INFLUENCE OF COLONIAL MICROALGAE ON STRUCTURAL COMPLEXITY OF BIOFILMS AND VERTEBRATE TRACK FORMATION

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Microbially induced sedimentary structures (MISS) have been related to the formation and preservation of both fossil and current vertebrate footprints. The relationship between the microalgal composition of modern biofilms and the formation of vertebrate tracks on the banks of the Negro River, Argentina, was analyzed. Predominance of filamentous and/or colonial microalgae (*e.g.*, ***Lyngbya*** sp., ***Fragilaria construens***, ***Melosira varians***, ***Spirogyra*** sp., ***Anabaena*** sp.) was registered in the layer of complex biofilms observed in two sites on the margin of the river, in July 2022. These species offer a network on which other microorganisms can develop or adhere (*e.g.*, epiphytic species), which give thickness to the layer. This complexity stabilizes the substrate and confers a plastic surface on which vertebrates step and leave a visible track. An increased flow of the river occurred in November 2022 and the associated sediment deposition, originated a new sediment layer on which pennate diatoms (*e.g.*, ***Cymbella*** sp., ***Surirella*** sp., ***Ulnaria*** sp., ***Epithemia*** sp., ***Cocconeis*** sp.) predominate in the initial stages of biofilm formation. This type of biofilm is less efficient in stabilizing the substrate, with respect to thicker MISS as microbial mats. However, biofilms with a predominance of high-profile microalgae, including erect, filamentous, chain-forming, with the ability to form long and spreading colonies, could confer a structural complexity to the biofilms that enhances footprint formation. Because the interweaving mesh of filamentous algae entangles sand grains more efficiently than a diatom biofilm and increases the cohesiveness of sediment.