

# Diatoms reveal where water comes from

**Algae known as diatoms in water samples can tell you where the water in a river comes from. This finding is from a study by the Belgian Jasper Foets.**

Diatoms are unicellular algae invisible to the naked eye. They have a hard outer shell made of silica. The geometric patterns on this skeleton are real works of art, as can be

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seen under an electron microscope. Over 64,000 different species are currently known, but there are many more.

Each soil has its own diatom community. That diversity makes it possible to use them as 'informers' in river currents. Water that was discharged from soil upstream carries the soil's diatoms with it. So analysing the diatoms in a water sample can tell you where that water originated.

Foets studied hundreds of soil samples in the drainage basin of the

River Attert, in southern Belgium, under the microscope to identify the characteristic communities of diatoms. It was a painstaking endeavour. 'Sometimes I could only manage two samples in a day. There were about 200 species that occurred frequently. They included common species but I often had to look up a species in identification guides.'

## Ploughed up

Foets found good indicator species for the acidity, moisture content and land use of the water's place of origin. He also showed that farming the land has a big impact on diatom communities. Ploughing, for example, changes the composition of the diatom community. That makes it difficult to trace water's origins when the countryside is not left undisturbed.

Using diatoms to trace water is currently too laborious and therefore too expensive. But Foets says genetic analysis of the samples using DNA barcoding could speed up the process a lot. 'It will eventually become much easier and quicker.' RK

