



<http://dx.doi.org/10.11646/zootaxa.3869.2.2>

<http://zoobank.org/urn:lsid:zoobank.org:pub:407C7804-ABAB-4419-A4E3-478856A3A57B>

Larval morphology of *Hydryphantes clypeatus* Thor, 1899, *H. dispar* Schaub, 1888 and *H. planus* Thon, 1899 (Acari, Hydrachnidia: Hydryphantidae)

PETR V. TUZOVSKIJ

Institute for Biology of Inland Waters of the Russian Academy of Sciences, Borok, Yaroslavl Province, 152742 Russia.

E-mail: tuz@ibiw.yaroslavl.ru

Abstract

Larvae of the water mite species *Hydryphantes clypeatus* Thor, 1899 are described for the first time, and redescriptions of the larvae *H. dispar* (Schaub, 1888) and *H. planus* Thon, 1899 are presented. The present data suggest that *H. clypeatus* and *H. hellichi* Thor, 1899, two species recently considered as a junior synonyms of *H. planus* resp. *H. ruber* (Geer, 1787) should be recognized as separate species. Separate keys to all named species based on larvae and adults are given.

Key words: water mites, Hydryphantidae, *Hydryphantes*, *H. clypeatus*, *H. dispar*, *H. planus*, morphology, larva, female

Introduction

The larvae of the European *Hydryphantes* species are still insufficiently known. Of the three species treated here, the larva of *H. clypeatus* Thor, 1899 was previously unknown and Sparing (1959) gave a brief description only of the morphology of the larva of *H. dispar* (Schaub, 1888). The larva of *H. planus* was described by Wainstein (1980) and Biesiadka & Cichocka (1990), but both descriptions are incomplete and deficitary in so far as no characteristics are given of the females from which these larvae were reared. The present paper highlights the importance of the larval morphology for understanding taxonomic conditions in the genus. Larvae of *Hydryphantes* species are known to parasitize imagoes of Hemiptera (Aphididae), Thysanoptera (Thripidae), Diptera (Chironomidae and Mycetophilidae) (Smith & Oliver 1986) and Odonata (Coenagrionidae) (Zawal & Dyatlova 2008) on which they attach to the thorax region or, rarely, the abdomen. The adults were identified using the original descriptions and revisions of Lundblad (1962), Gerecke (1996) and Di Sabatino et al. (2010).

Material and methods

Specimens were collected by the author in temporary reservoirs of the European part of Russia. To obtain larvae, water mites were maintained in laboratory (room temperature, natural day-night conditions). Eggs and larvae obtained from females kept individually in glass or transparent plastic vessels of 10–15 mm 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-1–6, first leg, segments 1–6 (trochanter, basifemur, telofemur, genu, tibia and tarsus) i.e. III-Leg-3 = genu of third leg; C1—coxal seta located medially on coxa I, C2—coxal seta located posterolaterally on

differences suggest that the larvae described from Poland belong to a species different from *H. planus*—possibly, there is more diversity hidden behind this name also other taxa synonymized by Lundblad (1962) could merit to be restored as separate species.

Keys to species of the genus *Hydryphantes*

Larvae

- 1 (2) Internal dorsal hysterosomal setae (*Hi*, *Sci*, *Li*) longer than external setae (*He*, *Sc*, *Le*) (Fig. 17), I-Leg-6 *de* longer than *ds* (Fig. 23) *H. dispar* (Schaub, 1888)
- 2 (1) All dorsal hysterosomal setae equal in length, I-Leg-6 *de* shorter or as long as, *ds*.
- 3 (4) Basal segments of chelicerae with a few wide strips (Wainstein 1980) *H. hellichi* Thor, 1899
- 4 (3) Basal segments of chelicerae with numerous narrow strips
- 5 (6) Distance between setae *Oi-Oi* less than their length (Wainstein 1980) *H. ruber* (Geer, 1778)
- 6 (5) Distance between setae *Oi-Oi* larger than their length
- 3 (4) Posterior margin of coxal plates II convex (Fig. 2), P-5 with long solenidion (Fig. 7), I-Leg-4 solenidion 2.0–2.5 times longer than eupathidium (Fig. 8), I-Leg-6 *de* < *ds* *H. clypeatus* (Thor, 1899)
- 4 (3) Posterior margin of coxal plates II straight (Fig. 33), P-5 with short solenidion (Fig. 37), I-Leg-4 solenidion shorter than eupathidium (Fig. 38), I-Leg-6 *de* = *ds* *H. planus* Thon, 1899

Adults

- 1 (2) Frontal plate elongate (L/W L ratio > 1.3) *H. hellichi* Thor, 1899
- 2 (1) Frontal plate as long as wide or slightly longer than wide (L/W L ratio < 1.2)
- 3 (4) Frontal plate anteriorly and posteriorly equal in width (Fig. 13) *H. clypeatus* (Thor, 1899)
- 4 (3) Frontal plate anteriorly broader than at the posterior ends
- 5 (6) Frontal plate with long posterior projections, anterior margin with bluntly pointed median projections (Fig. 28)
..... *H. dispar* (Schaub, 1888)
- 6 (5) Frontal plate with short posterior projections, anterior margin without median projection
- 7 (8) Capitulum with short rostrum (Fig. 43) *H. planus* Thon, 1899
- 8 (7) Capitulum with long rostrum (Di Sabatino *et al.* 2010) *H. ruber* (Geer, 1778)

Acknowledgements

The author expresses his sincere gratitude to Prof. Dr. Reinhard Gerecke and two anonymous referees for their careful work and critical comments.

References

- Biesiadka, E. & Cichocka, M. (1990) Studies on the morphology of larval stages of water mites (Hydracarina) 2. Some species of the superfamily Hydryphantoidea. *Annales Zoologici*, 43 (24), 461–492.
- Di Sabatino, A., Gerecke, R., Gledhill, T. & Smit, H. (2010) On the taxonomy of water mites (Acari: Hydrachnidia) described from the Palaearctic, part 2. Hydryphantoidea and Lebertioidea. *Zootaxa*, 2266, 1–34.
- Gerecke, R. (1996) Untersuchungen über Wassermilben der Familie Hydryphantidae (Acari, Actinedida) in der Westpalaearktis, II. Die Wassermilben der Familie Hydryphantidae Piersig, 1896 in der Mittelmeerländern. *Archiv für Hydrobiologie*, Supplementband, 77 (3–4), 337–513.
- Lundblad, O. (1962) Die Hydracarinen Schwedens. II. *Arkiv för Zoology*, 14 (1–6), 1–635.
- Smith, I.M. & Oliver, D.R. (1986) Review of parasitic associations of larval water mites (Acari: Parasitengona: Hydrachnida) with insect hosts. *The Canadian Entomologist*, 118, 407–472.
<http://dx.doi.org/10.4039/ent118407-5>
- Tuzovskij, P.V. (1987) *Morphology and Postembryonic Development in Water Mites*. Nauka, Moscow, 172 pp. [in Russian]
- Wainstein, B.A. (1980) *Key to water mite larvae*. Nauka, Leningrad, 238 pp. [in Russian]
- Zawal, A. & Dyatlowa, E. (2008) Parasitizing on damselflies (Odonata: Coenagrionidae) by water mite (Acari: Hydrachnidia) larvae from Odessa province (Southwestern Ukraine). *Natura Montenegrina*, 7, 453–462.