Loxodes striatus

(Engelmann, 1862) Penard, 1917

Most likely ID: n.a.

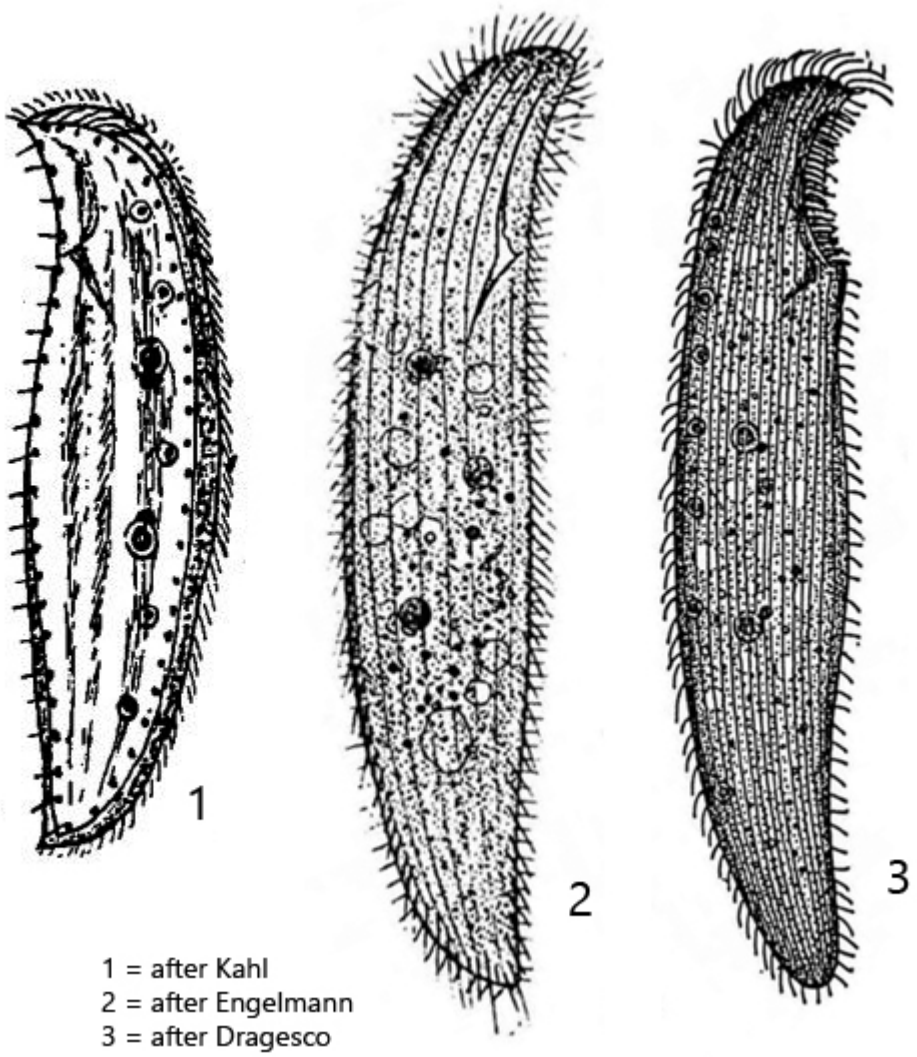
Synonym: *Drepanostoma striata*

Sampling location: Simmelried, Purren pond, Mainau pond, Bussenried, Bündtlisried, Ulmisried, Mühlhalden pond

Phylogenetic tree: *Loxodes striatus*

Diagnosis:

- body slender to broadly ellipsoid, anterior end beak-shaped, laterally strongly flattened
- length 100–300 µm, width 25–60 µm
- two widely separated macronuclei with one micronucleus each
- no contractile vacuole
- a row of about 4–12 Müller vesicles along the dorsal side
- cytoplasm mostly strongly vacuolated
- pellicle with parallel rows of brownish granules (sometimes colorless)
- right side with 9–13 longitudinal rows of paired cilia
- left side with only two marginal rows of cilia
- oral apparatus immediately behind the beak-shaped anterior end



Loxodes striatus

Loxodes striatus is one of the most common ciliates in my samples. It is found in all my sampling sites with a layer of mud and decaying leaves. It often occurs in very large numbers and sometimes there are mass developments where *Loxodes striatus* is the dominant species in the samples (s. fig. 1).

Often *Loxodes striatus* is found together with the two other species *Loxodes rostrum* and *Loxodes magnus*. From the body shape, the three species look similar, due to the curved, beak-shaped anterior end. However, these species can be confidently distinguished by their nuclear apparatus. In *Loxodes striatus*, two widely separated, spherical macronuclei are present, each with a densely attached micronucleus (s. figs. 4 b and 5 a). Thereby the micronuclei face each other. In *Loxodes rostrum* the two macronuclei lie close together with one micronucleus between and in *Loxodes magnus* many macronuclei are distributed in the cytoplasm.

The members of the genus *Loxodes* have specially constructed Müller vesicles arranged in a row at the dorsal side (s. fig. 4 a). These are constant vacuoles, in which a druse of barium sulfate crystals sits on a cytoplasm stalk (s. fig. 6). It is assumed that this organelle serves for orientation in the water body, similar to an organ of balance. *Loxodes striatus* has 4–12 of these organelles. They are easily recognized by the highly refractive barium sulfate crystals that shine brightly in DIC (s. figs. 4a and 5a). As another peculiarity, *Loxodes* has no contractile vacuole (Patterson, 1979), which I find very remarkable. To my knowledge, the way *Loxodes striatus* regulates its water balance is not known so far.



Fig. 1: *Loxodes striatus*. A mass development in the Simmelried in September 2022. Obj. 4 X.

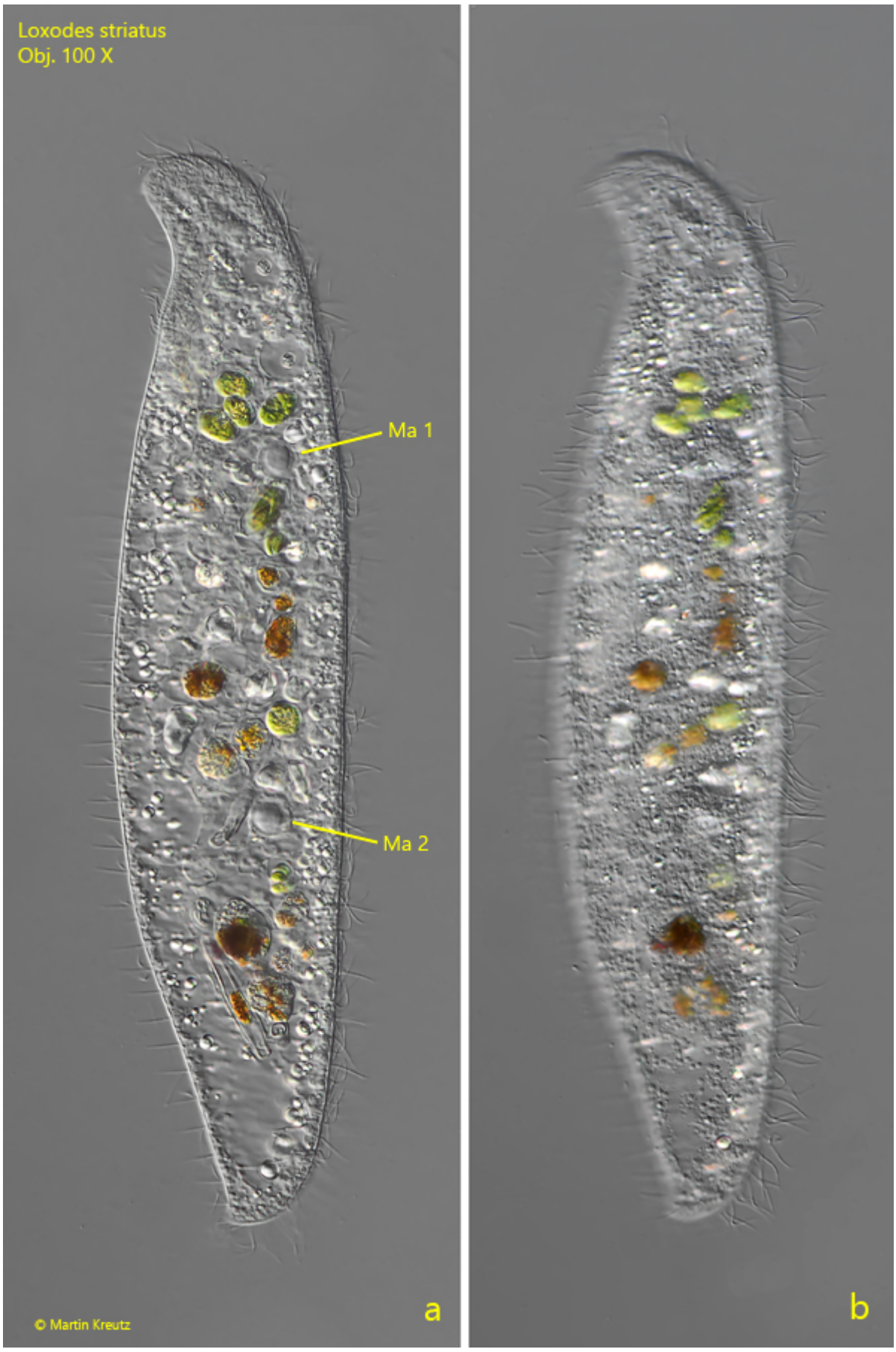


Fig. 2 a-b: *Loxodes striatus*. L = 115 µm. Two focal planes of a freely swimming specimen from left. Ma 1, Ma 2 = macronuclei. Obj. 100 X.

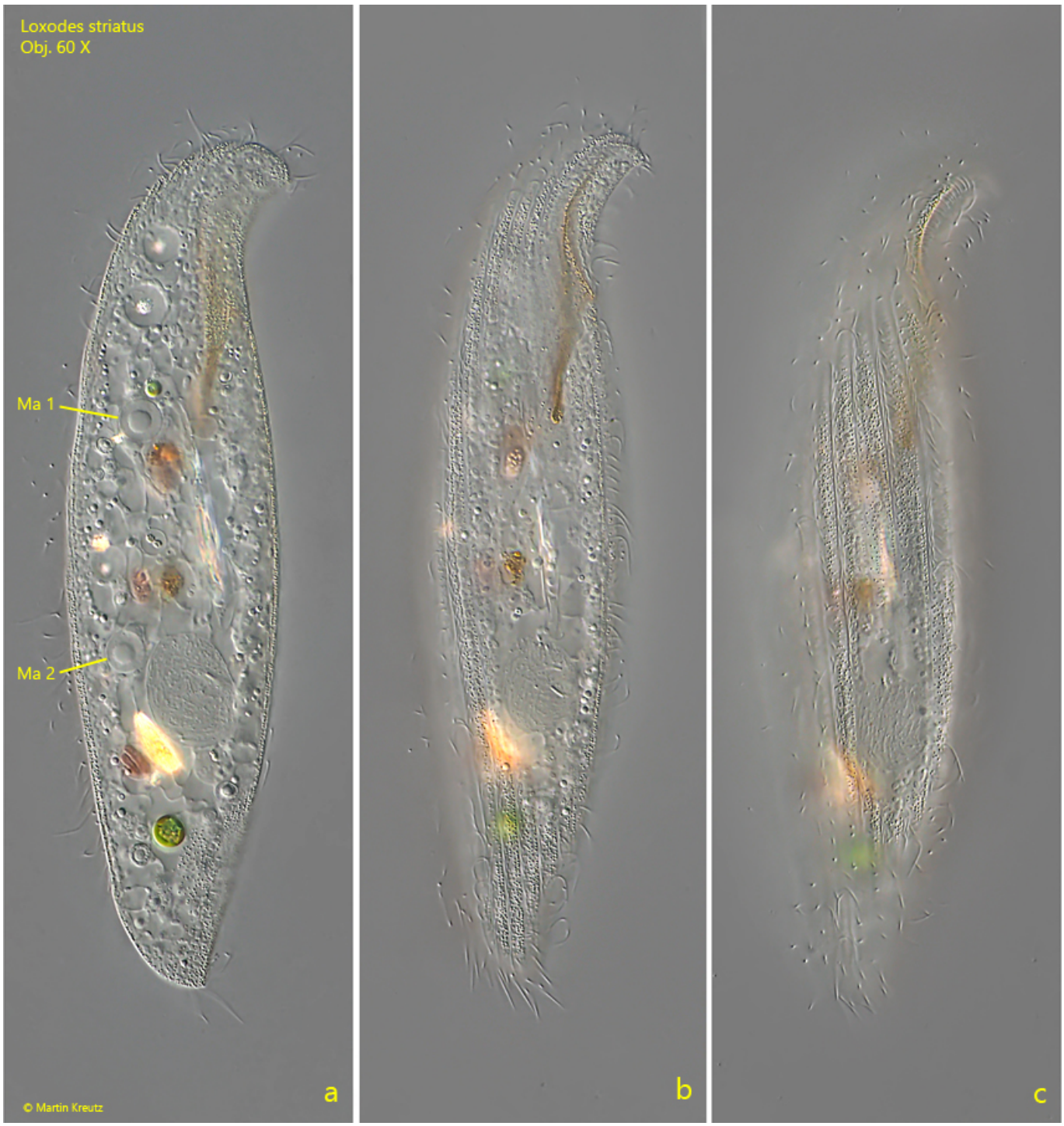


Fig. 3 a-c: *Loxodes striatus*. L = 171 µm. Three focal planes of a second, freely swimming specimen from right. Ma 1, Ma 2 = macronuclei. Obj. 100 X.

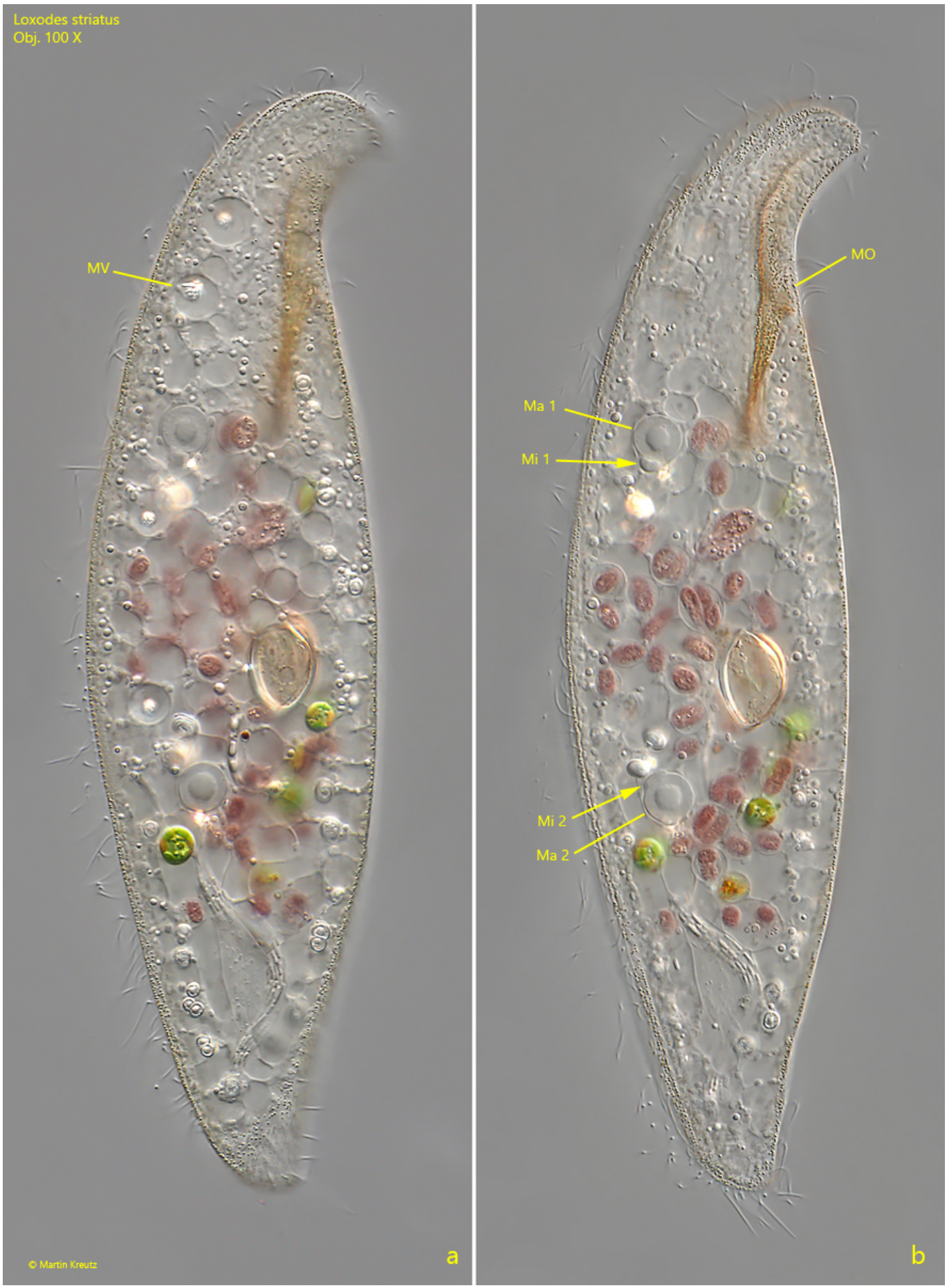


Fig. 4 a-b: *Loxodes striatus*. L = 202 µm. Two focal planes of a slightly squashed

specimen. Note the Müller vesicles (MV) at the dorsal side. Ma 1, Ma 2 = macronuclei, Mi 1, Mi 2 = micronuclei, MO = mouth opening. Obj. 100 X.

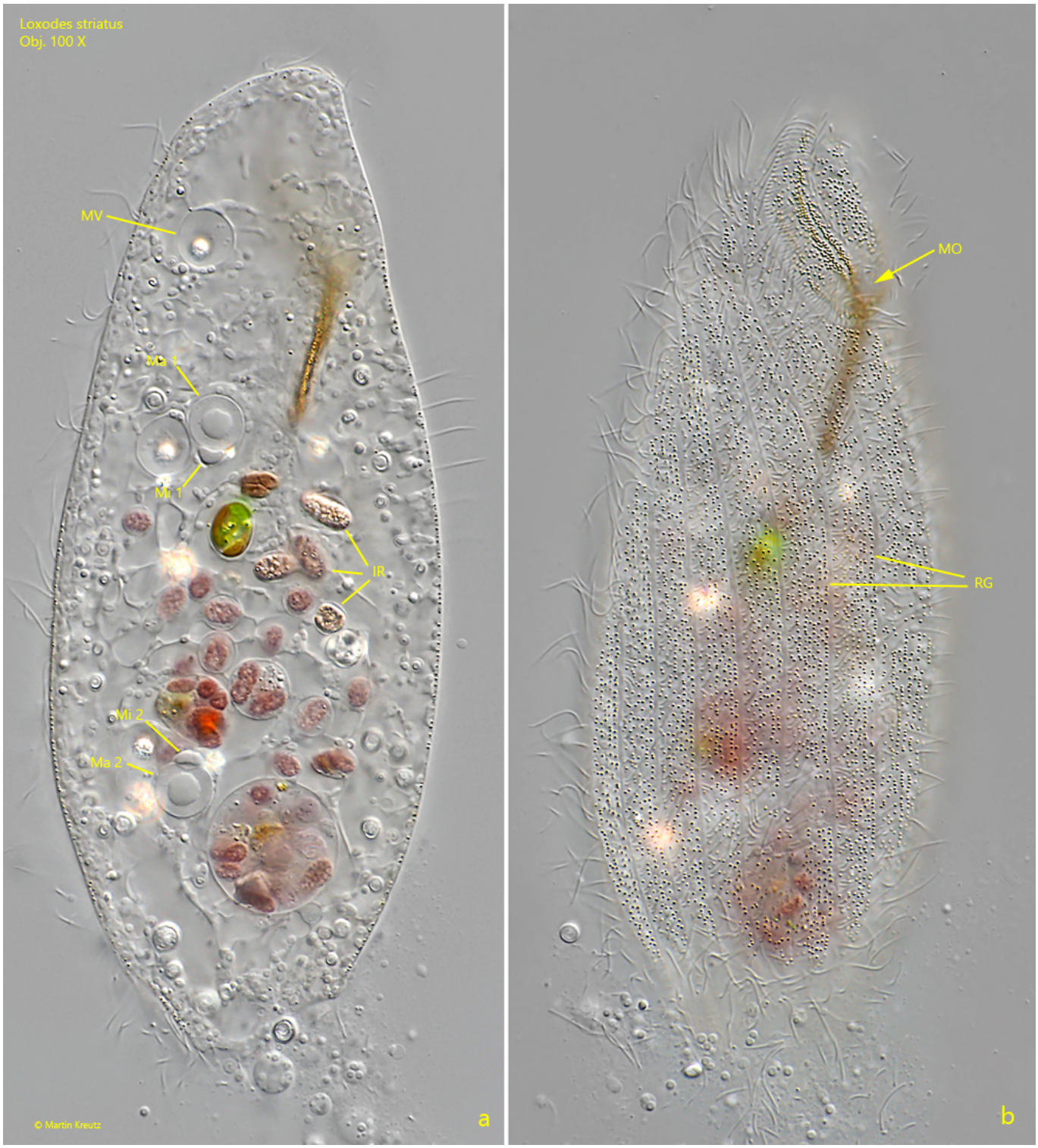


Fig. 5 a-b: *Loxodes striatus*. Two focal planes of a strongly squashed specimen. IR = ingested rhodobacteria, Ma 1, Ma 2 = macronuclei, Mi 1, Mi 2 = micronuclei, MO = mouth opening, MV = Müller vesicles, RG = rows of brownish granula. Obj. 100 X.



Fig. 6 a-b: *Loxodes striatus*. A Müller vesicle (MV) in detail (a) compared to a schematic drawing. DBS = druse of barium sulfate crystals, St = cytoplasm stalk. Obj. 100 X.



Fig. 7: *Loxodes striatus*. A crop of fig. 5 b to illustrate the paired cilia, in the rows of cilia on the right side (arrows). Obj. 100 X.