



Observations on

Saccamoeba limax (Dujardin, 1841)

Most likely ID: n. a.

Synonyms: n. a.

EOL Phylogenetic tree: [Saccamoeba limax](#)

Naked amoebae hunting for *Pyxidicula*

If sample water is left to rest in Petri dishes in the laboratory for a few days or weeks, a small, natural habitat can develop there. Samples from oligotrophic waters are particularly suitable for this method. With the dissecting microscope one can observe the protistic life in such microhabitats very well and transfer interesting objects with the pipette to a slide for more detailed examination. The following report deals with protists that are part of neuston (Preston, 2003), as they live on the surface membrane of the water body.

Many shell amoebae (testaceans) from the group of Arcellinida, genus *Pyxidicula*, moved on the surface membrane of the water, which was covered with a bacterial lawn. In addition to the testaceans, a large number of approximately 60 µm elongated naked amoebae of a certain species moved in the surface membrane of the water body. Strictly speaking, it is the hyponeuston, the community just below the surface of the water, to which the amoebae belong. It is distinguished from epineuston, the symbiotic community upon the surface membrane; the creatures there (e.g. certain species of golden algae) are not surrounded by water.

The naked amoebae showed very different silhouettes, which at first glance I could not associate with one and the same species. After a longer period of observation, however, I had the opportunity to witness the transformation of the star-shaped resting form into the rounded and elongated locomotive form. The sequence Fig. 1–6 shows this as well as the phagocytosis of a *Pyxidicula operculata* cell by a naked amoeba.

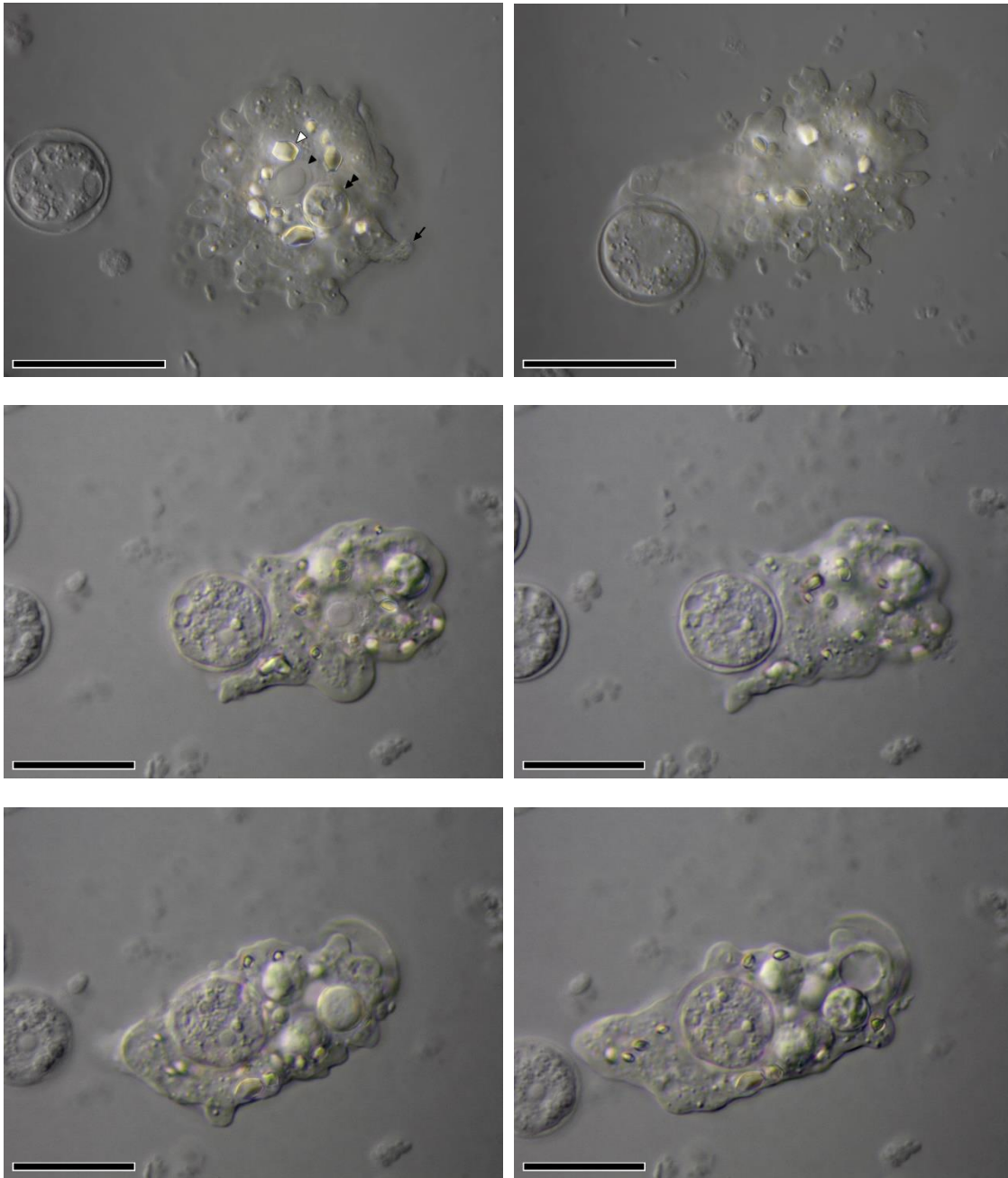


Fig. 1: *Saccamoeba limax* in floating form with vesicular nucleus (arrowhead), crystals (arrowhead outline), food vacuole (double arrowhead) and the uroid (arrow). Fig. 2–6: Phagocytosis of *Pyxidicula operculata* by *Saccamoeba limax*. Scale bar indicates 25 µm.

Sample from Pond Suploch, Hiddensee (Germany) Latitude: 54.538638, Longitude: 13.097802.



Fig. 7: *Saccamoeba limax* with two ingested *Pyxidicula* cells (arrows). The contractile vacuole (arrowhead) is surrounded by large crystals typical for *Saccamoeba limax*. Scale bar indicates 25 μm .

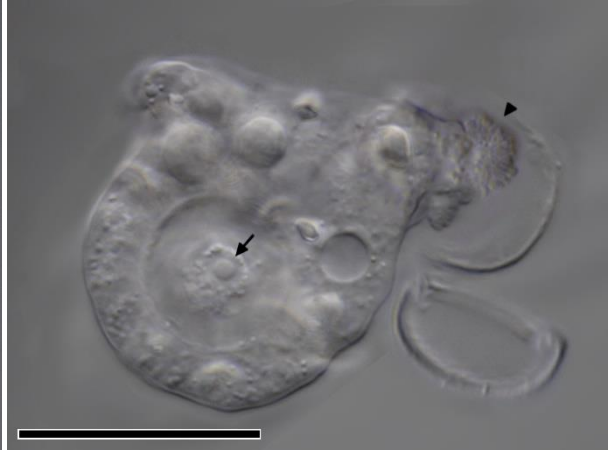


Fig. 8: *Saccamoeba limax*. Display of contractile vacuole and uroid (arrowhead). The phagocytosed *Pyxidicula* has a nucleus that still appears intact (arrow). Scale bar indicates 25 μm .

Like *Pyxidicula operculata*, this species has a vesicular nucleus with a relatively large central nucleolus. Both phases of the karyoplasm show no granules. Other larger deposits can be identified in the cytoplasm of the naked amoeba: rhombic and bipyramidal crystals and food vacuoles. Fig. 6 also shows the contractile vacuole and at the right end of the cell one can guess an empty *Pyxidicula* shell, which had been excreted a short time before the exposure was made.

Figures 7 and 8 show other cells. In the cell body of the amoeba from Fig. 7, two *Pyxidicula* shells can be seen (arrows). The individual in Fig. 8 has phagocytosed a *Pyxidicula* cell, the digestion is apparently not very far advanced, at least the cell nucleus of the *Pyxidicula* still appears intact (arrow). On the uroid (arrowhead), the shaggy cell region that is dragged along during movement, two shells excreted shortly before the picture was taken are attached to plasma threads.



Fig. 9: *Saccamoeba limax* in its elongated locomotive form. Scale bar indicates 25 μm .



Fig. 10: *Saccamoeba limax* when changing moving direction. Scale bar indicates 25 μm .

The different forms of appearance of *Saccamoeba limax*

When the naked amoebae presented here are in the phase of locomotion on substrate, they show an elongated, monopodial shape with a round cross section and a fine warty uroid. When changing direction, a Y-shape often results.

As the above images show, *Saccamoeba limax* can change shape from star-shaped (which also represents the floating shape in open water) to oblong up to pear-shaped. It should also be noted that in some manifestations the uroid is only partially visible.