Homalozoon vermiculare

(Stokes, 1887) Stokes, 1890

Most likely ID: n.a.

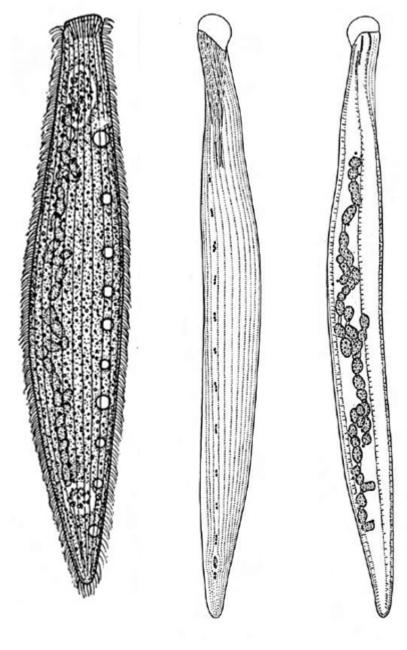
Synonym: n.a.

Sampling location: Purren pond, Simmelried

Phylogenetic tree: Homalozoon vermiculare

Diagnosis:

- body elongate, worm-like, tail gradually tapering
- length 150-1500 μm, width 20-60 μm
- macronucleus moniliform of 20-50 nodes, about 25-50 spherical micronuclei
- 5-21 contractile vacuoles arranged in a row along dorsal side
- oral bulge almost hemi-spherically shaped with 2 μm long and 5-15 μm long extrusomes (rod-shaped)
- below oral bulge a so-called parapharyngeal mass of small granules, sometimes colored yellowish
- right side ciliated with 10-20 rows of cilia
- left side almost naked apart from 3-4 rows of short bristles and the dorsal brush
- movement creeping, meandering, burrowing in detritus, rarely swimming



after Foissner

Homalozoon vermiculare

Homalozoon vermiculare is a large, characteristic ciliate that can hardly be confused with any other species. The body is slender and worm-like (s. fig. 1 a-e). In my population the specimens were about 500 µm long. The oral bulge is dome-shaped and densely covered with extrusomes (s. fig. 3). The moniliform macronucleus consists of 20-50 nodules, and is accompanied by numerous micronuclei (s. fig. 5). In parallel to the macronucleus is a row of 5-21 contractile vacuoles (s. fig. 5). The posterior end is tapered and rounded. A distinctive feature of Homalozoon vermiculare is a so-called parapharyngeal mass, which is located below the mouth opening (s. figs. 2, 3 and 4). It is often yellowish and has a granular character. It is described to consist of paraglycogen and various minerals. The exact purpose of the paraphyrangeal mass is not known. It is thought to play a role in the

digestion of prey organisms, as it enters the food vacuole along with the prey when swallowed.

I was able to observe *Homalozoon vermiculare* best on <u>floating coverslips</u>, where the ciliate likes to settle when a fauna of prey organisms (ciliates, rotifers) has already formed there. The specimens then glide along the coverslip with the right, ciliated side.



Fig. 1 a-e: $Homalozoon\ vermiculare$. L = 495 μm . A freely gliding specimen. Obj. 40 X.

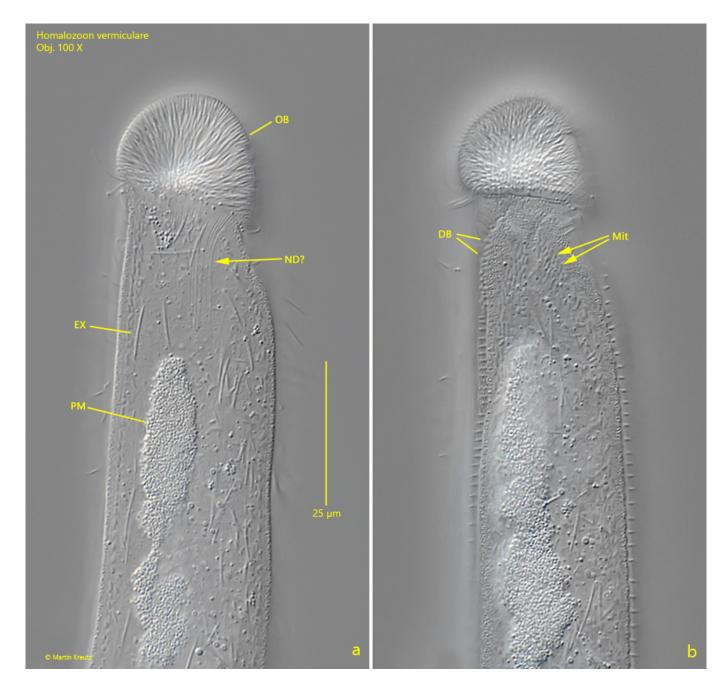


Fig. 2 a-b: Homalozoon vermiculare. Two focal planes of the oral bulge (OB) of a freely swimming specimen. DB = part of the dorsal brush, EX = extrusomes, Mit = mitochondria, ND? = probably nemadesmata, PM = parapharyngeal mass. Obj. 100 X.

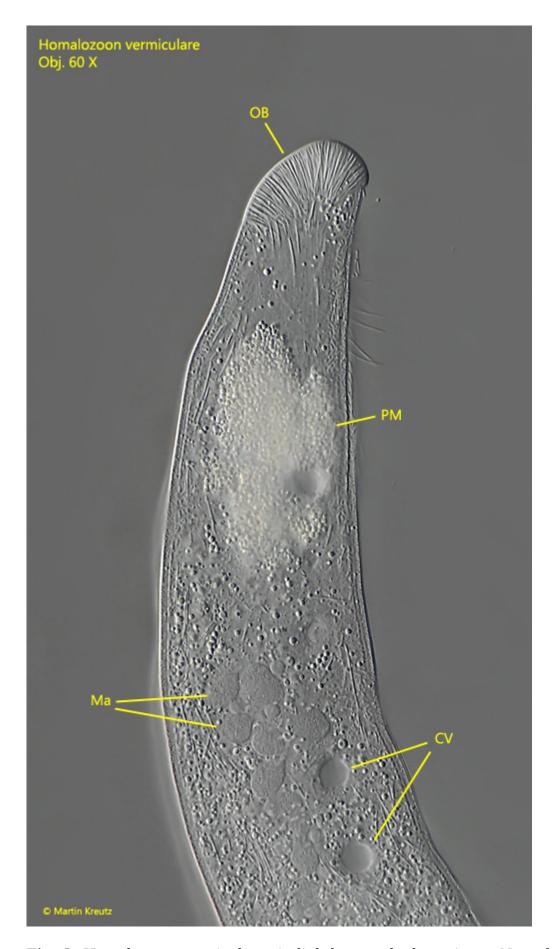


Fig. 3: Homalozoon vermiculare. A slightly squashed specimen. Note the parapharyngeal mass (PM) below the oral bulge (OB). CV = contractile vacuoles. Ma = nodes of the



Fig. 3: Homalozoon vermiculare. The parapharyngeal mass is an accumulation of small spherules with a diameter of about 1 μm . Obj. 100 X.

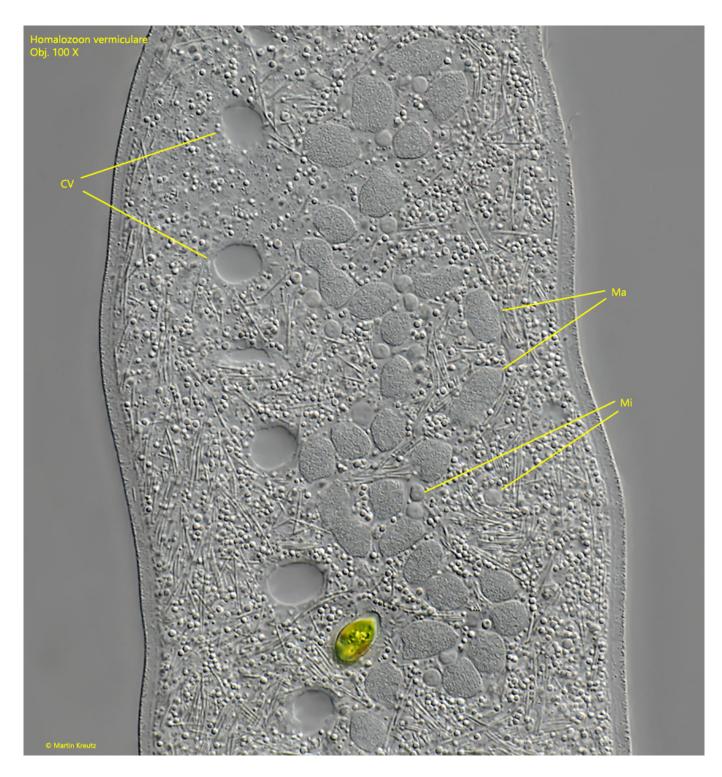


Fig. 5: Homalozoon vermiculare. The nodules of the moniliform macronucleus (Ma) with the adjacent micronuclei (Mi) in a strongly squashed specimen. Obj. 100 X.

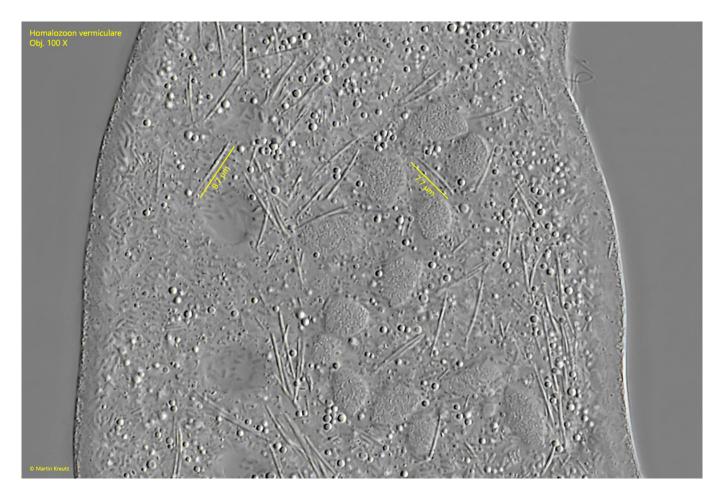


Fig. 6: Homalozoon vermiculare. In the cytoplasm slightly curved, rod-shaped extrusomes with a length of about 8 µm are scattered. Obj. 100 X.



Fig. 7: Homalozoon vermiculare. The left side is almost naked apart from 3-4 rows of short bristles. The bristles are located in furrows. Obj. $100~\rm X$.



 $\textbf{Fig. 8:} \ \textit{Homalozoon vermiculare}. \ \textbf{A specimen in cell division}. \ \textbf{Obj. 10 X}.$



Fig. 9 a-b: Homalozoon vermiculare. Two specimens in conjugation connected via the mouth openings. Obj. 20 X.

Homalozoon vermiculare is a voracious predator that especially likes to feed on ciliates. It also phagocytoses species that have extrusomes, such as Frontonia or Paramecium. I was able to observe prey capture several times in microaquaria (s. figs. 10 a-e, 11 a-d and 12 ae). After contact of the prey with the oral bulge of Homalozoon vermiculare, the prey ejects a cloud of extrusomes as a reaction. I could not see the extrusomes ejected by Homalozoon vermiculare, however, the prey ciliate immediately begins to denature and is unable to move. $Homalozoon\ vermiculare$ then immediately begins phagocytosis. The process takes about 30 seconds to 1 minute before the prey is completely swallowed.



Fig. 10 a-e: Homalozoon vermiculare. A specimen attacks a ciliate and devours it. Note the cloud of extrusomes ejected by the prey. Obj. 20 X.

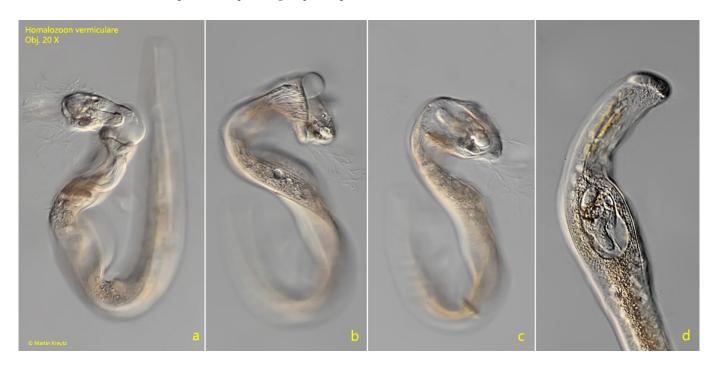


Fig. 11 a-d: Homalozoon vermiculare. A second specimen attacks a ciliate and devours it. Obj. 20 X.



 $\textbf{Fig. 12 a-e:} \ \textit{Homalozoon vermiculare}. \ \textit{A third specimen attacks a ciliate and devours it.} \\ \textit{Obj. 20 X.}$