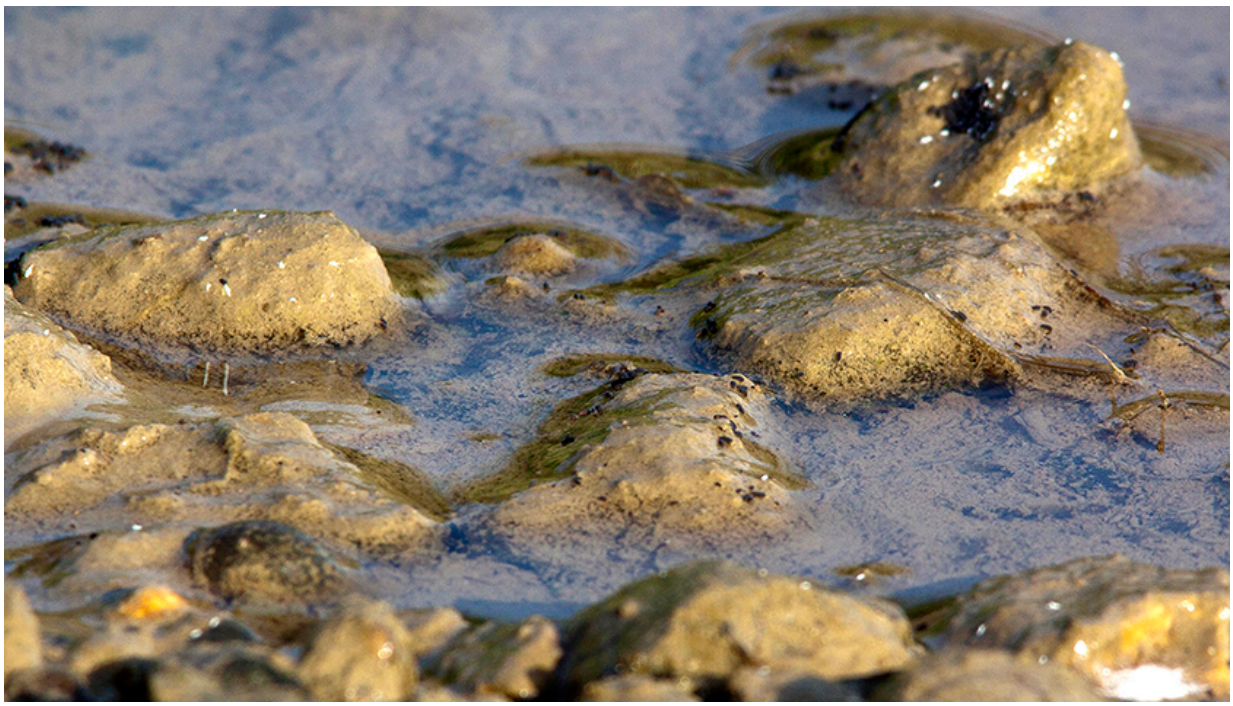

Analysis of biofilms and detection of microplastics

May 25, 2016 | Andres Jordi
Topics: Pollutants | Ecosystems

Biofilms are complex communities of microorganisms such as bacteria or algae. In aquatic ecosystems, they serve essential functions, e.g. as a food resource. They also play an important role in wastewater treatment and in biofuel production. Because they are sensitive to environmental changes, biofilms can serve as bioindicators: for example, the abundance and species composition of diatoms is used to assess water quality in rivers. However, this is time-consuming and requires appropriate expertise. Environmental toxicologists at Eawag have now developed a method, which makes it possible for changes in biofilm community structure to be determined rapidly and simply. The new method combines flow cytometry with a tool for visualization of high-dimensional data (used before in medicine for blood cell analysis). With this method, the researchers were able not only to detect changes in the community structure of biofilms along a Swiss stream, but also to detect minute plastic particles caught in the biofilms. In future, they suggest, it could be used to complement conventional methods of environmental monitoring and for the detection of microplastics.

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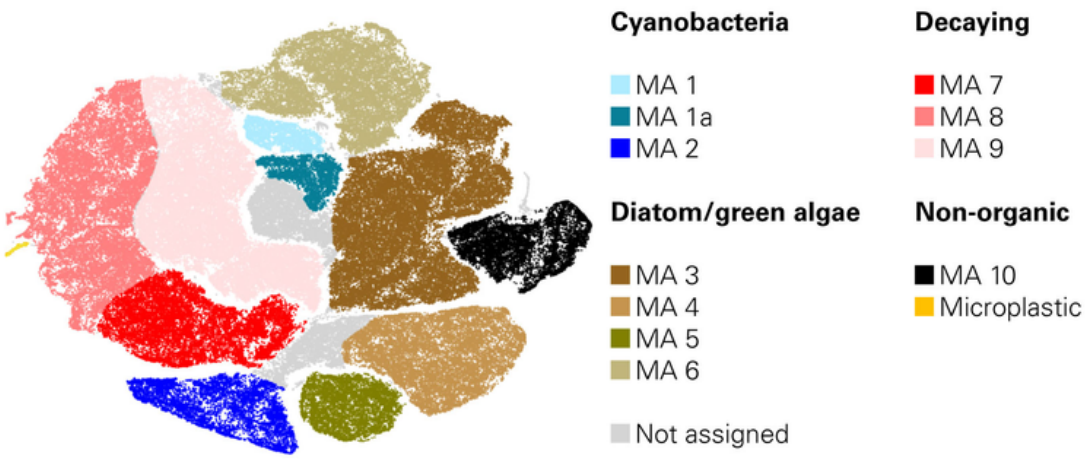

The new method permits analysis of the community structure of biofilms. The various clusters represent subpopulations of cyanobacteria, diatoms/green algae and decaying cells. Individual species, however, cannot always be distinguished. The method can also detect non-organic particles; with assistance from experts at ETH Zurich, some of these particles were identified as microplastics.

Related Links

Original publication in Nature Communications

https://www.eawag.ch/en/info/portal/news/news-archive/archive-detail/analysis-of-biofilms-and-detection-of-microplastics

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