (*ba* is stout, spiniform); 2) *Thyreophagus* Rondani, 1874, *Michaelopus* Fain et Johnston, 1974 and *Boletoglyphus* Volgin, 1953 (*ba* is weakly developed, short, stick-like). In this paper new genus which belongs to the second group is described and this group is treated as a new tribe, Tyreophagini Klimov, **trib. n.**

Material examined (material on new genus is given before corresponding description): *Michaelopus* sp. 1 [characters run to the couplet 6 of Fain's (1982) key], 1 protonymph – Russia, Primorskii krai; *Michaelopus* sp. 2 (the description is in press), 1 hypopus – South Korea, Kyongsangnam-Do; *Boletoglyphus* (*Boletoglyphus*) *boletophagi* (F. Türk et S. Türk, 1952), 6 ♀♀, 3 ♂♂, 86 hypopi – Russia, Irkutskaya oblast'; *Boletoglyphus* (*B.*) sp. (the description is in press), 8 ♀♀, 1 ♂, about 580 hypopi – Russia (Primorskii krai, Sakhalin), Japan (Hokkaido).

Terms of body parts and abbreviations of idiosomal setae are given after Griffiths et al. (1990); terms of parts of bursa copulatrix and abbreviations of leg elements follow Griffiths (1970) (beside ω_3 in hypopi which is replaced by *ba*).

All measurements are given in micrometers. All material (including types and insect hosts) is deposited in Institute of Biology and Pedology, Vladivostok (IBPV). Mites were collected by author if otherwise indicated.

SUBFAMILY RHIZOGLYPHINAE OUDEMANS, 1923

Key to tribes (adults)

1(2) Seta *aa* (tarsus I) developed . . . . . **Caloglyphini Oudemans, 1932**
2(1) Seta *aa* (tarsus I) not developed.

3(4) *ba* on tarsi I–II stout massive spine, considerable longer than half of ω_1 length and much longer than length of ξ, placed anteriorly ω_1 or in common field with the latter. *wa* on tarsi I–II present; setae *ad* and seta *scx* present or absent. Gnathosoma short and massive or elongated. Heteromorphic males present or absent . . . **Rhizoglyphini Oudemans, 1923**

4(3) *ba* on tarsi I–II short spine, considerable shorter than half of ω_1 length and approximately equal with ξ, placed in common field with ω_1. *wa* on tarsi I–II present or absent; seta *scx* present; setae *ad* absent. Gnathosoma short and massive. Heteromorphic males absent . . . **Thyreophagini, trib. n.**

Tribe Thyreophagini Klimov, trib. n.

Rhizoglyphini: Zachvatkin, 1937: 180 (part.); Zachvatkin, 1941: 179 (part.); Türk & Türk, 1956: 123 (part.).

Type genus – *Thyreophagus* Rondani, 1874.

DESCRIPTION. Leg podomeres (especially tarsi) short. *ba* on tarsi I–II small spine (considerably shorter than ω_1). ξ and *ba* approximately similar in length, both placed in common with ω_1 field. *wa* on tarsi I–II sometimes absent; *aa* absent. Anal suckers of male simple, disk-like, placed on tops of "V"-shaped fold. Setae *ad* completely absent in adults and other homeomorphic stages. Adults and other homeomorphic stages with stout, massive gnathosoma adopted to feeding of solid particles of food. Heteromorphic males absent. Another diagnostic charactrs are given in the key above.

NOTES. The tribe includes 4 genera and 29 species which are distributed in Holarctic, Afrotropic and Neotropic regions. Three genera are known from both adults and hypopi and one (*Thyreophagus*) from adults only.

Key to genera of the tribe Thyreophagini

Adults

1(4) Setae *si*, $c_{1\text{-}3}$, d_1, e_1 and $ps_{1\text{-}3}$ absent; h_3 placed before f_2 in female; ps_2 placed behind ps_3 and anterior level of anal suckers in male.

2(3) Apical tarsal spines *q* and *v* III–IV absent. ventral seta *wa* I–II absent . . . . . ***Thyreophagus* Rondani, 1874**

3(2) Apical tarsal spines *q* and *v* III–IV present. *wa* I–II present or absent . . . . . ***Michaelopus* Fain et Johnston, 1974**

4(1) Setae *si* (short or long), d_1, e_1 and $ps_{1\text{-}3}$ present; setae $c_{1\text{-}3}$ present or absent, h_3 placed approximately at level f_2 in female; ps_2 placed approximately at half of length of anal slit, before ps_3 and anal suckers in male.

5(6) *si* short, considerably shorter than *se*. $c_{1\text{-}3}$ absent in female. Epiginium "Y"-like, well-developed, touching epimerites II. *wa* I–II present . . . . . ***Boletoglyphus* Volgin, 1953**

6(5) *si* long, similar in length with *se*. $c_{1\text{-}3}$ present. Epiginium straight, transverse, weakly developed, not touch epimerites II. *wa* I–II absent . . . . . ***Capillaroglyphus*, gen. n.**

Hypopi (unknown for *Thyreophagus*)

1(4) Eyes developed. Central suckers, occupies less than half of square of anal plate. *1a* present. Dorsal cuticle smooth or fine porous.

2(3) ξ spiniform, not clavate; *e* I–IV and *vsc* I–IV long, setiform (or dilated apically). Solenidia of gnathosoma longer than gnathosomal length, setae of gnathosoma setiform. Dorsal setae short. Tarsi long. *wa* I–II absent or present . . . . . ***Michaelopus* Fain et Johnston, 1974**

3(2) ξ clavate; *e* I–IV and *vsc* I–IV short, spiniform, never dilated. Solenidia of gnathosoma shorter than gnathosomal length, setae of gnathosoma knife-like. Dorsal setae long, hair-like. Tarsi short. *wa* I–II absent . . . . . ***Capillaroglyphus,* gen. n.**

4(1) Eyes not developed. Central suckers large, occupy about 1/2 square of anal plate. *1a* absent. Dorsal cuticle coarsely porous . . . . . ***Boletoglyphus* Volgin, 1953**

Genus *Thyreophagus* Rondani, 1874

Thyreophagus Rondani, 1874: 67; Zachvatkin, 1940: 43; Zachvatkin, 1941: 208; Türk & Türk, 1957: 145 (part.); Mahunka, 1974: 374 (part.); Hughes, 1976: 123; Chmielewski, 1977: 65 (part.); Fain, 1982: 7; Bugrov, 1997: 151.

Monieziella Berlese, 1897: 107 (part.) [type species *Monieziella entomophaga* (Laboulbene, 1852) (=*Thyreophagus entomophagus* Laboulbene, 1852), by subsequent designation (Jacot, 1936)]; Jacot, 1936: 628 (part.). Synonymized by Fain & Johnston (1974).

Fumouzea Zachvatkin, 1953: 57 [type species *Fumouzea entomophaga* (Laboulbene, 1852) (=*Thyreophagus entomophagus* Laboulbene, 1852), by monotypy], **syn. n.**

Type species – *Acarus entomophagus* Laboulbene, 1852, by monotypy.

SPECIES INCLUDED. *Th. entomophagus* (Laboulbene, 1852) – Europe, Asia, North America (USA); *Th. odyneri* Fain, 1982 – Belgium; *Th. cooremani* Fain, 1982 – Morocco.

BIOLOGY. Species of the genus are associated with insects (Hymenoptera, Homoptera, Coleoptera). *Thyreophagus entomophagus* is known to be minor pest of stored products and entomological collections (Fain, 1982; Hughes, 1976; Türk & Türk, 1957; Zachvatkin, 1941).

REMARKS. For the first time the name of genus had been mentioned (without any comments) in combination "*Thyreophagus entomophagus* Laboulb." by C. Rondani in 1874. As in this binomen had been used previously described taxon the generic name is valid. In 1953 Zachvatkin unwarrantedly replaced generic name *Thyreophagus* by *Fumouzea* Zachvatkin, 1941 [type species *Fumouzea entomophaga* (Laboulbene), by monotypy].

Genus *Michaelopus* Fain et Johnston, 1974

Michaelopus Fain & Johnston, 1974: 411; Fain, 1982: 18; Cruz, 1990: 1; Sevastianov & Kivganov, 1992: 25.

Monieziella (non Berlese, 1897): Zachvatkin, 1941: 206; Zachvatkin, 1953: 57; Chmielewski, 1977: 65 (part.); Bugrov, 1997: 151.

Thyreophagus: Türk & Türk, 1957: 145 (part.); Mahunka, 1974: 374 (part.); Chmielewski, 1977: 65 (part.).

Type species – *Tyroglyphus corticalis* Michael, 1885, by original designation.

SPECIES INCLUDED. *M. africanus* (Mahunka, 1974) – Ghana; *M. angustus* (Banks, 1906) – USA; *M. annae* Sevastianov et Kivganov, 1992 – Ukraine (Odessa); *M. athiasae* Fain, 1982 – Algeria, Morocco; *M. berlesiana* (Zachvatkin, 1941) – Italy, Poland; *M. corticalis* (Michael, 1885) – Great Britain, Belgium, Germany, Italy, Russia; *M. evansi* Fain, 1982 – Great Britain (Ireland); *M. gallegoi gallegoi* (Portus et Gomez, 1980) – Spain; *M. gallegoi mauritianus* Fain, 1982 – Mauritius; *M. incanus* Fain et Rack, 1987 – Colombia; *M. johnstoni* Fain, 1982 – USA; *M. leclercqi* Fain, 1982 – Belgium; *M. macfarlanei* Fain, 1982 – Great Britain; *M. magnus* (Berlese, 1910) – Italy (Sicily); *M. passerinus* Cruz, 1990 – Cuba; *M. polezhaevi* (Zachvatkin, 1953) – former USSR (with indefinite locality); *M. rwandanus* Fain, 1982 – Rwanda; *M. sminthurus* Fain et Johnston, 1974 – Great Britain, USA; *M. spinitarsis* Fain, 1982 – Belgium; *M. tridens* Fain et Lukoschus, 1986 – USA; *M. vermicularis* (Fain et Lukoschus, 1982) – Great Britain; *Michaelopus lignieri* (Zachvatkin, 1953), **comb. n.** (=*Monieziella lignieri* Zachvatkin, 1953) – Western Europe; *M.* sp. 2 – South Korea. Moreover *Michaelopus* (=*Monieziella*) *oryctis* (Kamenskiy, 1940), nomen nudum, from Kazakhstan probably belong to this genus.

BIOLOGY. Species of the genus are associated with arthropods (Collembola, Homoptera, Hymenoptera and Coleoptera), birds (Passeriformes, Charadriiformes, Columbiformes) and mammals (Insectivora, Rodentia), certain species had been found on stored products, decaying vegetation, under bark of trees, in forest litter, soil, and bracket-fungus (Aphyllophorales, Polyporaceae) (Bugrov, 1997; Chmielewski, 1977; Cruz, 1990; Fain & Lukoschus, 1986; Fain & Rack, 1987; Fain, 1982; Kamenskiy, 1940; Mahunka, 1974; Sevastianov & Kivganov, 1992, Türk & Türk, 1957; Zachvatkin, 1953).

REMARKS. In 1953 Zachvatkin proposed for "*Histiogaster entomophagus* Lab." *sensu* Reuter (1909) new name, *Monieziella lignieri*. As genus *Monieziella* is an junior synonym of *Michaelopus*, this species should be transferred to latter genus.

Genus *Boletoglyphus* Volgin, 1953

Boletoglyphus Volgin, 1953: 262; Černý & Samšińák, 1971: 508; Fain & Mahunka, 1990: 110; Bugrov, 1997: 151.

Fantovia Samšińák, 1957: 112 (type species *Schwiebea boletophagi* F. Türk et S. Türk, 1952, by original designation). Synonymized by Černý & Samšińák (1971).

Type species – *Boletoglyphus cribrosus* Volgin, 1953 (=*Schwiebea boletophagi* F. Türk et S. Türk, 1952), by original designation.

SPECIES INCLUDED. See below for the subgenera.

BIOLOGY. Adults and other homeomorphic stages inhabit hymenium of decaying bracket-fungi (Aphyllophorales, Polyporaceae) and feed on their tissues. Hypopi are phoretically associated with fungivorous beetles (Coleoptera: Tenebrionidae, Ciidae, Anobidae).

Subgenus *Boletoglyphus* Volgin, 1953

Boletoglyphus Volgin, 1953: 262 (as genus); Černý & Samšińák, 1971: 508 (as genus); Fain & Mahunka, 1990: 110 (as genus, part.); Bugrov, 1997: 151 (as genus).

Fantovia Samšińák, 1957: 112 (as genus).

SPECIES INCLUDED. *Boletoglyphus* (*Boletoglyphus*) *boletophagi* (F. Türk et S. Türk, 1952) – Great Britain (Scotland), Slovak Republic, Russia (Leningradskaya, Moscovskaya and Irkutskaya oblast'); *Boletoglyphus* (*Boletoglyphus*) sp. – Russia (Primorskii krai, Sakhalin), Japan (Hokkaido) [Volgin, 1953; Samšińák, 1957; Bugrov, 1997; Klimov (in litt.)].

Subgenus *Ellipsopus* Fain et Ide, 1976

Ellipsopus Fain & Ide, 1976: 233 (as genus).

Lindquistia Mahunka, 1977: 69 [type species *Lindquistia bolitotheri* Mahunka, 1977 (=*Ellipsopus ornatus* Fain et Ide, 1976)]. Synonymized by Fain & Mahunka (1990).

Boletoglyphus: Fain & Mahunka, 1990: 110 (as genus, part.).

Type species – *Ellipsopus ornatus* Fain et Ide, 1976, by original designation.

SPECIES INCLUDED. *Boletoglyphus* (*Ellipsopus*) *ornatus* Fain et Ide, 1976 – USA, Canada (Fain & Ide, 1976; Mahunka, 1977).

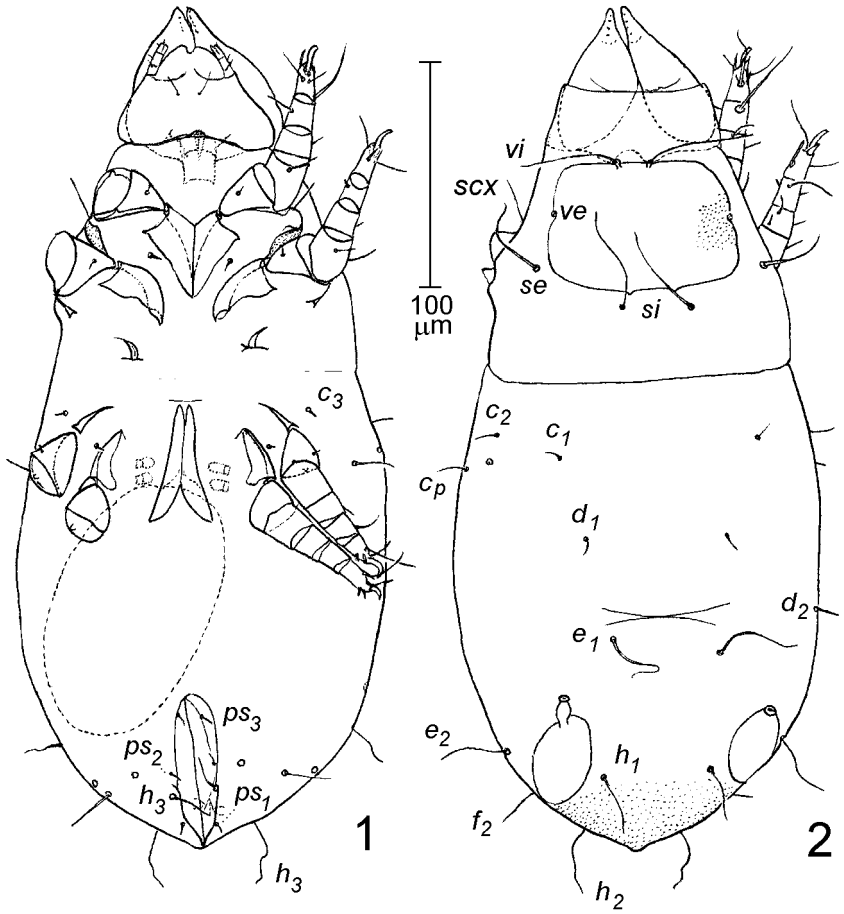
Genus *Capillaroglyphus* Klimov, gen. n.

Type species – *Capillaroglyphus polypori* Klimov, sp. n.

DESCRIPTION. *scx* long, setiform. *ve* reduced. Tibiae I–II with *gT* only (*hT* absent). Genua III without setae (solenidion σ developed only). Tarsi short. *wa* I–II absent. ω_1, ξ and *ba* placed in common field.

Adults. Subcapitulum massive, its length shorter than width. Chelicerae massive. All idiosomal setae beside *ve* and 3 pairs of *ad* developed, comparatively not long; *si* long, similar in length with *se*. Epiginium weakly developed, not reach epimerae II. ps_2 in male placed before ps_3 at level of half of anal slit length; anal suckers simple, disk-like, placed at tips of "V"-shaped fold beginning at posterior end of anal slit. *ba* represented by short spine (much shorter than ω_1).

Hypopi. Solenidia of gnathosoma shorter than gnathosomal length, setae of gnathosoma knife-like. There is pair of lateral eyes. Coxisternal and -ventral skeleton well defined. Sternum and epimerae II not reaching hind edge of sternal shield. Ventrum not interrupted. Genital shield clearly separated from



Figs 1–2. *Capillaroglyphus polypori* Klimov, gen. et sp. n. Female (holotype): 1) ventral view; 2) dorsal view.

ventral one. *1a*, *3b*, *4a* all suckers (*3b* nipple-like). Lateral suckers of anal plate placed behind level of central suckers. Dorsal setae very long. ω_1 and *ba* setiform; ξ short, clavate; *e* I–IV and *vsc* I–IV spiniform.

The genus differs from other genera of tribe Thyreophagini mainly by presence of long *si* and by reduced epiginium in adults (others differential characters see in the key above).

ETYMOLOGY. The generic name is derived from Latin adjective *capillaris* (capillaceosus) and *glyphus* [root originated from Greek verb *γλυφω* (to hollow out, to cut out, to engrave) and currently used for forming names for Acaroidea] with the reference of habitat of mites in capillar-like tubes of bracket-fungi hymenium and hair-like dorsal setae in hypopi.

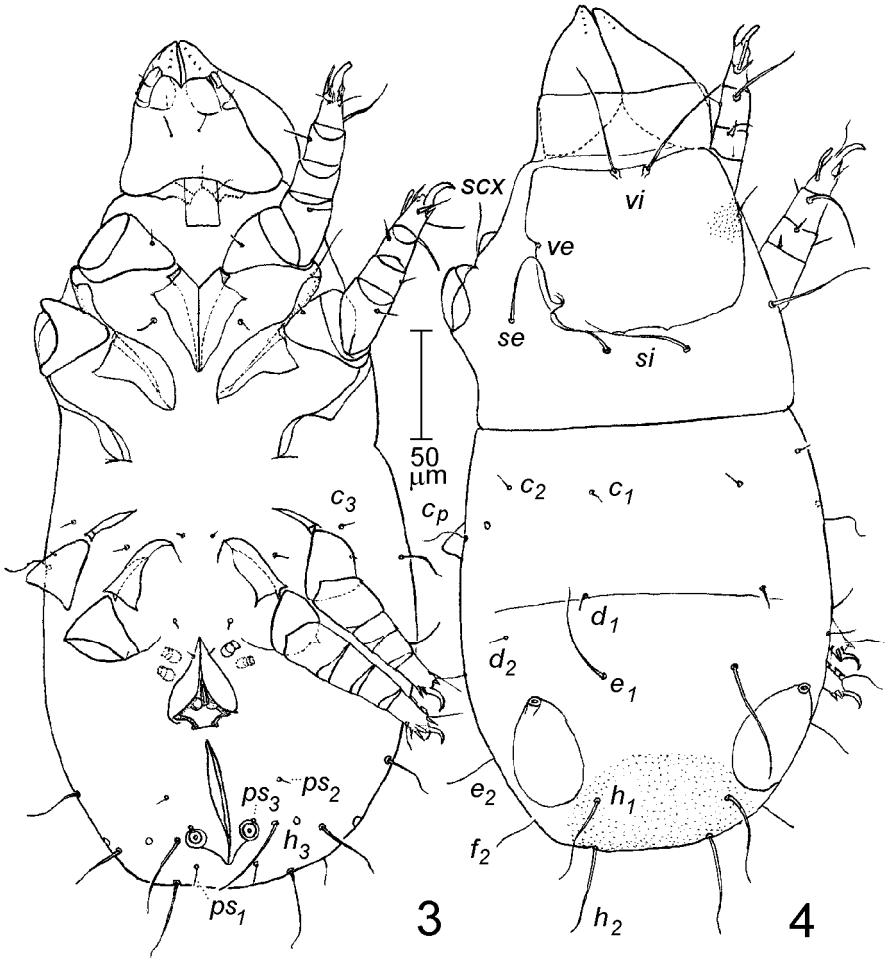
SPECIES INCLUDED. Type species only.

BIOLOGY. Adults feed on hymenium of decaying bracket-fungi (Aphyllophorales, Polyporaceae). Hypopi are phoretically associated with fungivorous beetles (families Tenebrionidae and Ciidae).

***Capillaroglyphus polypori* Klimov, sp. n.**
Figs 1–32.

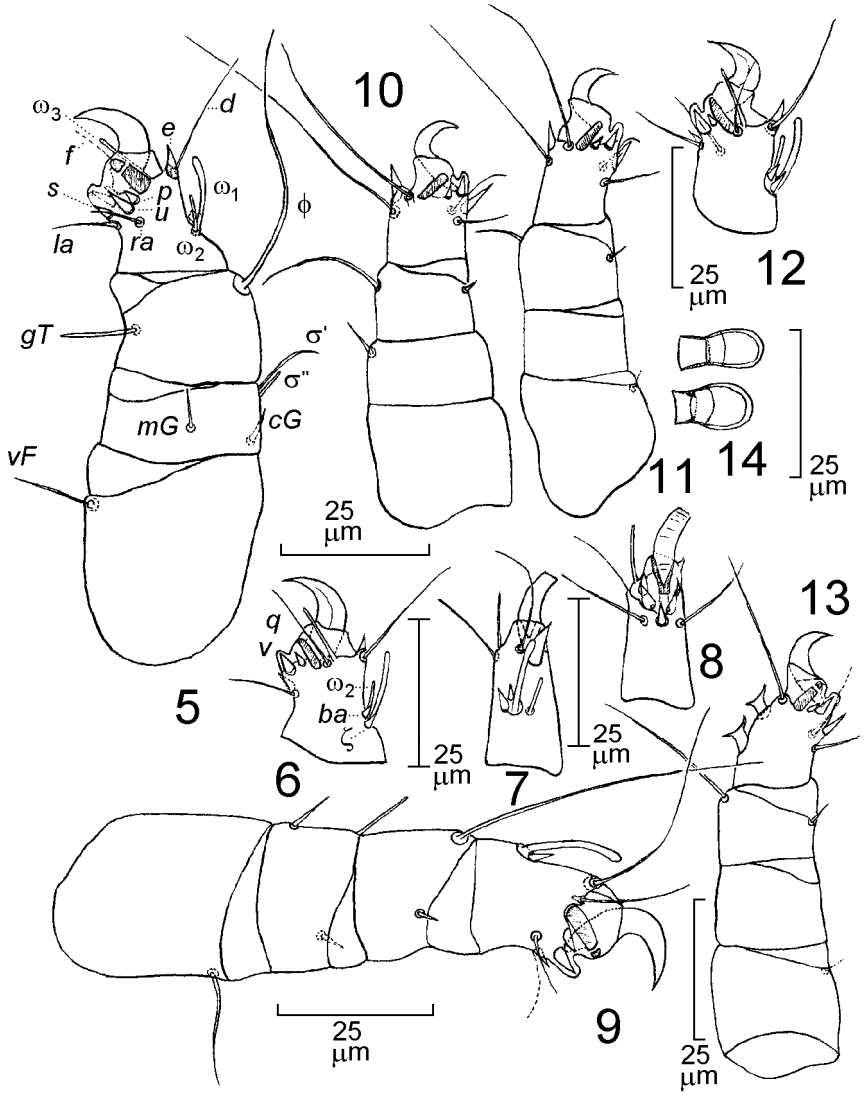
MATERIAL. Holotype – ♀ (marked by arrow), Russia, Vladivostok, Botanical garden, mixed forest, in hymenium of decaying bracket-fungus grown on *Betula*, 27.VIII 1995. Paratypes – 55♀♀, 13♂♂, 13 hypopi with *Schwiebea longibursata* Fain et Wauthy, 1979 (Acaridae), mounted with holotype; 41 hypopi (2 slides), same locality, 12.V 1995; 14♀♀, 5♂♂, 12 hypopi with *Mezorhizoglyphus colchicus* Kadzhaja, 1966 (Acaridae), same locality, 23. VI 1995; 9♀♀, 10♂♂, 1 hypopus with *M. colchicus*, same locality, 30.VI 1995; 1 ♀ with *Boletoglyphus* sp., same locality, 20.VIII 1995; 9♀♀, 2♂♂ with *Boletoglyphus* sp., *Schwiebea parallela* (J. Müller, 1860) (Acaridae), *Gamasellus vibrissatus* Emberson, 1967 and *Rhodacarellus* sp. (Parasitiformes, Rhodacaridae), Primorskii krai, Kedrovaya Pad' reserve, same habitat, 8.VI 1997; 1 ♀, same locality, 16.VI 1997; 2 hypopi with *Boletoglyphus* sp., same locality, ex *Cis jacquemarti* Mell. (Coleoptera, Ciidae), 9.VI 1997; 1 hypopus with *Boletoglyphus* sp., Japan, Nopporo Forest Park, 10 km SE Sapporo, ex *Boletoxenus bellicum* Loew. (Coleoptera, Tenebrionidae), 2.VII 1992 (G. Lafer).

Female (holotype). Idiosoma 420.2 (368.1–476.1, n=21) long, 221.6 wide (153.3–233.1, n=5) (ratio 1.9). Subcapitulum (Fig. 18) massive, 70.2 long, 89.6 wide (length shorter then width). Chelicerae stout, almost completely cover subcapitulum. Fixed digit with 3 stout and strongly sclerotized teeth (excluding slightly incised tip of digit) and 3 additional preaxial teeth (these teeth beginning with second main tooth). Movable digit with 4 strongly sclerotized teeth, 1 additional tooth placed behind third tooth. Collar reaches approximately half of subcapitulum length. Anterior cuticular cheliceral spine well-developed, sharpened; posterior one weakly sclerotizied, bifid. Cheliceral seta setiform. Propodosoma 144.6 long, covered by short propodosomal shield (80.7 long, 109.0 wide). There is comparatively large (18.9) distance between *vi* (67.8 long). Setae *ve* reduced, represented by alveoli which placed at level of 1/2 of propodosomal shield. *se* (>48.4 long) placed before hind level of the shield at its posterior angles; *si* (60.6 long) situated just behind the shield. Distance between *se–se* 133.2 and *si–si* 41.2. Supracoxal setae 27.9 long, well-developed, setiform. Hysterosoma 275.6 long. All hysterosomal setae developed, hair-like or setiform. Length of setae is as follows (distance between several setae in parentheses): c_1 9.7 (118.7), c_2 12.1, c_3 8.5, c_p 26.6, d_1 13.3 (109.0), d_2 13.3, e_1 >42.4 (76.3), e_2 >48.4, f_2 35.1, h_1 >38.8 (59.3), h_2 >38.8, h_3 >24.2. Cupules well-developed (diameter about 4.8); *ia* placed outerly and slightly anteriorly from c_p; *im* between d_2 and e_2 (but slightly near to latter); *ip* outerly f_2; *ih* placed outerly of anal slit near its half. Coxisternal skeleton well defined. External



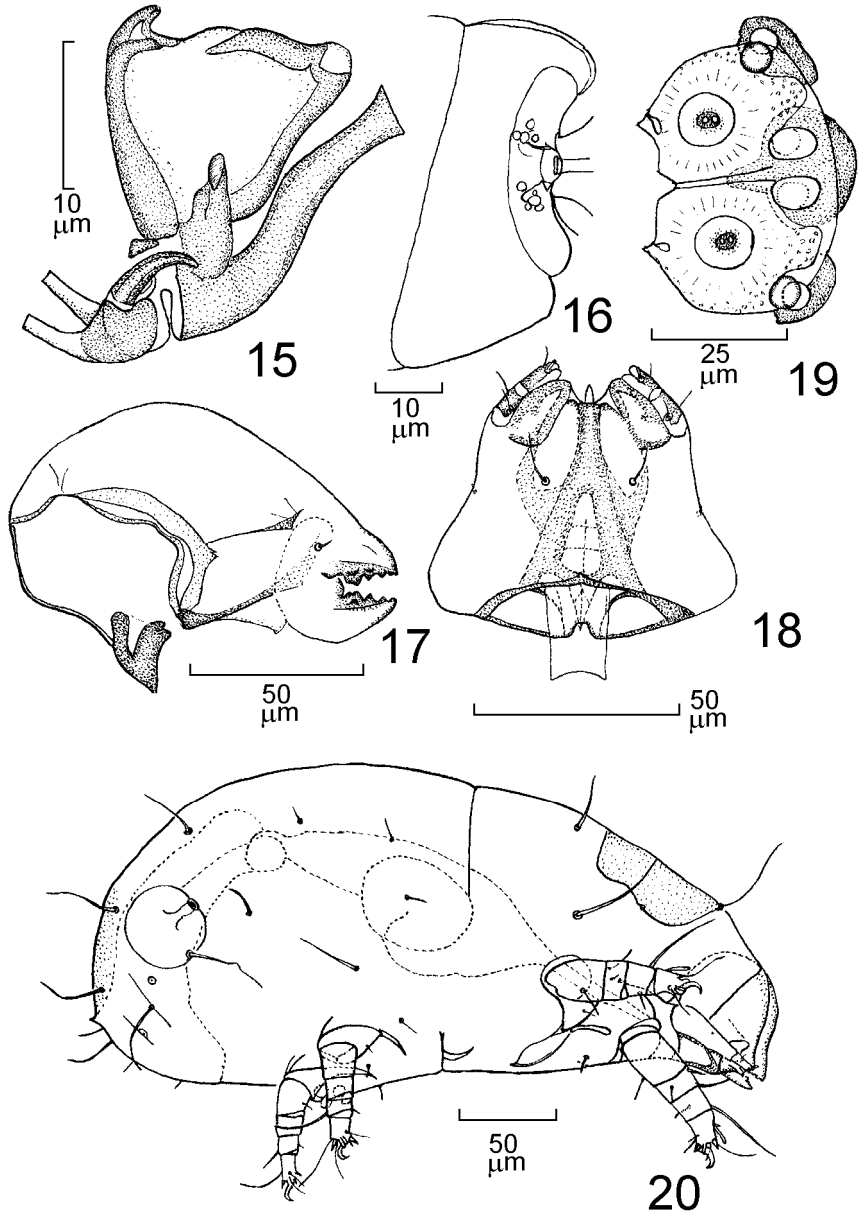
Figs 3–4. *Capillaroglyphus polypori* Klimov, gen. et sp. n. Male (paratype): 3) ventral view; 4) dorsal view.

edges of sternum and epimerae II and internal ones of epimerae IV with sclerotized platelets. Epimerites II considerably not reach epimerae III. Legs I–II and III–IV far from each other. Genital orifice 80.9 long, atrium narrowed anteriorly. Epiginium weakly developed, represented by transverse sclerite (length 19.4) which considerably not reach epimerae II. Genital papillae 14.5 long, 8.5 wide; length of it basal "segment" 9.7. Anal slit moved to hind of hysterosoma, supplied with 3 pairs of setae (ps_1–ps_3), setae h_3 placed near the slit at its posterior 1/3. Hind part of hysterosoma sclerotized (opisthosomal shield), boundaries of the shield not visible. Bursa copulatrix large, chitinized openings of oviducts 7.8 long, 5.6 wide, dome-shaped; bell-shaped structure



Figs 5–13. *Capillaroglyphus polypori* Klimov, gen. et sp. n. 5–11, 14) female, 12–13) male. Legs: 5) leg I; 6, 12) tarsus I, lateral view; 7, 8) tarsus I, dorsal, ventral view, respectively; 9) leg II; 10) leg III; 11, 13) leg IV; 14) genital papillae.

developed; dilatable sac supplied with characteristic vesicle (Fig. 16). Legs short. Length of legs I–IV podomeres is as follows (length of corresponding leg without and with claw in parentheses): 36.3, 16.0, 20.3, 26.4 (99.1, 107.8); 38.3, 12.8, 18.2, 25.7 (94.9, 104.1); 25.4, 13.3, 14.5, 21.8 (75.1, 82.3); 26.6, 12.4, 15.3,



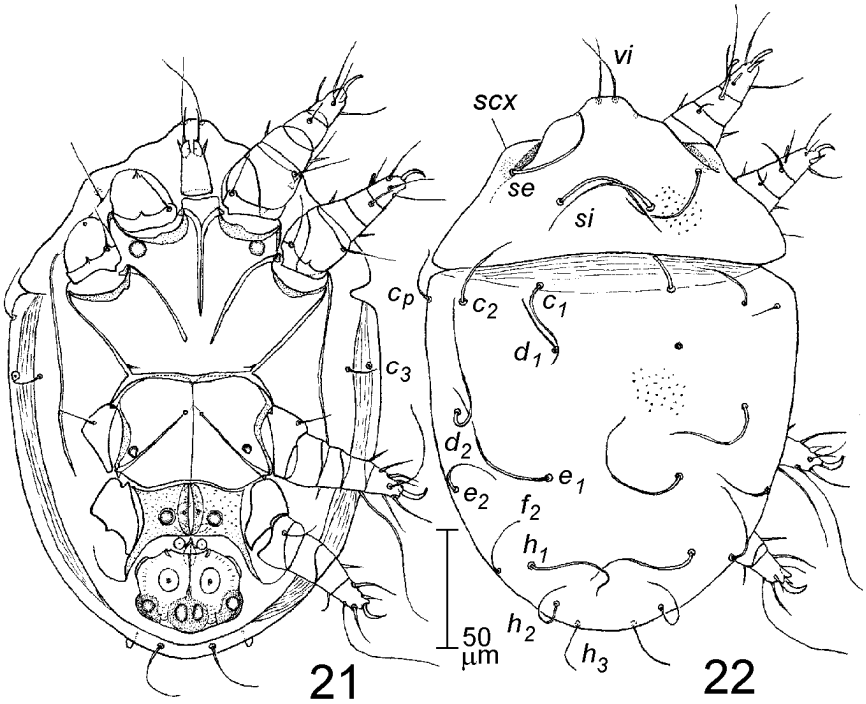
Figs 15–20. *Capillaroglyphus polypori* Klimov, gen. et sp. n. 15) male, 16–18) female, 19) hypopus, 20) deutonymph: 15) penis; 16) bursa copulatrix; 17) chelicera; 18) subcapitulum; 19) anal plate; 20) deutonymph, lateral view.

22.5 (76.8, 84.8). Genua I and especially II considerably shorter than corresponding tibiae. Tarsi short. Leg I: ω_1, ω_2, ξ (famulus) and *ba* on tarsus I placed near each other; ω_1 slightly curved, stick-like (not clavate); length of ω_2 approximately half of ω_1 length, ω_2 not reaching *e*; *ba* and ξ short, spiniform, 2 times shorter than ω_2; ω_3 with blunt tip; *e* spiniform; *d*, *f*, *la* and *ra* setiform; *wa* absent; all 5 lateral ventroapical spines developed; *gT* long, narrow, flattened. *d* and *f* on tarsi III–IV several time longer than corresponding tarsus; σ“ with blunt tip, is approximately half of σ‘. Chaetotaxy and solenidiotaxy of legs I–IV is as follows: 1–1–2+(2)–1+(1)–11+(3+1), 1–1–2+(1)–1+(1)–11+(1), 1–0–(1)–1+(1)–10, 0–1–0–1+(1)–10.

Measurements. Leg I (tarsus 26.9): ω_1 12.3, ω_2 6.7, ω_3 11.2, *d* 25.7, *la* 13.4, ϕ 50.4, *gT* 13.4, σ‘ 7.8, σ“ 16.2, *mG* 6.7, *vF* 15.7. Leg II (tarsus 26.9) ω_1 16.8, *ba* 5.6, *e* 14.9, ϕ 61.5, σ 12.3. *d* III 47.0, *d* IV 48.1, ϕ III 39.2, ϕ IV 10.6, σ III 6.9.

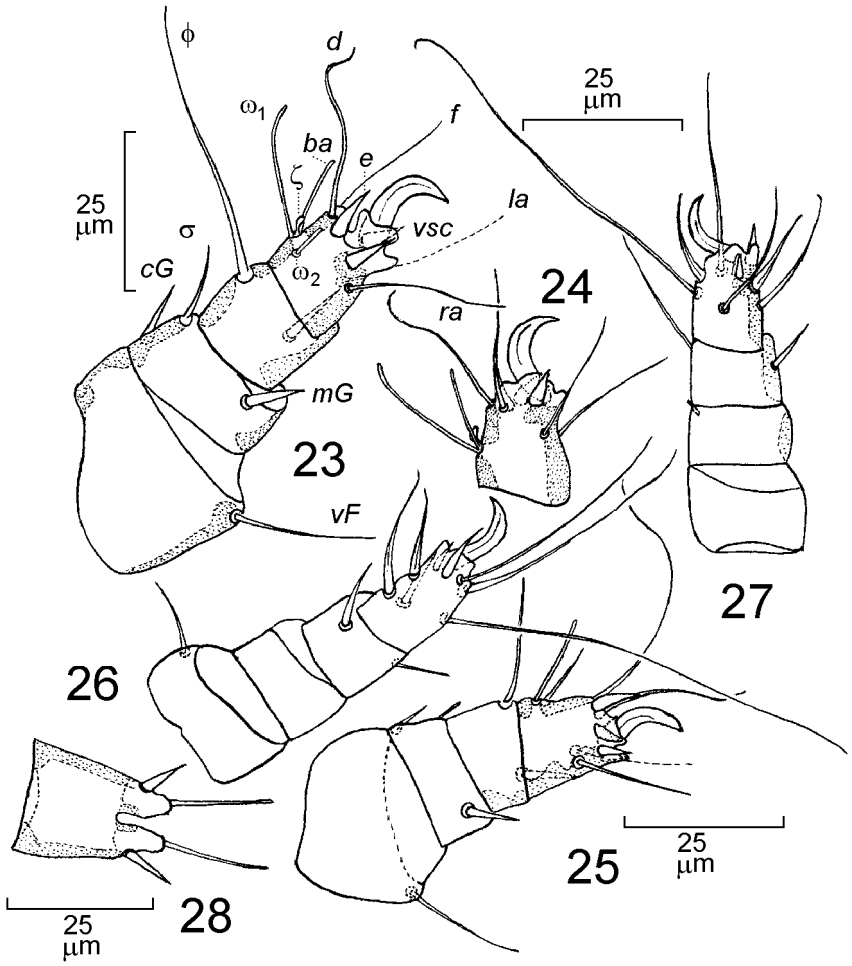
Homeomorhic male. Idiosoma 314.9 long (294.5–327.6, n=7), 159.9 wide (147.2–159.9, n=2) (ratio 2.0). Gnathosoma as in female. Propodosoma 123.5, hysterosoma 191.3 long. Propodosomal shield 75.1 long, 89.6 wide. Arrangement of dorsal setae and cupules as in female, but distance between d_1 longer than between c_1. Length of setae is as follows (distance between several setae in parentheses): *vi* 50.9 (17.0), *si* 54.5 (58.1), *se* ~64.2 (106.6), *scx* 24.2, c_1 7.3 (75.8), c_2 7.3, c_3 6.1, c_p 31.5, d_1 7.3 (77.5), d_2 9.7, e_1 50.9 (50.9), e_2 32.7, f_2 40.0, h_1 43.6 (58.1), h_2 44.8, h_3 43.6, ps_1 9.7 (24.2), ps_2 6.1 (44.1). Genital apparatus placed behind level of legs IV. Penis thick, 2 times curved, with perpendicularly “cut” tip (Fig. 15). Anal suckers with transparent margin, simple, placed at tips of “V”-shaped fold beginning at posterior end of anal slit. Diameter of the sucker 7.0x4.8 (with transparent marginal ring 9.9x12.1); distance between suckers 21.8. There is a pair of alveoli (ps_3) near fore edge of the suckers. ps_2 placed at level of half of anal slit length (anteriorly from anal suckers and ps_3), ps_1 behind the suckers, h_3 situated just outerly from the suckers. Opisthosomal sclerotization better developed than in female (reaches posterior level of opistogastric gland). Chaetotaxy and solenidiotaxy of legs I–IV as in female (with common exception of *e* and *d* IV which turned into tarsal suckers). ω_2 slightly longer than in female (reaching *e*). ω_1 12.9, ω_2 9.4, ω_3 11.7 long (tarsus 27.5 long). Length of legs I–IV podomeres is as follows (length of corresponding leg without and with claw in parentethes): 31.7, 14.8, 18.2, 23.0 (87.7, 95.2); 33.9, 10.9, 15.7, 23.7 (34.8, 37.2); 25.4, 11.4, 14.5, 19.9 (29.4, 32.8); 25.4, 13.3, 14.5, 22.5 (75.8, 84.0).

Deutonymph. Idiosoma 333.7 (333.7–336.2, n=2), hysterosoma 196.3 long. External morphology (beside absence of genital apparatus) as in female. Length of several idiosomal setae is as follows: *vi* 50.9, *se* 48.4, *si* 43.6, c_1 8.5, c_3 7.3, c_p 27.9, d_1 8.0, d_2 12.6, e_1, e_2, h_1 and h_2 38.8, f_2 36.3, h_3 17.0, ps_1 9.7, ps_2 4.8, ps_3 2.4. Length of legs I–IV without and with claw (in parenthesis) is as follows: 73.9 (81.1), 72.1 (79.9), 55.7 (63.0), 58.0 (63.7), respectively. σ‘ 15.7, σ“ 4.8 (with blunt end), *cG* 9.7 long. σ II (5.1) with blunt end. Placement of *d* IV as in female. Chaetotaxy and solenidiotaxy of legs as in female.



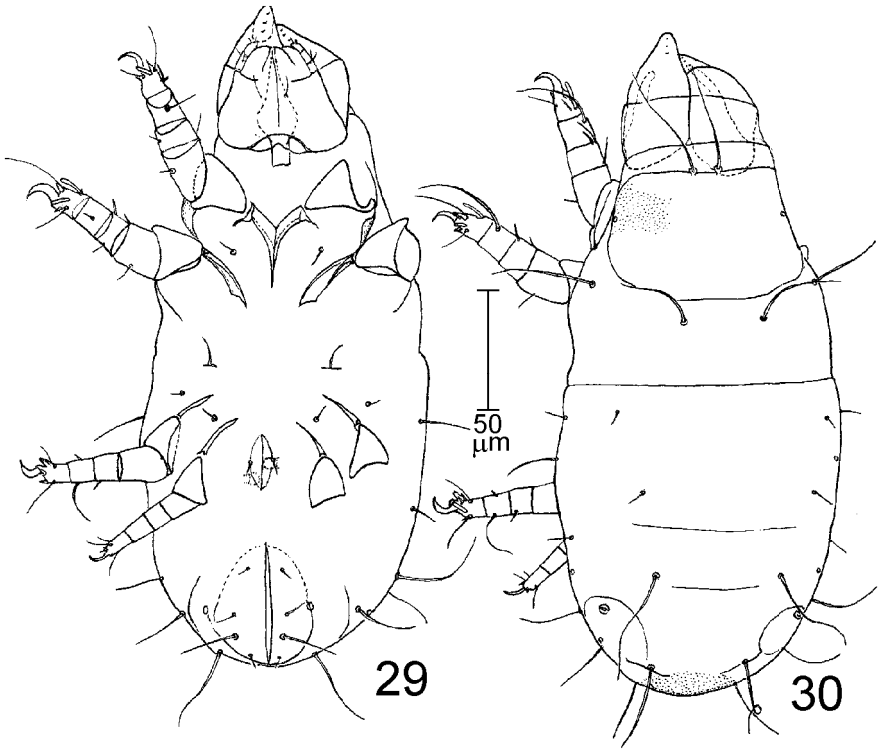
Figs 21–22. *Capillaroglyphus polypori* Klimov, gen. et sp. n. Hypopus (paratype): 21) ventral view; 22) dorsal view.

Hypopus (heteromorphic deutonymph). Idiosoma 226.0 long (202.5–238.0, n=26), 154.5 wide (142.3–171.8, n=26) (ratio 1.46). Cuticle dorsally bearing with fine pores. All idiosomal setae developed; dorsal ones long, hair-like. Gnathosoma (Fig. 27) 27.9 long, 16.2–7.3 wide at base and tip, respectively; basal palpomer 20.6 long, 12.1 wide (at tip); anterior setae flattened, knife-like, 7.3 long; distal solenidia 17.0 long, shorter than length of gnathosoma. Propodosoma 66.1 long. Rostrum 8.2 long, 27.9 wide, trapeziform, with *vi* on tip, placed on trapeziform base (18.4 long, 64.2 wide). There is pair of eyes near lateral edges of the trapeziform base. Eyes represented by semitransparent lens and weakly developed pigmented retinae; also, there is place of weak sclerotization at inner edges of eyes were setae *se* located. *si* placed posteriorly *se*. *scx* long, setiform, placed ventrally. Hysterosoma 159.9 long. Opening of opisthosomal glands placed at level c_3. Sternal shield 74.8 long, 116.3 wide, almost touching ventral one; sternum 43.6, epimerae II 46.0 long, both not reach hind edge of sternal shield; latter straight (length 50.9). Ventral shield 42.9 long, 65.4 wide, fore edge straight (length 50.9), hind one 42.4; epimerae III 31.5 long, reaching *3a* but not touching ventrum; ventrum not interrupted, dividing the shield into 2 halves. Genital shield 21.8 (without posterior prongs)



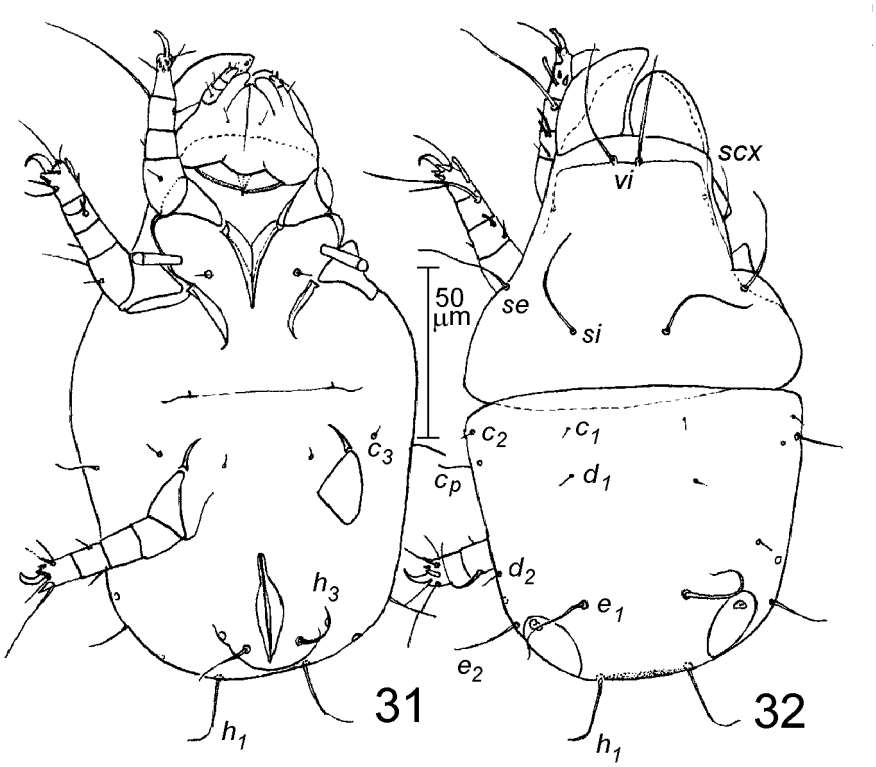
Figs 23–28. *Capillaroglyphus polypori* Klimov, gen. et sp. n. Hypopus: 23) leg I; 24) tarsus I; 25) leg II; 26) leg III; 27) leg IV; 28) gnathosoma.

and 40.0 long (with these prongs), 46.0 and 55.7 wide (at anterior and posterior edges, respectively), clearly separated from ventral one by undulate band of cuticle, comparatively better sclerotized than other shields. Diameter of *1a*, *3b*, *4a* (all suckers, *3b* nipple-like) is as follows: 9.2, 4.4, 6.8, respectively. Anal plate 37.3 long, 46.0 wide, with radial lines around central suckers. Diameter of fore suckers 7.3; central ones 10.9x9.7, with 2 touching each other pores which placed on pigmented spot on the suckers; hind suckers 7.3x5.3, placed on large, rounded sclerite (main body of this element 15.7 long, 18.2 wide, anterior processes 3.7 long); lateral suckers 5.1, they fore edges placed



Figs 29–30. *Capillaroglyphus polypori* Klimov, gen. et sp. n. Protonymph: 29) ventral view; 30) dorsal view.

between levels of central and hind suckers, each sucker supplied with dark sclerite of irregular form; fore cuticular suckers reduced, represented by stick-like sclerites (9.7) long which placed on anteriolateral edges of anal plate. Legs short, femora–tibiae with setiform setae or spines. Length of legs I–IV podomeres is as follows (length of corresponding leg without and with claw in parentethes): 23.7, 10.4, 12.6, 18.9 (65.6, 75.6); 22.0, 8.5, 10.9, 17.0 (58.4, 66.4); 16.2, 9.7, 10.4, 17.7 (54.0, 63.0); 17.0, 10.9, 9.7, 18.9 (56.4, 69.0). *vF* I–II placed at sclerotized edge of femur, *cG* I comparatively long, *hT* I–II absent, *gT* I–II represented by stout spine. Tarsus I: ω_1, *ba* elongate, setiform, ω_1 longer than *ba* and length of tarsus, ξ very small, with strongly dilated tip (strongly clavate); ω_1, *ba* and ξ placed in common field; ω_1 stick-like, shorter than *ba*, placed just outerly this field; *d*, *f*, *ra*, *la* setiform; *e* and *vsc* spiniform; *wa* absent. *d* III–IV longer than length of corresponding tarsus; *f* III–IV shorter (approximately equal length of tarsus + tibia); *e* III–IV with widened bases, length of *e* IV equal with *f* IV, length of *e* III at half shorter then *f* III; *vsc* III–IV spiniform. Chaetotaxy and solenidiotaxy of legs I–IV is as follows: 1–1–2+(1)–1+(1)–7+(3+1), 1–1–2+(1)–1+(1)–8+(1), 1–0–(1)–1+(1)–8, 0–1–0–1+(1)–8.



Figs 31–32. *Capillaroglyphus polypori* Klimov, gen. et sp. n. Larva. 31) ventral view; 32) dorsal view.

Measurements. Length of several idiosomal setae is as follows (distance between several setae in parenthesis): *vi* 31.5 (8.0), *se* 43.6 (79.9), *si* 21.5 (36.3), c_1 43.6 (53.2), c_2 43.6 (110.2), c_p 24.2, d_1 50.9 (52.1), d_2 63.0 (116.3), e_1 67.8 (54.5), e_2 ~24.2, f_2 36.3, h_1 ~60.6 (70.2), h_2 ~43.6 (44.8), h_3 26.6 (27.9) (idiosoma 221.1 long, 152 wide). Leg I (length 70.2, 79.2): *vF* 17.7, *cG* 8.5, σ 10.2, *mG* 9.7, ϕ 60.6, *gT* 9.0, ω_1 20.8, ω_2 9.7, ξ 3.6, *ba* 13.3, *d* 60.6, *f* 24.2, *vsc* 9.7 (both), *ra* 26.6, *la* 24.2, *e* 8.7 long. Leg IV (length 55.7, 65.4): *d* 77.5; *e*, *f* 36.3; *w* 21.8, ϕ 7.3 long.

Protonymph. Idiosoma 228.4 (187.7–282.0, n=13) long, 118.7 (99.3–118.7, n=2) wide. Propodosoma 100.0, hysterosoma 128.4 long. Propodosomal shield 53.3 long, 63.0 wide. Setae *3a* and *4a* absent, arrangement of other idiosomal setae as in female. Length of several idiosomal setae is as follows (distance between several setae in parenthesis): *vi* 43.6 (10.4), *se* 41.2 (86.0), *si* ~36.3 (32.7), c_2 ~24.2, c_p 29.1, d_1 9.2 (66.1), d_2 12.1, e_1 32.7 (49.7), e_2 32.7, f_2 29.1, h_1 32.7 (37.1), h_2 32.7 (37.1), h_3 16.5 (20.8), ps_2 7.5 (31.8). Genital slit 21.8, anal slit 53.3 long. Opisthosomal shield developed. Length of legs I–IV without and

with claw (in parenthesis) is as follows: 60.1 (67.8), 55.2 (60.6), 49.7 (55.5), 46.0 (52.8), respectively. ω_2 present, ω_3 absent; *cG* I 11.6, *gT* I 12.1 long, σ" shorter than half of σ'. σ" and σ II with blunt ends. *e*, *f*, *s* on tarsus IV absent; *d* placed near half of the tarsus. Chaetotaxy and solenidiotaxy of legs I–III is as follows: 0–1–2+(1)–1+(1)–11+(2+1), 0–1–2+(1)–1+(1)–11+(1), 0–0–(1)–1+(1)–10, 0–0–0–0–7.

Larva. Idiosoma 156.2 (156.2–220.4, n=6) long, 99.3 (99.3–116.3, n=2) wide. Propodosoma 71.4 long. Arrangement of propodosomal setae and cupules as in female. Propodosomal shield weakly developed, without visible boundaries. Hysterosoma 84.8 long. Length of several idiosomal setae is as follows (distance between several setae in parenthesis): *vi* 36.3 (6.1), *se* 31.5 (69.1), *si* 29.1 (25.4), c_1 microsetae (30.0), c_p 14.5, e_1 33.9, e_2 21.8, h_1 24.2 (25.4), h_3 17.0 (18.2). All cupules well-developed (arrangement as in female). c_1, c_2 and d_1 microsetae. *g*, *3a*, *4a*, f_2 and h_2 absent. Caparede's organ stick-like, 15.4 long, diameter 4.4. There is region of sclerotization between setae h_1 and h_3 (opisthosomal shield). The shield undulate in vertical plane. Anal slit (44.0) moved to hind end of hysterosoma. Length of legs I–III without and with claw (in parenthesis) is as follows: 49.2 (53.9), 45.9 (50.4), 41.4 (47.6), respectively. ω_2, ω_3 and setae on coxae I–III absent. Arrangement and proportions of other setae of legs I–III as in female, but *ba* and σ" relatively longer. σ' 7.3, σ" 4.5 (with blunt end), σ II 3.5–4.5 (with blunt end), ϕ I 33.6, ϕ II 25.7 long. Chaetotaxy and solenidiotaxy of legs I–III is as follows: 0–1–2+(2)–1+(1)–11+(1+1), 0–1–2+(1)–1+(1)–11+(1), 0–0–(1)–1+(1)–10.

ETYMOLOGY. The specific name is derived from Latin noun *polyporus* (bracket-fungus, polyporus) with the reference of habit of new species.

DIAGNOSIS. See above for the genus.

BIOLOGY. Adults had been found in decaying hymenium of bracket-fungi with following mites: *Schwiebea longibursata*, *Mezorhizoglyphus colchicus*, *Schwiebea parallela* (Acaridae), *Gamasellus vibrissatus* and *Rhodacarellus* sp. (Parasitiformes, Rhodacaridae). Hypopi are phoretically associated with: *Cis jacquemarti* Mell. (Coleoptera, Ciidae) and *Boletoxenus bellicum* Loew. (Coleoptera, Tenebrionidae).

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REFERENCES

Černý, V. & Samšiňák, K. 1971. [Nadkohorta Acaridiae]. In: Daniel, M. & Černý, V. (eds.). Klíč zvíreny ČSSR. Dil 4. Praha: 496-529.

Berlese, A. 1882–1903. Acari, Myriapoda et Scorpiones hicusque in Italia reperta. Patavii: 1-425.

Bugrov, S. A. 1997. [Free-living Astigmata (Acariformes) of the Moscow District fauna]. – Zoologicheskii zhurnal 76(2): 147-156. (In Russian).

Chmielewski, W. 1977. Wyniki obserwacji powiazan roztoczy z owadami (Acari–Insecta). – Polskie Pismo Entomol. (Bull. entomol. pologne) 47(1): 59-78.

Cruz, J. de la. 1990. Acaros nidicolas de Cuba. I. Nueva espece del genero Michaelopus Fain et Johnston, 1974 (Acari, Acaridae). – Poeyana 399: 1-6.

Fain, A. 1982. Revision des genres Thyreophagus Rondani, 1874 et Michaelopus Fain & Johnston, 1974 (Acari, Acaridae) avec description de neuf especes nouvelles. – Bul. Inst. r. Sci. Nat. Belg. Entomol. 54(7): 1-47.

Fain, A. & Ide G.S., 1976. Ellipsopus ornatus, a new genus and species of Acaridae (Acari) phoretic on the beetle Bolithotherus cornutus (Panzer, 1794). – Entomol. News 87(7): 233-236.

Fain, A. & Johnston, D. 1974. Three new species of hypopi phoretic on springtails (Collembola) in England (Acari: Acaridae). – J. nat. Hist. 8: 411-420.

Fain, A. & Lukoschus, F. S. 1986. Michaelopus tridens spec. nov. (Acari, Acaridae) from a North American rodent. – Bul. Inst. r. Sci. Nat. Belg. Entomol. 56: 55-57.

Fain, A. & Mahunka, S. 1990. Two new acarid mites from Hungary (Acari, Astigmata). – Bul. Inst. r. Sci. Nat. Belg. Entomol. 60: 109-112.

Fain, A. & Rack, G. 1987. Notes on the mites living in the flowers of Espeletia spp. (Asteraceae) in Colombia. II Espeletiacarus andinus g. n sp. n (Hemisarcoptidae) and Michaelopus incanus sp. n (Acaridae). – Entomol. Mitt. Zool. Mus. Hamburg. 130: 37-47.

Griffiths, D. A., Atyeo, W. T., Norton, R. A. & Lynch, C. A. 1990. The idiosomal chaetotaxy of astigmatid mites. – Journal of Zoology 220(1): 1-32.

Griffiths, D.A. 1970. A further systematic study of the genus Acarus L., 1758 (Acaridae, Acarina), with a key to species. – Bull. British Museum (Nat. Hist.). Zool. ser. 19(2): 85-118.

Hughes, A. M. 1976. The mites of stored food and houses. Technical Bulletin. Ministry of Agriculture, Fisheries and Food. Fd. 9. London: 1-400.

Jacot, A. P. 1936. Three possible vectors of the Dutch elm disease. – An. Entomol. Soc. Am. 29: 627-635.

Kamenskiy, A. F. 1940. [Grain mites of the virgin steppes of Kazakhstan]. – Zoologicheskii zhurnal 19(4): 603-617. (In Russian).

Klimov, P. B. A review of the genus Boletoglyphus (Acariformes, Acaridae). – Zoologicheskii zhurnal (in litt.)

Mahunka, S. 1974. Auf Insekten lebende Milben (Acari: Acarida, Tarsonemida) aus Afrika. IV. – Acta zool. hung. 20(3–4): 367-402.

Mahunka, S., 1977. Lindquistia bolitotheri gen. n., sp. n., a New Mite (Acari: Acarida) from Coprohagous Beeetle. – Opusc. Zool. Budapest 8(1–2): 69-72.

Rondani, C. 1874. Degli insetti nocivi e dei loro parasiti. Enumerazione con note. – Bull. Soc. Entomol. Ital. Firenze. 4: 43-68.

Samšińák, K., 1957. Einige Bemerkunken zur faunistik der in Gesellschaft von Insekten lebenden Acari. – Acta faunistica entomol. mus. nationalis Pragae (Sb. faun. Praci entomol. oddeleni narodn. Mus. Praze) 2: 109-114.

Sevastianov, V. D. & Kivganov, D. A. 1992. [Review of the genus Michaelopus (Acari, Acaridae) of the world fauna with description of new species]. – Vestnik zoologii 2: 25-30. (In Russian).

Türk, E. & Türk, F. 1957. Systematik und Ökologie der Tyroglyphiden Mitteleuropas. In.: H. J. Stammer (ed.). Beitrage zur Systematik und Okologie mitteleuropaischer Acarina. Bd. 1. Teil 1: 2-231.

Türk, F. A. & Türk, S. M., 1952. LV. Studies of Acari. 7th series: "Records and description of mites new to British fauna, together with short notes on the biology of sundry species". – Ann. nat. Hist. (12 Ser.) 5: 475-506.

Volgin, V. I. 1953. [Two new genera of tyroglyphid mites (Acarina, Tyroglyphidae)]. – Entomologicheskoe obozrenie 33(2): 262-265. (In Russian).

Zachvatkin, A. A. 1937. [Investigation on systematics of the mites family Tyroglyphidae]. – Uchenye zapiski Moskovskogo gosudarstvennogo universiteta 13: 169-202. (In Russian).

Zachvatkin, A. A. 1940. [Key to mites damaging crops in USSR]. – Uchenye zapiski Moskovskogo gosudarstvennogo universiteta 14:7-68. (In Russian).

Zachvatkin, A. A. 1941. Tiroglifoidnye kleshchi (Tyroglyphoidea). Fauna SSSR. Paukoobraznye. T. 6 (1). Moscow-Leningrad: 475 pp. (In Russian).

Zachvatkin, A. A. 1953. [Investigation on morphology and postembrionic development of tyroglyphid mites (Sarcoptiformes, Tyroglyphoidea)] In: Sbornik nauchnykh rabot. Moscow University Publ., Moscow: 19-118. (In Russian).

SHORT COMMUNICATION

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Г. Ш. Лафер. Дополнение к фауне жужелиц (Coleoptera, Carabidae) Южных Курильских островов // Дальневосточный энтомолог. 1998. N 59. С. 19-20.

The distribution of two spisies of ground-beetles (Coleoptera, Carabidae) in the Southern Kuril Islands are discussed.

***Eobroscus lutshniki* (Roubal, 1928)**

MATERIAL. Russia: Kunashir Is., west coast, Stolbchatyi cape, 25. VII 1985, 1♂ (N. B. Nikitsky).

DISTRIBUTION. Russia: South Primorskii krai, South Sakhalin, Kunashir. Japan (Hokkaido, Honshu, Shikoku, Kyushu), Korea, China (North-East and Gansu) [3, 5].