

A WEIRD BEAST...

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Yep, I was stuck!...

I've been looking at microorganisms for years. I'm also pretty good at finding answers on the Web or in books. But last fall I came upon something that had left me baffled, at least until recently.

Just on the edge of the St-Lawrence River, in the small town of Neuville, west of Quebec City, is a place where I can indulge in two of my passions: looking for fossils and picking up some samples to be examined under the microscope. While my last visit didn't turn up any interesting fossils, the water samples collected at the river's edge eventually produced several specimens of one strange critter. It was found in shallow water, amidst reeds and other wetland plants.

It seemed to be multicellular; I could see cell walls, and possibly cell nucleus even though it was not stained in any way. In some specimens the cells were piled up to form something like a square but in others the number of cells seemed to be greater, resulting in what looked like a flexible ribbon moving with an undulating motion. After a few minutes of observation, the "square" cells would shift sideways and the critter became a thin rod... Eventually, the end of the rod appeared to grab a hold of something and pull the rest of it along. Stretching and pulling, stretching and pulling, its movements were somewhat reminiscent of an amoeba, so I started to call this thing "the weird amoeba". But an amoeba is unicellular, so this was no amoeba.

So I wrote the first draft of an article, appealing to the Micscape community to identify the beastly. Well, it did not take long to find an answer, which is to the credit of Micscape administrator, David Walker. It turns out that there was already an article on my curious critter written in 1998 by Wim van Egmond:

www.microscopy-uk.org.uk/mag/art98/bacill.html

As stated in van Egmond's article the species can be found in marine and brackish, almost fresh, waters. Even though subjected to tides of a few meters, the water west of Quebec City is considered fresh. Further research confirms that the critter is able to tolerate fluctuation in salinity, from fresh to salt water.

But what is it? At the microscopic level the line between animal and vegetal is often blurry. Even though it's moving all the time, my critter is a plant. And not only is it a plant, it's the first diatom ever observed!

Back in 1786, Danish naturalist Otto Friedrich Müller published its first description, naming it *Vibrio paxillifer*. Curiously, the genus *Vibrio* also included the cholera bacteria, *V. cholera*. Two years later, further studies by J.F. Gemlin found the species distinct enough to warrant its own genus, *Bacillaria*. He named the species *Bacillaria paradoxa*, as if he found a moving and stretching plant to be paradoxical, I wonder why... Thus was the first genus and the first species of diatoms to be formally described.

However, the name is no longer valid. Its accepted name is now *Bacillaria paxillifera* (O.F.Müller) T.Marsson, 1901. It's a shame, as van Egmond mentioned in his own article; *B. paradoxa* is a great description for plants that moves the way these do.

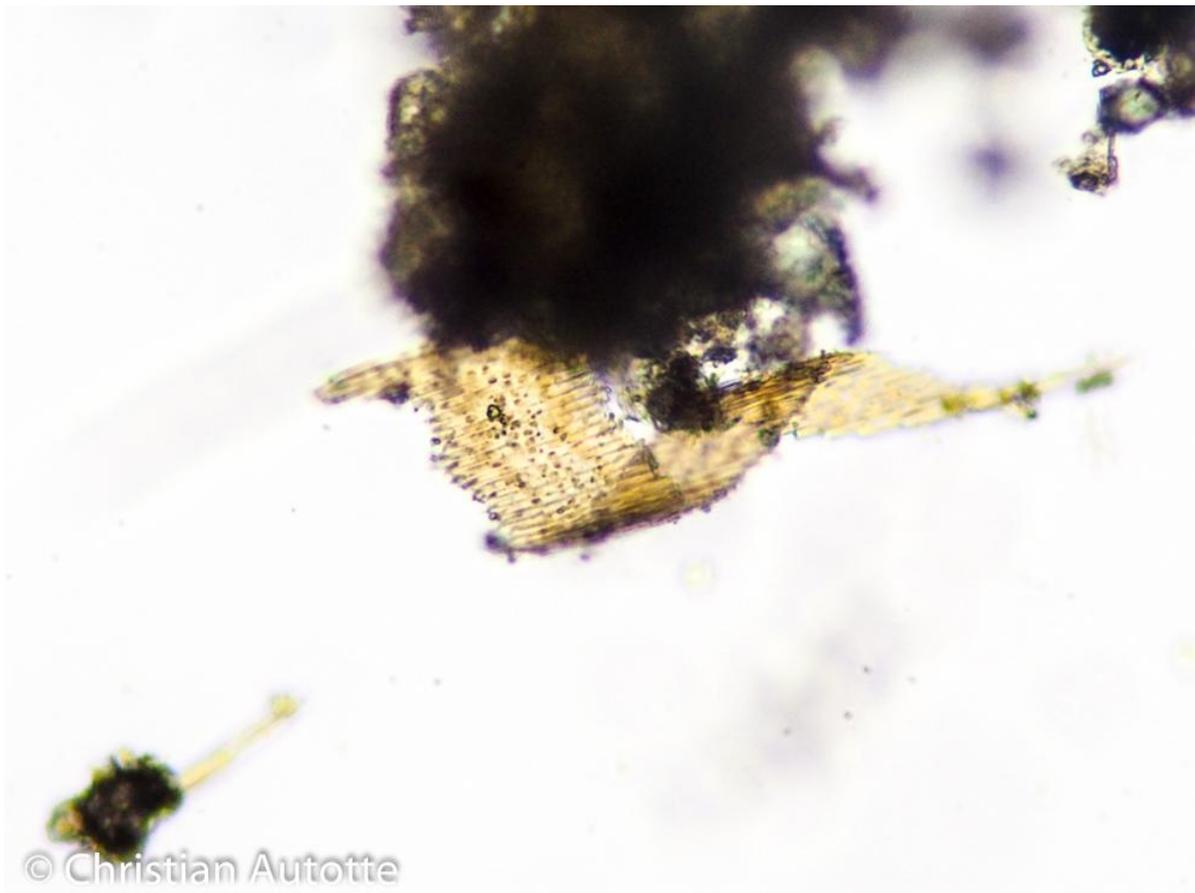
Diatoms don't always live as individual cells. They often form colonies which can take the shape of ribbons, fans, zigzags, or stars. Some diatoms tend to drift along with the plankton while others will stick to substrate. In the case of *B. paxillifera* it can do both; specimens have been collected in plankton nets dragged in open water. When it lives in contact with a solid surface it is known to be difficult to collect with a simple pipette, and even then, it often sticks to the inside of the pipette. I did my collecting with something a bit more vigorous: a regular turkey baster. As I did, I would also drag its end to the bottom and against rocks and plants to try and dislodge any interesting organism.

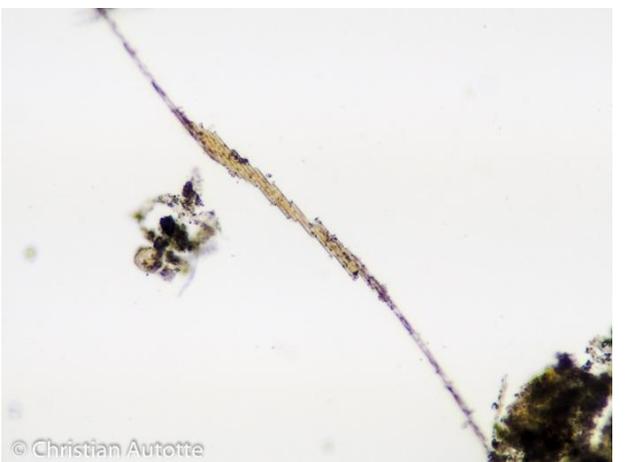
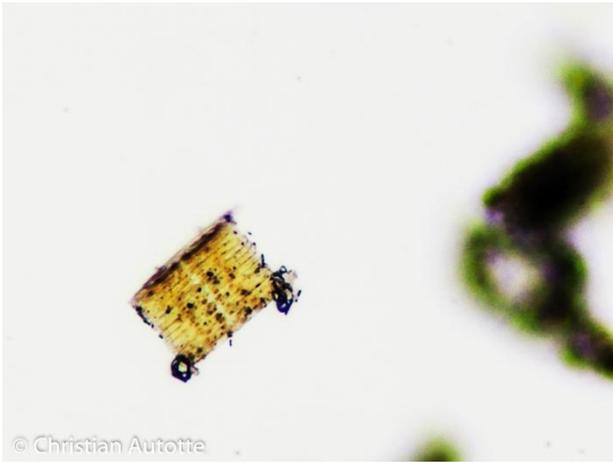
A video on YouTube shows the colony in motion <https://www.youtube.com/watch?v=SPfhjazILYA>

For more information you can also consult Wikipedia: <https://en.wikipedia.org/wiki/Bacillaria>

Excellent electron photomicrographs on https://diatoms.org/species/bacillaria_paxillifera

All the following pictures were taken at 100x. Some were slightly cropped.





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