

A new water mite (Acari, Hydrachnidia: Limnesiidae) split off from *Limnesia undulata*

C. DAVIDS

DAVIDS, C., 1997. A NEW WATER MITE (ACARI, HYDRACHNIDIA: LIMNESIIDAE) SPLIT OFF FROM *LIMNESIA UNDULATA*. – *ENT. BER., AMST.* 57 (10): 157-160.

Abstract: *Limnesia undulatoides* spec. nov. is split off from *Limnesia undulata*. The morphological resemblance between the two species is close, but the dimensions of *L. undulatoides* are much larger than those of *L. undulata*. Moreover, the shape of the genital acetabula differs clearly. The colour of the newly described species is red, instead of yellowish as in *L. undulata*. In addition to that, there are differences between the life cycles of the two species. In *L. undulatoides* larvae hatch from the eggs, in *L. undulata* eggs develop into nymphs. From literature data it is obvious that in a few cases illustrations and/or text are dealing with *L. undulatoides* instead of *L. undulata*. When correcting for wrong identifications, *L. undulatoides* shows a Western Palaearctic distribution pattern.

Keywords: Acari, Hydrachnidia, water mites, *Limnesia*.

Aquatische Oecotoxicologie, Universiteit van Amsterdam, Kruislaan 320, 1098 SM Amsterdam, The Netherlands.

Introduction

Limnesia undulata (Müller) is a common species in lentic waters, with a Holarctic distribution. In the original description of Müller (1776) the colour (yellowish-white, often tinged with green) is one of the main characteristics. Lundblad (1929) noted a large variation in colour and size in *L. undulata*. Like Lundblad I observed red and yellowish-white specimens, according to Viets' key (1936) all belonging to *L. undulata*. For reasons of differences in colour, size and life history I herewith raise the large red specimens to species level under the name *Limnesia undulatoides*.

Limnesia undulatoides spec. nov.

(figs 1, 3-4)

Type material

Holotype: ♂, The Netherlands, Amsterdam, Amsterdamse Bos, collected in a ditch connected with Het Nieuwe Meer, 52°20'N, 4°50'E, 14.iv.1967, slide 447, leg. C. Davids. Paratypes: ♂, slide 446 and ♀, slide 450, same data as the holotype. In addition, 4 ♂, and 6 ♀, same data, preserved in Koenike's fluid. The holotype and two paratypes specimens are dissected and mounted on slides by the glycerine-gelatine method (Viets, 1923). The type material is deposited in the Zoological Museum of the University of Amsterdam.

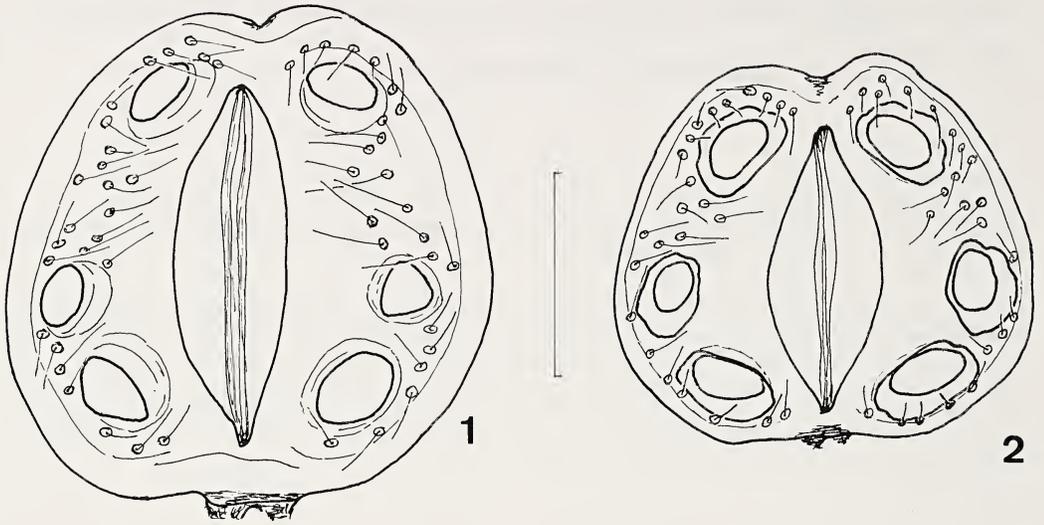
Description

Male: Total length 1582 µm, width 1309 µm. The colour of the body is red with bluish-black epimera, legs and palpi. The first pair of epimera is fused posterior to the gnathosoma (fig. 4). The tubercle on the ventral margin of the second palpal segment (PII) is longer than its peg-like seta (fig. 3). An unpaired small platelet is situated on the dorsum. The genital plates bear a number of small papillae, each with a fine hair, between the first and second acetabulum. The genital acetabula are heightened and conus-shaped (fig. 1). See table 1 for further dimensions.

Female: Total length 1488 µm, width 1428 µm. Apart from the genital plates there are no differences between male and female (fig. 4).

Diagnosis

The new species differs from the closely related *Limnesia undulata* by the red-coloured body with bluish-black epimera, legs and palpi. The acetabula are heightened and conus-shaped (fig. 1.). The disc-like acetabula in *L. undulata* are depressed and have slightly undulated margins (fig. 2.). The number of papillae between the first and second acetabulum va-



Figs 1-2. *Limnesia*, genital plates. 1, *Limnesia undulatooides* spec. nov., ♂ holotype; 2, *Limnesia undulata*, ♂, (scale 100 μ m).

ries: in *L. undulatooides* from 8 - 13, mean 10.5 (n=24); in *L. undulata* from 5 - 9, mean 7.0 (n=24).

Discussion

Piersig (1896-1899) indicated that in *Limnesia undulata* nymphs hatch from the eggs. Szalay (1928) observed that the larval stage lasted within the eggshell only 24 hours, after that the larva transformed into a protonymph and after 7 to 8 days the nymph will leave the egg mass. Hatching of nymphs from the eggs in *L. undulata* was also observed by the author. In *L. undulatooides*, however, I observed larvae emerging from the eggs. Combined with the differences in morphological characteristics, it became clear to me that *L. undulatooides* has to be considered a separate species.

The following morphological characteristics distinguish both *L. undulata* and *L. undulatooides* from the most closely related *Limnesia fulgida* Koch.

An unpaired small platelet on the dorsum, which is lacking in *L. fulgida*. The tubercle on the ventral margin of PII is longer than its peg-like seta. In *L. fulgida* tubercle and seta are about of the same length. The first pair of epimera is fused posterior to the gnathosoma. In

L. fulgida the first pair of epimera is not fused. The genital plates bear a number of small papillae, each with a fine hair, between the first and second acetabulum. In *L. fulgida* these papillae are situated along the margin of the genital plates.

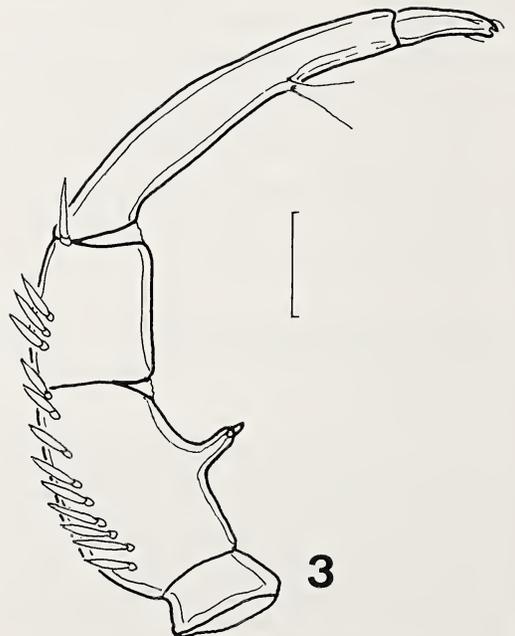


Fig. 3. *Limnesia undulatooides* spec. nov., ♂ holotype, left palp (medial view) (scale 100 μ m).

Table 1. *Limnesia undulatooides* type series and *L. undulata*, dimensions in μm ; l: length, w: width.

	prep. 447 Holotype Male	prep. 450 Paratype Female	prep. 442 <i>L. undulata</i> Male	prep. 455 <i>L. undulata</i> Female
Total length	1582	1488	976	1023
Maximum width	1309	1428	904	797
Chelicera, basal segment, l	375	390	280	309
Chelicera, claw, l	126	126	97	107
Palp segments dorsal, l				
PI	49	50	39	38
PII	232	252	175	203
PIII	175	194	139	155
PIV	380	407	272	307
PV	95	107	95	102
Tubercle on P-II, l	47	49	38	43
Peg-like seta on tubercle, l	12	13	16	15
Ratio distance ventral setae P-IV to proximal and distal margin	1,7	2,3	1,5	1,5
Gonopore, l	146	228	108	208
Genital plate, l	226	274	181	252
Genital plates, w	242	193	204	177
Number of setae left and right between 1st and 2nd acetabulum	10/12	9/11	7/7	6/6
Genital skeleton, l	251	186		
Dorsal platelet, l	96	97	53	50
Dorsal platelet, w	95	95	68	73
I-Leg-5, dorsal l	243	276	183	199
I-Leg-6, dorsal l	209	233	148	165
II-Leg-5, dorsal l	320	349	234	262
II-Leg-6, dorsal l	275	306	213	215
III-Leg-5, dorsal l	354	372	256	262
III-Leg-6, dorsal l	272	306	197	204
IV-Leg-5, dorsal l	416	446	317	319
IV-Leg-6, dorsal l	419	428	325	338
Distal seta on IV-Leg-6, l	155	184	155	194

Before and in the beginning of this century, the colour was considered as one of the main characteristics of these species. In Viets' key (1936) the colour is only an additional characteristic. Using the key of Piersig (1901), Koenike (1909) or that of Soar & Williamson (1927), identification of *L. undulatooides*, owing to its red colour, will lead to *L. fulgida* and in Viets' key to *L. undulata*.

Striking is the difference in size between *L. undulatooides* and *L. undulata*, as can be seen in table 1. Besides the shape of the genital acetabula, the length of III-Leg-5 (5th segment of 3rd leg) can be taken for identification purposes. In table 2 a number of dimensions are taken from specimens originating from The Netherlands and Germany. Specimens with

III-Leg-5 larger than 300 μm will belong to *L. undulatooides* and smaller than 300 μm to *L. undulata*. Apart from the genital plates, there are no other differences between the sexes.

From these data it can be concluded that Lundblad (1929) presented in his fig. 10 the genital plates of *L. undulatooides*. Another example from literature is Croneberg (1899), publishing on mites collected in the surroundings

Table 2. Length in μm of III-Leg-5 of *Limnesia undulatooides* and *L. undulata*; n: number of specimens measured.

	mean	range	n
<i>L. undulatooides</i> , ♂	367	333-397	25
<i>L. undulatooides</i> , ♀	378	350-420	34
<i>L. undulata</i> , ♂	233	210-268	74
<i>L. undulata</i> , ♀	256	216-292	83

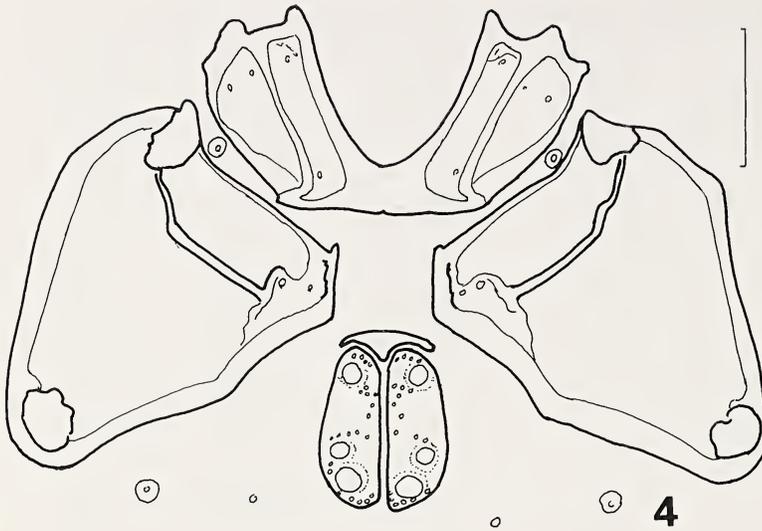


Fig. 4. *Limnesia undulatooides* spec. nov., ♀ paratype, ventral side with epimeres and genital area (scale 200 µm).

of Moscow. In the paragraph on *Limnesia histrionica* Hermann (= *L. fulgida*) he hesitates about his identification. Apparently because of the colour, he identified the specimens as *L. histrionica*. However, looking at his figures 19 a and b *L. undulata* or *L. undulatooides* was pictured. Considering the colour in his description *L. undulatooides* is involved. In view of the data of Lundblad and Croneberg it can be concluded, that *L. undulatooides* has a Western Palaearctic distribution.

References

- CRONEBERG, A. I., 1899. Beitrag zur Hydrachnidenfauna der Umgegend von Moskau. – *Bull. Soc. Nat. Moscou* 13: 67-100.
- KOENIKE, F., 1909. Acari, Milben. In: *Die Süßwasserfauna Deutschlands* (A. Brauer, ed.) 12: 13-184. Fischer Verlag, Jena.
- LUNDBLAD, O., 1929. Die Hydracarinen des Sees Tåkern. – *Sjön Tåkerns Fauna Flora* 5: 1-62.
- MÜLLER, O. F., 1776. *Zoologiae Danicae prodromus, seu animalium Daniae et Norvegiae indigenarum characteres, nomina, et synonyma imprimis popularium. Havniae (Hallager)*: 1-274.
- PIERSIG, R., 1896-1899. Deutschlands Hydrachniden. – *Zool., Stuttg.* 19: i-vii, 1-601.
- PIERSIG, 1901. *Acarina, Hydrachnidae*. In: *Acarina, Hydrachnidae und Halacaridae*. Tierreich, Berlin (Piersig & Lohmann eds) 13: i-xviii, 1-336.
- SOAR, C. D. & W. WILLIAMSON, 1927. *The British Hydracarina* II: 1-215. Ray Society, London.
- SZALAY, L., 1928. Beiträge zur Kenntnis der postembryonalen Entwicklung von *Limnesia undulata* O.F. MÜLL. – *Állatt. Közl.* 25: 133-139, 200-203 (in Hungarian).
- VIETS, K., 1923. Über die Präparation von Hydracarinen. – *Int. Rev. Hydrobiol.* 11: 322-328.
- VIETS, K., 1936. Wassermilben oder Hydracarina (Hydrachnellae und Halacaridae). – *Tierw. Dtl.* 31: i-x, 1-288.

Accepted 25.iv.1997.