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Two new species of the genus *Armscirus* (Acari: Prostigmata: Cunaxidae) from India and Vietnam, with a description of the preimaginal stage of *Armscirus fendai*

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Abstract

Two new mite species from India and Vietnam, viz. *Armscirus denheyeri* sp. nov. and *Armscirus orientalis* sp. nov. (Acari: Prostigmata, Cunaxidae), are described and figured together with the description of the deutonymph of *Armscirus fendai* from Slovakia.

Key words: Acari, *Armscirus*, Cunaxinae, taxonomy

Introduction

The genus *Armscirus*, erected by Den Heyer (1978), comprises 39 species described from females (Den Heyer 2011), plus males of *A. ebrius* (Chaudhri) and *A. masani* Kaluz & Vrabec, and an additional two new species described in this paper. The first detailed classification system and systematics of the family Cunaxidae was published by Den Heyer (1980, 1981). Later, Smiley's (1992) monograph presented more detailed knowledge on the family Cunaxidae. Since then various papers have described new cunaxid species from Asia (Muhammad & Chaudhri 1991; Bashir & Afzal 2005; Bashir *et al.* 2008; Corpuz-Raros 1995, 2008; Corpuz-Raros & Gruezo 2007) and Europe (Kalúz 2009; Kalúz & Vrabec 2013). Some species previously placed in the genus *Dactyloscirus* (Chaudhri 1977, 1980; Michocka 1982) were discussed and considered probable *Armscirus* (Den Heyer & Castro 2008). Two new species of this genus were described also from the Neotropical region (Den Heyer & Castro 2012). The latest papers (Skvarla & Dowling, 2011; Kalúz & Vrabec 2013) joined together the knowledge on this genus, described a new species, and presented keys to adults of *Armscirus* of the world.

Material and methods

The specimens studied were collected from litter, isolated in Tullgren photoelectors and mounted in Swann's medium. The drawings were produced with light microscopy and then enhanced with computer software (GIMP2). All measurements (stated in micrometers— μm) were done with a standardized microscopy ocular micrometer. As each species was described from two specimens, measurements are presented as the values of the holotype measurement followed by the paratype measurement (both in brackets). The length of the body was measured from the anterior margin of the pronotal dorsal shield to the caudal margin of the opisthosoma; the width of the body was measured just behind the posterior margin of the pronotal shield. For the leg segments (excluding coxae and trochanters), the lengths of their dorsal side were measured. The dorsal setal notation follows the more generally accepted nomenclature of Kethley (1990), used by Sionti & Papadoulis (2003a, b), Den Heyer (2006) and the later changes suggested for the Bdelloidea by Den Heyer & Castro (2008). The scales in all figures are 100 μm .

transversally striated integument arranged anteriorly to genital plates. Three simple setae on each of weakly sclerotized genital valves, setae equal in length. Each of two pairs of para-anal setae situated on small platelet, and a pair of anal setae present on soft tegument close to anal opening.

Gnathosoma. Palp 251 long, setation as in female. Palpal chaetotaxy as follows: trochanter—bare, basifemur—1 sts; telofemur—1 ap (17 long), 1 ap (21), 1 spl; genu—1 ap (50), 2 spls, 2 sts; tibiotarsus—1 spl, 4 sts. Chelicera slender and 154 long with a pair of distal setae. Subcapitulum with two pairs of short adoral setae and four pairs of hypognathal setae (*hg*); setae *hg*₁ 15, *hg*₂ 21, *hg*₃ 11 and *hg*₄ 43 long.

Legs. Chaetotaxy I–IV as follows: coxae 3–2–3–3 sts, trochanters 1–1–2–1 sts; basifemora 2–2–1–0 sts; telofemora 4–4–4–4 sts; genu I—1 asl, (1 sts, 1 mst), 5 sts; genu II—1 asl, 6 sts; genu III—6 sts; genu IV—6 sts; tibia I—(1 asl, 1 mst), 5 sts; tibia II—1 asl, 5 sts; tibia III—1 bsl, 6 sts; tibia IV—1 smooth T, 4 sts; tarsus I—1 fam, 1 asl, 1 tsl, 10 sts; tarsus II—1 bsl, 1 tsl, 8 sts; tarsus III—9 sts; tarsus IV—7 sts.

Length of leg segments I–IV (coxa and trochanter not measured): Basifemur 62–69–66–77; Telofemur 46–39–34–36; Genu 28–29–34–43; Tibia 39–31–49–51; Tarsus 136–117–135–134.

Material studied. N—Slovakia, High Tatras Mts., Vyšné Hágy vicinity (N–49°07'20", E–20°06'32"), 1175 m a.s.l., mountain meadow, 11 July 2008, 1 deutonymph collected from grass rhizosphaera. Material collected by S. Kalúz.

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References

- Bashir, H.M. & Afzal, M. (2005) New cunaxid mites of the genus *Armscirus* from Punjab Pakistan. *Pakistan Journal of Agricultural Sciences*, 42, 117–121.
- Bashir, H.M., Afzal, M. & Khan, B.S. (2008) Genus *Armscirus* (Acari: Prostigmata: Cunaxidae) from Pakistan. *Belgian Journal of Zoology*, 138 (2), 115–127.
- Chaudhri, M.W. (1977) Descriptions of the mites of the family Cunaxidae (Acarina) from Pakistan. *Pakistan Journal of Agricultural Sciences*, 14 (2–3), 41–52.
- Chaudhri, M.W. (1980) *Studies on the biosystematics and control of mites of field crops, vegetable and fruit plants in Pakistan*. Second Annual report (on Project PK–ARS–150). Pakistan, University of Agriculture, 78 pp.
- Corpuz-Raros, L.A. (1995) Philippine predatory mites of the family Cunaxidae (Acari). 2. Genera *Armscirus* Den Heyer and *Dactyloscirus* Berlese. *The Philippine Agriculturist*, 78 (2), 159–173.
- Corpuz-Raros, L.A. (2008) Additional species of Cunaxidae and first report of the subfamily Neobonzinae (Cunaxidae, Acari) from the Philippines. *Asia Life Sciences*, 17 (1), 71–89.
- Corpuz-Raros, L.A. & Gruezo, W.S. (2007) Two new species of predatory mites of the family Cunaxidae (Acari) from Java, Indonesia. *Asia Life Sciences*, 16 (2), 175–181.
- Den Heyer, J. (1978) Four new species of *Armscirus* gen. nov. (Prostigmata: Acari) from the Ethiopian Region. *Journal of Entomological Society of South Africa*, 41, 217–239.
- Den Heyer, J. (1980) A classification system for the family Cunaxidae (Actinedida: Acarida). *Publications of the University of the North*, Series A, 23, 1–12.
- Den Heyer, J. (1981) Systematics of the family Cunaxidae Thor, 1902 (Actinedida: Acarida). *Publications of the University of the North*, Series A, 24, 1–19.
- Den Heyer, J. (2006) *Riscus*, a new cunaxid genus from Thailand (Acari: Actinedida: Cunaxidae). *Acarologia*, 46 (3–4), 195–201.
- Den Heyer, J. (2011) *CunaxidBase: Family Cunaxidae Database (version Jan 2010)*. In: Bisby, F.A., Roskov, Y.R., Orrell, T.M., Nicholson, D., Paglinawan, L.E., Bailly, N., Kirk, P.M., Bourgoin, T., Baillargeon, G. Ouvrard, D. (Eds.), *Species 2000 & ITIS Catalogue of Life: 24th October 2011*. Species 2000: Reading, UK. Digital resource. Available from: <http://www.catalogueoflife.org/col> (accessed 28 May 2014)

- Den Heyer, J. & Castro, T. (2008) A new Neotropical genus of the family Cunaxidae (Acari: Prostigmata: Bdelloidea). *Zootaxa*, 1843, 35–46.
- Den Heyer, J. & Castro, T. (2012) New Neotropical cunaxine species (Acari: Prostigmata: Cunaxidae). *Zootaxa*, 3265, 22–44.
- Kalúz, S. (2009) Two new Palearctic mite species of the family Cunaxidae (Acari: Prostigmata). *Zootaxa*, 2198, 27–40.
- Kalúz, S. & Vrabec, M. (2013) Two new species of *Armscirus* (Acari: Prostigmata: Cunaxidae) from Slovakia. *Zootaxa*, 3734 (2), 141–155.
<http://dx.doi.org/10.11646/zootaxa.3734.2.3>
- Kethley, J. (1990) Acarina: Prostigmata (Actinedida). In: Dindal, D.L. (Ed.), *Soil Biology Guide*. John Wiley & Sons, New York, pp. 667–756.
- Michocka, S. (1982) Two new species of the family Cunaxidae (Acari: Prostigmata) from Poland. *Acarologia*, 23, 327–332.
- Muhammad, T. & Chaudhri, W.M. (1991) Two new cunaxid mites of the genus *Armscirus* (Acarina: Cunaxidae) from Pakistan. *Pakistan Entomologist*, 13, 50–55.
- Sionti, P.G. & Papadoulis, G.T. (2003a) Two species of the genus *Neocunaxoides* Smiley (Acari: Cunaxidae) from Greece. *International Journal of Acarology*, 3, 225–229.
<http://dx.doi.org/10.1080/01647950308684332>
- Sionti, P.G. & Papadoulis, G.T. (2003b) Cunaxid mites of Greece (Acari: Cunaxidae). *International Journal of Acarology*, 4, 315–325.
<http://dx.doi.org/10.1080/01647950308684347>
- Skvarla, M.J. & Dowling, A.P.G. (2011) Some new armscirine cunaxids (Acari: Prostigmata: Cunaxidae) from the Eastern United States. *Zootaxa*, 3194, 1–34.
- Smiley, R.L. (1992) *The Predatory Mite Family Cunaxidae (Acari) of the World with a New Classification*. West Bloomfield, Indira Publishing House, 356 pp.