



## Article

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### Larval morphology of *Unionicola figuralis* (Koch, 1836), *Neumania imitata* Koenike, 1908, and *N. spinipes* (Müller, 1776) (Acari: Hydrachnidia: Unionicolidae)

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#### Abstract

Illustrated descriptions of the larvae of the water mite species of *Unionicola figuralis* (Koch, 1836), *Neumania imitata* Koenike, 1908 and redescription of the larva of *N. spinipes* (Müller, 1776) are presented.

**Key words:** water mites, Unionicolidae, *Unionicola*, *U. figuralis*, *Neumania*, *N. imitata*, *N. spinipes*, morphology, larva.

#### Introduction

Traditionally water mites are described on adults, but preadult stages (larva and deutonymph) of many species are unknown or described not adequately. The larvae of *Unionicola figuralis* (Koch, 1836) and *Neumania imitata* Koenike, 1908 were previously unknown. Viets (1908) and Soar & Williamson (1927) gave a brief data on the morphology of the larva of *N. spinipes* (Müller, 1776). The present paper describes the larvae of the above mentioned species in detail. Larvae of the family Unionicolidae are known to parasitize the abdominal region and legs of imagos of the family Chironomidae (Diptera), and, rarely, the abdomen of Leptoceridae (Trichoptera) (Smith & Oliver 1986).

#### Material and methods

Specimens were collected by the author in streams of the European and Asian parts of Russia. To obtain larvae, water mites were maintained in laboratory conditions. Eggs and larvae obtained from females were kept individually in glass or transparent plastic vessels of 10–15 mm in diameter, and a height of 15 mm.

Idiosomal setae are named according to Tuzovskij (1987): *Fch*—frontales chelicerarum, *Fp*—frontales pedipalporum, *Vi*—verticales internae, *Ve*—verticales externae, *Oi*—occipitales internae, *Oe*—occipitales externae, *Hi*—humerales internae, *He*—humerales externae, *Hv*—humerales ventralia, *Sci*—scapulares internae, *Sce*—scapulares externae, *Li*—lumbales internae, *Le*—lumbales externae, *Si*—sacrales internae, *Se*—sacrales externae, *Ci*—caudales internae, *Pi*—praeanales internae, *Pe*—praeanales externae, *Ai*—anales internae, *Ae*—anales externae.

Furthermore, the following abbreviations are used: P-1–5, pedipalp segments (trochanter, femur, genu, tibia and tarsus); I—Leg-1–5, first leg, segments 1–5 (trochanter, femur, genu, tibia and tarsus) i.e. III—Leg-3 = genu of third leg; C1—coxal setae located posteromedially on coxa I, C2—coxal seta located posterolaterally on coxa I, C3—coxal seta located posterolaterally on coxa II, C4—coxal seta located anteriorly on coxa III, s—solenidion, ac—acanthoid seta; L—length; W—width, *tmas*—transverse muscle attachment scar located on coxa III posteromedially, n = number of specimens measured; all measurements are given in  $\mu\text{m}$ .