

# REDESCRIPTION OF *MEXECHELES VIRGINIENSIS* MALE (ACARIFORMES: CHEYLETIDAE) FROM THE EUROPEAN PART OF RUSSIA

Aleksandra V. Diumina<sup>1\*</sup> and Vladimir V. Abramov<sup>2</sup>

<sup>1</sup>Russian Academy of Sciences, Zoological Institute, St. Petersburg, Russia

<sup>2</sup>Independent Researcher; Suvorov, Tula Region, Russia

\*corresponding author; e-mail: d\_alexia@mail.ru

**ABSTRACT:** The male of *Mexecheles virginensis* (Baker, 1949) (Acariformes; Cheyletidae) found in galleries of scolytine beetles (Coleoptera: Curculionidae) is recorded for the first time in Russia (Tula Region) and redescribed.

**KEY WORDS:** Acari, Cheyletidae, systematics, *Mexecheles virginensis*.

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## INTRODUCTION

The family Cheyletidae (Acariformes: Prostigmata) includes over 440 species in 75 genera (Zhang *et al.* 2011). Most members of this family are predators, but some genera are permanent ectoparasites of small mammals and birds (Volgin 1969; Summers and Price 1970; Bochkov and Fain 2001; Bochkov 2004, 2009). The genus *Mexecheles* De Leon, 1962 currently includes ten species represented by free-living predators and those ecologically associated with scolytine beetle galleries (Coleoptera: Curculionidae) (De Leon 1962; Volgin 1969; Smiley and Mooser 1970; Faungarworn and Lekprayoon 2010). The latter work provides a key to females of all presently known species. The currently known *Mexecheles* species, males, were often described for only four species: *Mexecheles votandinii* (Jeffrey, 1975) in Scotland; *M. shiva* (Bochkov et Ochoa, 2005) and *M. virginensis* (Baker, 1949) in India; and *M. thailandensis* Faungarworn et Lekprayoon, 2010 in Thailand (Jeffrey 1975; Fain and Bochkov 2001; Bochkov and Ochoa 2005; Faungarworn and Lekprayoon 2010).

The fauna of cheyletids in the Suvorov District of the Tula Region, Russia was recently studied by Bochkov and Abramov (2016). Among seven cheyletid mites found in that locality, females of *Mexecheles virginensis* were recorded in the territory of Russia for the first time. This species was originally described from females in Virginia, USA (Baker 1949). Males were described much later based on the material from Kashmir, India (Fain and Bochkov 2001). In the present work, we provide a redescription of *M. virginensis* males, based on a newly collected material in the European part of Russia.

## MATERIAL AND METHODS

The specimens, used for redescription, were collected near the city of Suvorov (Tula Region,

Russia) by V.V. Abramov in 2016. Extraction from samples was made with Berlese's funnel; mites were stored in tubes with 70% ethanol, and then were mounted in Hoyer's medium. Drawings were made with a Leica microscope, equipped with a camera lucida and DIC optics. The description of idiosomal setation follows that of Grandjean (1939), as adapted for Prostigmata by Kethley (1990). The nomenclature of leg setae follows that of Grandjean (1944). The description follows modern standards proposed in the recent works on *Mexecheles* and related cheyletids (Fain and Bochkov 2001; Bochkov and Ochoa 2005; Faungarworn and Lekprayoon 2010). All measurements are in micrometres (µm). Mite specimens are deposited at the Zoological Institute of the Russian Academy of Sciences (ZISP), St. Petersburg, Russia.

## SYSTEMATICS

Family **Cheyletidae Leach, 1815**

Genus ***Mexecheles* De Leon, 1862**

***Mexecheles virginensis* (Baker, 1949)**

(Figs. 1, 2)

*Cheyletia virginensis* Baker, 1949: 299, pl. 13, Fig. 95–98.

*Paracheyletia virginensis*, Volgin 1955: 169.

*Acarocheyla virginensis*, Smiley and Moser 1970: 229–236.

*Mexecheles virginensis*, Volgin 1969: 187, Fig. 190–192; Summers and Price 1970: 47, Fig. 39; Fain and Bochkov 2001: 54, Fig. 5.

**Material examined.** 4 males (AVB 17-1102-69) from galleries of supposedly *Pitiophthorus micrographus* (Linnaeus) (Curculionidae: Scolytinae) under bark of dead fir tree (*Picea* sp.), Russia, Tula Region, Suvorov District, 54°7'20" N, 36°29'47" E,



Fig. 1. *Mexecheles virginiensis*, dorsal view.

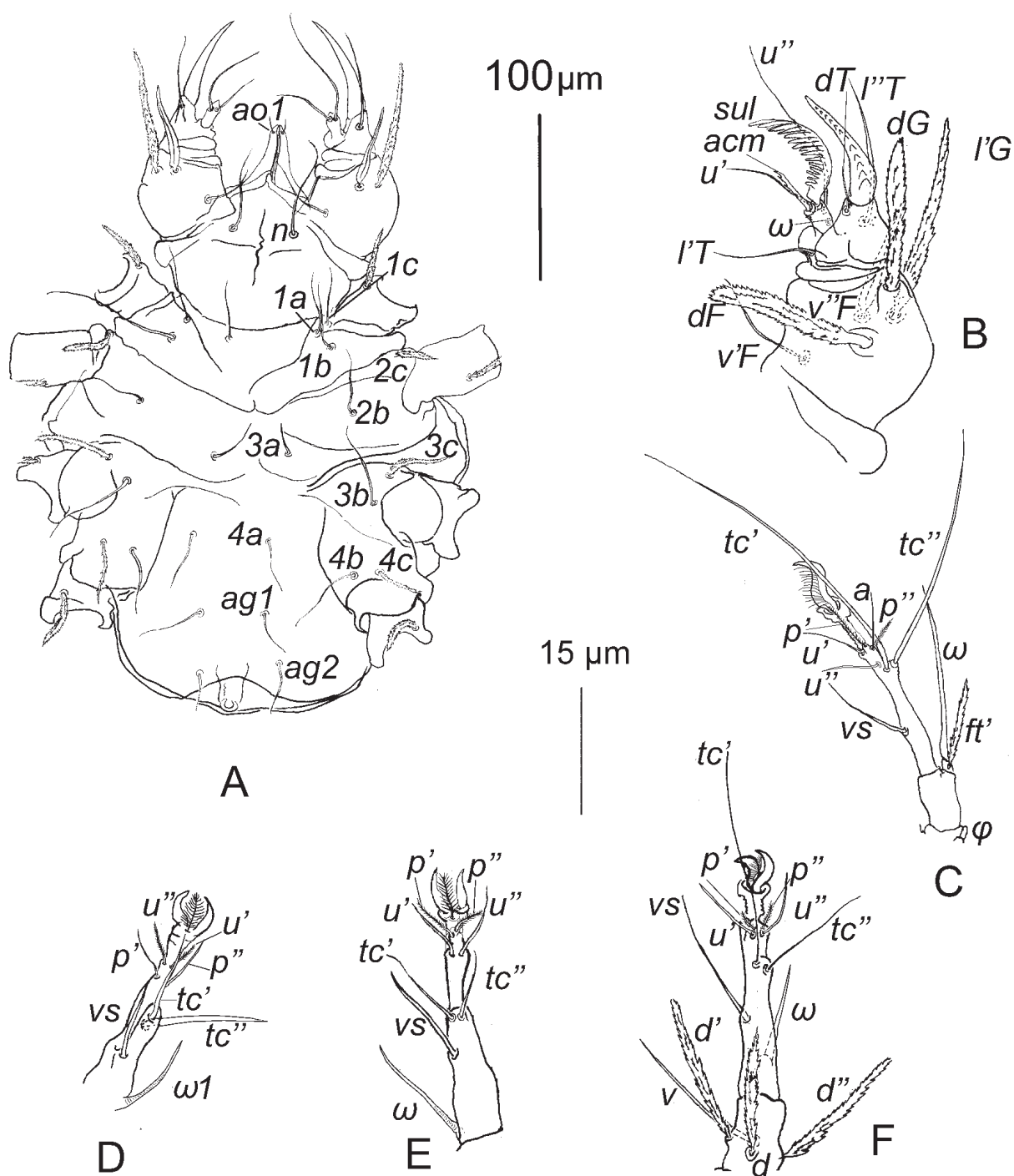


Fig. 2. *Mexeches virginiensis*. A—ventral view of idiosoma and gnathosoma, B—dorsal view of palp, C—D—dorsal view of tarsi I–IV, respectively.

October 2016, coll. V.V. Abramov. All material is deposited in ZISP.

**Description.** *Male* (range for 4 specimens). Body including rostral extension of gnathosoma: 425–520 long, 410–480 wide. *Gnathosoma* 165–170 long and 175–190 wide. Palpal femur: 100–130 long; setae *dF* and *v''F* serrate, 60–75 long, 10–12 wide, seta *v'F* smooth filiform. Palpal genu: setae

*dG* and *l''G* serrate, 70–85 long and 10–12 wide. Palpal tibia: claw with 10–12 basal teeth, setae *dT*, *l'T*, *l''T* smooth filiform. Palpal tarsus: eupathidium *sul* with 14–15 tines, eupathidium *acm* with 2–5 fine basal tines, solenidion *ω* small stick-like, setae *u'*, *u''* smooth filiform (Fig. 2B). Peritremes shaped as wide arch with small acute apex (roughly as onion dome), each with 8 chambers. Rostral shield

weakly ornamented with fine punctures. *Idiosoma* 300–355 long. Propodonal shield 150–190 long, with 8 pairs of setae (Fig. 1). All propodonal setae narrowly lanceolate and serrate, 10–12 wide; length of setae: *vi* 55–100, *ve* 80–105, *si* 55–100, *se* 75–105, *c1* 30–55, *c2* 35–50, *c3* 30–50, and *c4* 45–80. Hysterosomal shield 125–140 long, with 6 pairs or lanceolate serrate setae 10–12 wide; length of these setae: *d1* 30–35, *d2* 30–55, *e2* 30–50, *e1* 30–50, *f1* 20–30, and *f2* 35–40. Setae *e1* inserted posterior to level of setae *e2*. Pseudanal setae *ps1*–*ps3* present, narrowly lanceolate; seta *ps2* with subapical tine. Genital setae *g1* and *g2* rod-like, about 5 and 7 long, respectively. 2 pairs of filiform agential setae *ag* present. Aedeagus about 20–28 long.

Tarsi I–IV with solenidion  $\omega 1$ ; length and position of this solenidia: on tarsus I 90–105, situated dorsally; on tarsus II 40–45 long, situated ventrally; on tarsus III 30–40, situated ventrally, on tarsus IV 50–60, situated ventrally (Fig. 2C–F). Claws of all tarsi without basal angle. Solenidia  $\phi$  of tibia I and II shaped as short sticks, about 5 long; solenidion  $\sigma 1$  of genu I rudimentary, shaped as minute button. Length of legs I 405–475; length of tarsi: I—100–130, II—75–95, III—75–100, IV—90–105.

**Remarks.** Among previously described species for which males are known, *Mexeches virginiensis* is most similar to *M. thailandensis* and *M. votandinii* (Jeffrey 1975; Faungarworn and Lekprayoon 2010). In males of these species, all dorsal idiosomal setae are narrowly lanceolate or spatuliform and densely serrate. In *M. shiva*, these setae are rod-like and sparsely serrate. Males of *M. virginiensis* are distinguished by the form of their peritremes; they form an acute anterior angle, i.e., they are shaped like an onion dome (vs. trapezoid-shaped in *M. thailandensis* and rounded in *M. votandinii*). It is necessary to note that male specimens of *M. virginiensis* described herein are noticeably smaller than those described from India (Fain and Bochkov 2001). The body length of European specimens is 425–520 (vs. 570 in the Indian specimen) and the gnathosoma is punctured dorsally (vs. ornamented with short irregular dashes).

**Distribution.** This species was originally described from the USA, Virginia (Baker 1949). Later on, it was recorded in a number of localities of the New World: USA (Alabama, Louisiana, Mississippi, Nevada and Utah), Canada and Honduras (Smiley and Moser 1970; Summers and Price 1970). In the Old World, it was recorded in Finland

(Penttinen *et al.* 2013), Russia (Tula Region) (Bochkov and Abramov 2016) and India (Kashmir) (Fain and Bochkov 2001).

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