

New data on Tasmanian water-mites (*Hydrachnellae*) with a list of recorded species

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(WITH 4 TEXT FIGURES)

Prof. Dr. V. Brehm has handed over for study, some water-mites he had received through Dr. A. G. Nicholls. For this I wish to express my thanks to Prof. Brehm.

We are grateful to Dr. A. G. Nicholls who collected the material in Tasmania. These water-mites, 46 specimens altogether, are from 5 localities. Among them 7 species and 5 genera were determined. These, together, with the localities, are given in the following list:—

1. Big Lake Waterhouse, 12 IX. 1949.
Limnochares (Cyclothrix) australica Ldbl., 5 ♂♂.
Eylais Nicholli n. sp., 1 ♀.
Eylais Nicholli var. *fraterna* n. var., 1 ♀.
2. Cleveland Lagoon, 14 IX. 1949.
Hydrodroma monticola (Piers.), 6 ♂♂, 6 ♀♀.
Heterolimnesia Lundbladi n. sp., 1 ♂.
Unionicola (Pentatax) longiseta Walt., 1 ♂.
3. Pond 1, Tunbridge, 14. IX. 1949.
Limnochares (Cyclothrix) australica Ldbl., 2 ♂♂, 1 ♀.
Eylais (Eylais) extendens var. *tasmanica* n. var., 1 ♀.
4. Lake Leake near Weir, 30. XI. 1949.
Unionicola (Pentatax) longiseta Walt., 5 ♂♂, 12 ♀♀.
5. Little Waterhouse Lake, 1949.
Unionicola (Pentatax) longiseta Walt., 1 ♂, 1 ♀.

These, together with descriptions of new species and varieties, are set out in systematic order.

1. *Limnochares (Cyclothrix) australica* Ldbl.

The specimens examined are closely allied to those described by Lundblad. (1947, p. 13-17, table III, fig. 8-10). Localities: 1 and 3.

2. *Eylais (Eylais) extendens* var. *tasmanica* n. var.

Female: This form seems to be near to the species *Eylais (Eylais) extendens* (O. F. Mull.) in the form of the maxillary organ, but differs from the principal species mainly in respect of the pharynx.

The oval body is 3 mm. long and 2.5 mm. wide. Its colour was probably red (all specimens preserved in alcohol).

The width of the eye-plates is 320 μ , length of one eye-capsule is 213 μ , width 131 μ . The anterior margin of intercapsular bridge scarcely rises above the hair-pores, medially considerably sinuated. The capsules slightly sinuated laterally to the middle. The pores of the eye-capsules are very fine. (fig. 1a).

The length of maxillary-organ from the anterior end of mandible to the posterior end overhanging the pharynx, 606 μ , and from the anterior end of the mouth to the posterior processes 412 μ . The width across the bases of the palpi 327 μ . The mouth is comparatively small, more or less circular, length 131 μ , width 142 μ . The chitinous ring beyond the mouth-plate is 180 μ long and 155 μ wide in external diameter. The posterior processes of the maxillary-organ are comparatively short, they curve slightly inward. The maxillary plate is marked with very fine, hardly observable, reticulations nearly to the middle, and with very fine pores at the end. The length of the pharynx is 426 μ , it is slender backwards, gradually broadening about up to the middle (172 μ), from the middle to the last quarter nearly the same width, rounded upwards at the end. The chitinous ring before the pharynx-end is slightly prominent. The surface of the pharynx is covered with fine small granules. (fig. 1b).

The lengths of the segments of the maxillary palpi measured in microns on the dorsal side are as follows:—I. = —, II. = 164, III. = 170, IV. = 311, V. = 196.

Each segment, see fig. 1c, is armed with spiniform setae among which are some pectinate setae. The last segment ends with 6-7 short spines.

The epimeres are mostly anastomosed, armed with reticulate chitinous ridges, the epimeral-plates more or less branching off transversely and possessing very fine transverse connections. This mesh work of chitinous ridges seems to be more thick than in the true species and so thick in places that the epimeral surface seems to be quite porous.

No particulars can be given about the outer genital-organs because the abdomen skin is damaged. Locality: 3.

3. *Eylais Nicholli* n. sp.

This new species resembles the European *Eylais (Syneylais) infundibulifera* Koen. and *Eylais australica* Ldbl. described from Tasmania. The resemblance is mainly in the eye-plates. The maxillary organs and the more or less chitinous structure of the epimera are different. Unfortunately it could not be decided whether it is a species of the genus *Syneylais* or *Eylais*, because only one female specimen was at my disposal.

Female: The oval body is 3 mm. long, 2.5 mm. wide. The colour was probably red.

The eye-plates are 323 μ wide, broader than in *E. australica* (264 μ). The eye-capsules are 196 μ long and 128 μ wide, like *E. infundibulifera*,

they are broader behind than in the front. An obtuse, moderately developed bridge-process exists. On the right and left of this projection a little depression is noticeable. The eye-bristles arise from the front inner-corner of the eye-plates (fig. 2a).

The comparatively broad maxillary-organ extends from the anterior-end of the mandible up to the posterior end of the pharynx (622 μ), from the anterior end of the mouth-plates to the posterior processes, 393 μ long, and across the bases of the palpi, 377 μ wide. The nearly circular mouth-plate is 131 μ long and 139 μ wide. The chitinous ring placed outside the mouth-plate is 155 μ long and 172 μ wide across its interior margin. The maxillary basal plate is richly reticulate and up to one half densely reticulated, so that the surface is covered with big pores at one end, and with dense fine pores at the other. The length of the pharynx is 409 μ , and the maximal width about the middle 213 μ . The chitinous ring before the pharynx-end is very distinct in front. The surface of the pharynx is also covered with fine pores, though these pores are somewhat larger than the pores of the posterior half of the maxillary plate (fig. 2b).

The maxillary palpi are rather slender. Length of each segment on its extensor surface are as follows (in μ); I. = 164, II. = 204, III. = 180, IV. = 339, V. = 200. For the structure of the palpi and bristles of the segments see fig. 2c. There are about 6-7 terminal spines.

The epimeres are generally like those of *E. australica*, supported by anastomosed chitinous ridges, mostly crossing the epimeron-plates. The intervals of the mesh-work seem to be relatively narrower in the new form, as in Lundblad's photograph. (Lundblad 1947, A, table IV, fig. 12) of *E. australica*, so that the epimeral surface partly seems to be porous.

The external genital organs in general are like those of *E. australica*.
Locality: 1.

With the species described above, (*E. Nichollsi*) there was found at the same place another female *Eylais*-specimen which resembles very much this form. It is known that these *Eylais*-forms are very variable, in spite of these circumstances this specimen will not be identified as *E. Nichollsi*, but will be described as a variety of this form, as there seem to be differences in some characters (body-size, eye-organ, maxillary-organ).

4. *Eylais-Nichollsi* var. *fraterna* n. var.

Female: Length of body 3 mm. width 2 mm. thus smaller than the principal species. Body form oval, colour was probably red.

The eye-organs are 327 μ wide. Eye-capsules 188 μ long and 147 μ wide. Eye-organs resemble those of the European *Eylais* (*Syneylais*) *discreta* Koen. Bridge-process does not exist, instead in the middle of the bridge a small stud-like structure (muscle attachment) is noticeable, otherwise the anterior margin of the intercapsular bridge is nearly quite even. The hair-papillae rest on the edge of the eye-capsules (fig. 3a).

The maxillary organ measures 598 μ from the anterior end of the mandible up to the posterior end of pharynx, 409 μ from the anterior edge of the mouth-plate up to the posterior processes and 360 μ in width across the bases of the palpi. The circular mouth-plate is 147 μ in diameter. The chitinous ring outside the mouth-plate measures 180 μ in length and 196 μ in width across its internal diameter. The maxillary plate is thickly

covered with large pores up to half of its area, and is not so distinctly reticulated as in the principal species. The maxillary plate is covered at its end with fine pores. Pharynx is 409 μ long, largest pharynx-width is 221 μ behind the middle. The chitinous ring is prominent in front of the pharynx-end. The porosity of the pharynx is similar to that of the principal species (fig. 3b).

On the extensor surface the segments of the maxillary palpi have the following lengths (in μ): I. = 131, II. = 164, III. = 172, IV. = 295, V. = 180. For the bristles of the maxillary palpi see fig. 3c.

The anastomosed ridged sculpture of the epimera is generally similar to that of the principal form, but the mesh-work seems to be looser in this variety.

The external genital organs show the same structure as in the principal form. Locality: 1.

5. *Hydrodroma monticola* (Piers).

The collection contained specimens, which I classified previously as *Hydrodroma monticola* (Piers.), though these little animals do not resemble exactly the form described by Piersig from West Java. Firstly there are size differences. The body length of the male animal described by Piersig is 0.842 mm. and its width 0.800 mm., the male animal of this collection which is described below is about 1150 μ long and 1065 μ wide; and the female animal is about 1260 μ long and 1180 μ wide. The length of the exterior genital organ in the male is 262 μ , and in the female 262 μ ; The genital plates are about of the same width in both sexes. The outer sex-organ does not show striking differences.

In the specimen in question, the subcutaneous posterior inner-process of the anterior epimera-group is visible. These processes are medially connected, and furthermore grown together. The position of the concrescence is marked with a scarcely discernible line or groove. Thus it arises between both anterior epimera-groups as a bridge of which the anterior margin is medially protruding (sometimes also the posterior margin of the intercapsular bridge but this is much weaker).

The mandible of the male is (with claw) 344 μ , that of the female 377 μ long. The claws are 65 μ and 73 μ respectively.

The measurements of the segments of maxillary palpi are dorsally (in μ):—

	I.	II.	III.	IV.	V.
Male	65	82	49	213	90
Female	65	90	57	232	104

This form was recently recorded by Lundblad from different parts of Australia and he noted that the specimens examined by him resemble *Hydrodromo monticola* (Piers.) to such an extent that he did not describe them. It would be desirable to have a detailed description of Lundblad's specimens because the specimens from Tasmania seem to differ from the typical *H. monticola* (Piers.) in some respects. Locality: 2.

6. *Heterolimnesia Lundbladi* n. sp.

This new form seems to be closely related to the species *Heterolimnesia tasmanica* Ldbl. but some characteristics, especially the structure of the penis-organ, do not permit it to be identified with this species.

Male: Body without prominent epimera 1016 μ , with accentuated epimera 1147 μ long and 852 μ wide. Body elliptical. The original colour of the little animal was not certain, but it was probably brownish-lilac.

1. With the distal lengthening Skin structureless.

Mandible (with claw) 417 μ long. The claw is 106 μ (fig. 4a).

The maxillary palpi are in P. II and P. III rather thick. P. II is especially strongly swollen. This segment has on its ventral side a strong and thick peg set backwards. On P. IV there are about 6 very little and thin hairs (fig. 4b) set ventrodistally.

The measurements of each segment are as follows (in μ):—

	I.	II.	III.	IV.	V.
Dorsal length of segment	32	155	115	196	53
Distal height of segment	64	131	82	32	12

The length of the four epimera groups are 655 μ . The epimera edges are noteworthy for their strong chitinous margin. Both first epimeras lie quite apart and free from each other, a connecting chitinous bridge is not apparent.

The three pairs of hind-legs, with the exception of the posterior segment of IV, bear swimming hairs and also short strong spinous bristles. Especially on the end segment there are long spiniform setae. The end segment of leg III is slightly curved and provided with three ventral spines. The claws possess a dorsal and ventral spike. The claws of leg III are only a little longer and thicker than those of the anterior legs.

The outer genital plate is of reversed heart-shape and 311 μ long. It is laterally to the middle and on the posterior edge deeply incised. Of the four acetabular groups, the two anterior ones possess 7 and 6 genital acetabulae respectively and each of the two posterior ones 13 genital acetabular (fig. 4c).

The genital opening is 131 μ long. The penis apparatus ends in two curved hooks in the same way as in *H. tasmanica*, otherwise it is differently built. (fig. 4d, s. also Lindblad 1947, p. 48, fig. 31D). Locality: 2.

7. *Unionicola* (*Pentatax*) *longiseta* Walt.

Length 573 μ in the male from the anterior end of the first epimere to the end of the posterior processes of the fourth epimere, 655 μ in the female.

It is to be noted that the specimens studied here are not typical forms, as there are some differences to be observed. For example, we find dorsally on the 5 segments of the anterior extremities some (2-3) bristles and hairs, ventrally and distally 1-2 delicate hairs and on the end of these segments sulcate ones, viz., a large ventral one and a weaker one on the outer side.

The bristling of the epimeres resembles that of *Unionicola* (*Hexatax*) *annulata* Ldbl. (Lundblad 1947, p. 63, fig. 40), in the rather long and fine hair pointing outwards. This hair is not far from the posterior margin of the fourth epimere and attached on the middle. The long hair and the posterior processes of the fourth epimere are readily seen on the specimen in question. In spite of these contrasts, the specimens are considered to be merely different forms of one and the same species, the differences most probably being due to variability. Localities: 2, 4 and 5.

A list of water-mites of Tasmania, on the basis of the data available to the author is as follows:—

1. *Hydrachna (Rhabdohydrachna) approximata* Hal. South Esk River, Longford. Other distribution: West Australia, Victoria.
2. *Hydrachna (Rhabdohydrachna) tasmanica* Ldbl. South Esk River, Longford.
3. *Limnochares (Cyclothrix) australica* Ldbl. Big Lake, Waterhouse, Pond 1, Tunbridge. Other distribution: West Australia, New South Wales.
4. *Eylais australica* Ldbl. The Lagoon, the outflow of the Great Lake.
5. *Eylais (Eylais) contigua* Ldbl. South Esk River, Longford. Other distribution: Victoria.
6. *Eylais (Eylais) extendens* var. *tasmanica* Szal. Pond 1. Tunbridge.
7. *Eylais Nicholli* Szal. Big Lake, Waterhouse.
8. *Eylais Nicholli* var. *fraterna* Szal. Big Lake, Waterhouse.
9. *Diptodontus mandibulatus* Ldbl. South Esk River, Longford. Other distribution: West Australia, Victoria.
10. *Hydrodroma despiciens* (O. F. Müll.). South Esk River, Longford. Other distribution: This little animal is a cosmopolitan form.
11. *Hydrodroma monticola* (Piers.). Cleveland Lagoon. Other distribution: West Java, Victoria, New South Wales, South Australia.
12. *Oxus australicus* var. *meridianus* Ldbl. The Lagoon, the outflow of Great Lake. Other distribution: Victoria.
13. *Flabellifrontipoda pectinata* Ldbl. The Lagoon, the outflow of Great Lake.
14. *Limnesia australica* Ldbl. South Esk River, Longford. Other distribution: South Australia, Victoria, New South Wales.
15. *Heterolimnesia tasmanica* Ldbl. Hobart. Other distribution: South Australia, Victoria, New South Wales.
16. *Heterolimnesia Lundbladi* Szal. Cleveland Lagoon.
17. *Australiobates violaceus* Ldbl. South Esk River, Longford.
18. *Australiobates Linderi* Ldbl. South Esk River, Longford. The Lagoon, the outflow from the Great Lake. Other distribution: New South Wales, South Australia.
19. *Australiobates longipalpis* Ldbl. South Esk River, Longford. Other distribution: New South Wales, Victoria.
20. *Australiobates longipalpis* var. *minor* Ldbl. South Esk River, Longford.
21. *Aspidiobates scutatus* Ldbl. Pool near to St. Clair.
22. *Unionicola (Pentatax) longiseta* Walt. South Esk River, Longford, Cleveland Lagoon, Lake Leake near Weir, Little Waterhouse Lake. Other distribution: New Caledonia, Victoria.
23. *Unionicola (Hexatax) minutissima* Ldbl. South Esk River, Longford.
24. *Unionicola (Hexatax) annulata* Ldbl. South Esk River, Longford.
25. *Koenikea (Koenikea) australica* Ldbl. South Esk River, Longford. Other distribution: Victoria.
26. *Koenikea (Koenikea) verrucosa* Ldbl. South Esk River, Longford.
27. *Arrenurus (Truncaturus) tasmanicus* Ldbl. Pool at the Lake St. Clair. the outflow of Lake St. Clair.

EXPLANATION OF FIGURES

- FIG. 1.—*Eylais (Eylais) extendens* var. *tasmanica* n. var. ♀. a = eye plates, b = maxillary organ, c = maxillary palpi, inner view.
- FIG. 2.—*Eylais Nicholli* n. sp. ♀. a = eye plates, b = maxillary organ, c = maxillary palpi, inner view.
- FIG. 3.—*Eylais Nicholli* var. *fraterna* n. var. ♀. a = eye plates, b = maxillary organ, c = maxillary palpi from the inner side.
- FIG. 4.—*Heterolimnesia Lundbladi* n. sp. ♂. a = mandible, b = maxillary palpi, c = epimera and genital area, d = penis organ in ventral view.

Fig. 1.

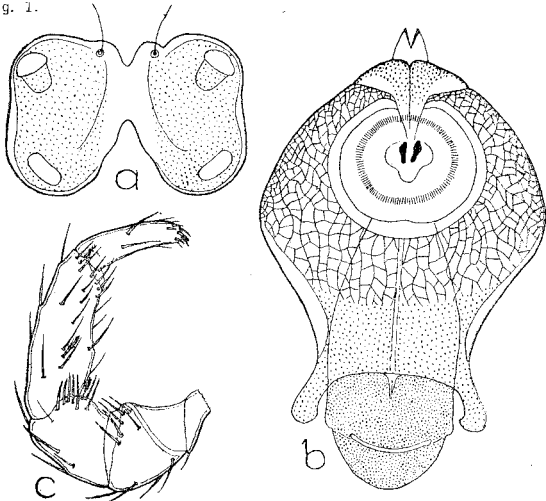


Fig. 2.

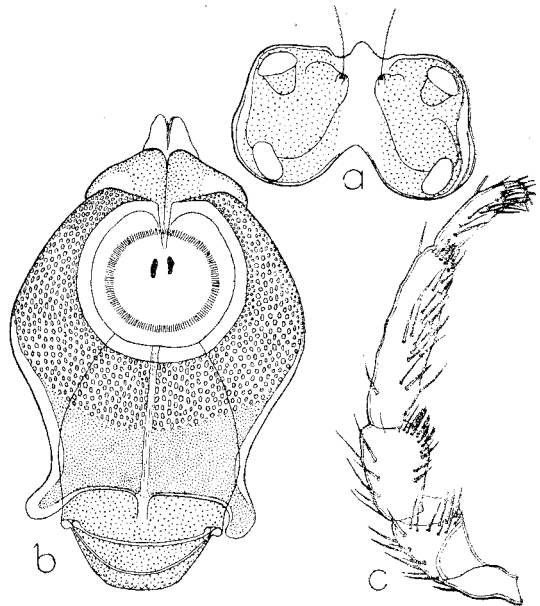


Fig. 4.

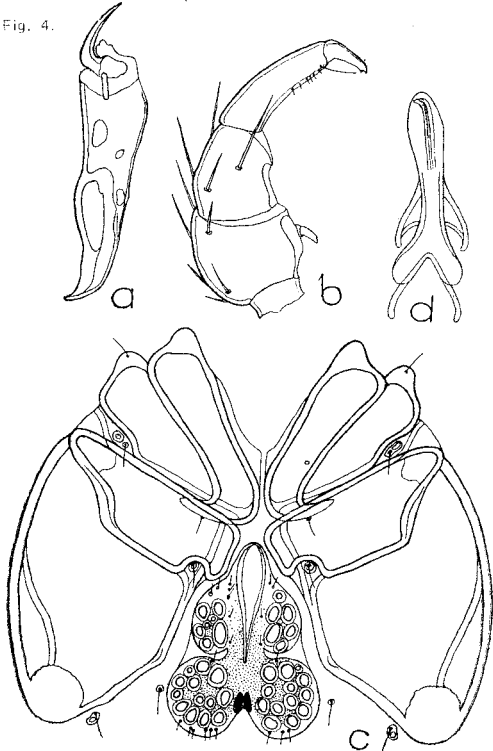
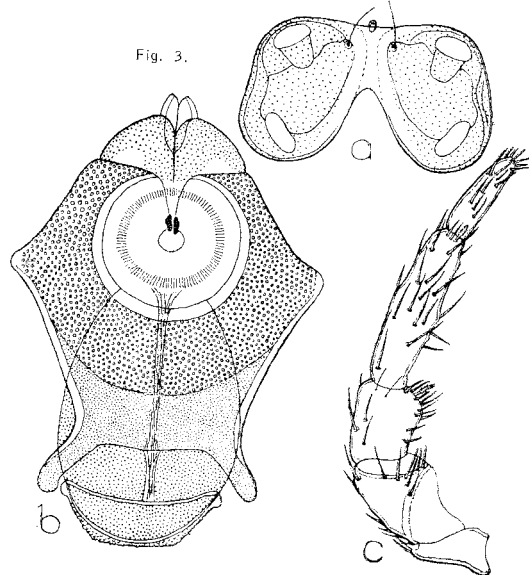


Fig. 3.



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