

## Reduction of biofouling on aquatic moss-based biofilters using Mediterranean crustaceans

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Aquatic mosses can be used as biofilters since they reduce heavy metals, nitrogenous compounds and nanoparticles in solution through absorption and uptake. They're also an effective mechanical filter for particles resuspended in water. However, over time, biofiltering efficiency can be compromised by the formation of a biofilm consisting of filamentous algae and cyanobacteria (biofouling). This phenomenon can obstruct the spaces between mosses' talli and reduce the water flow through the filter. Therefore, it would be appropriate to associate this with organisms capable of reducing biofouling by feeding on the contaminating microflora. In this study (Project fish RISE; PON 2014/20 ARS01\_01053) was tested the behaviour of two Mediterranean aquatic crustaceans, i.e. the amphipod *Gammarus aequicauda* and the isopod *Lekanesphaera monodi*, by allowing them to feed, under laboratory conditions, on contaminated *Leptodictyum riparium*, a cosmopolitan species of moss common in Italy. Subsequently, the moss fragments used in the trial were observed under a confocal fluorescence microscope and, from the analysis of the acquired images, it was possible to deduce that the two species of crustaceans have a different feeding behaviour. In particular, it turned out that *Gammarus aequicauda* feeds on both the microflora and moss biomass, while *L. monodi* feeds mostly on the fouling microorganisms without damaging the moss, therefore this latter may represent a suitable organism for preserving moss efficiency as a biofilter.