

**TITLE:** PROKARYOTIC DENSITY IN RIVER SEDIMENT OF AN EUTROPHIC AQUATIC RESERVOIR

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**ABSTRACT:**

Aquatic ecosystems have suffered significant anthropic changes with dam construction, river diversion and anthropic eutrophication. The direct consequence of these changes is the accumulation of organic matter in the sediment. Once deposited in the sediments, this organic matter can follow three paths: mineralization by microorganisms, resuspension, and degradation in the water column or buried in the sediment. Therefore, aquatic sediments operate with a deposit of material. In the aquatic ecosystems sediments, thousands of microorganism species can be found. However, even with all this diversity, there is still little knowledge about microorganisms associated to river sediments. The aim of this work was to evaluate the total prokaryotic density in the sediment of a river which is an eutrophic aquatic reservoir in different depths. Samples were collected at three points along the river with transparent PVC cores (6 cm in diameter, 60 cm high) using a gravitational sediment collector (UWITEC, Mondsee, Austria). Afterward, samples from the sediment were fractioned every 2 cm up to 10 cm depth, at the three points of the river. Samples were fixed with 2% paraformaldehyde for 24 hours, sonicated, centrifuged, diluted 10x and filtered on 0.2  $\mu\text{m}$  polycarbonate membranes for placement with DAPI. Microscopic analysis showed that the total prokaryotic average density varied from  $0.79 \pm 0.15 \times 10^8 \text{ cell g}^{-1}$  (2 cm),  $0.63 \pm 0.17 \times 10^8 \text{ cell g}^{-1}$  (4 cm)  $0.59 \pm 0.36 \times 10^8 \text{ cell g}^{-1}$  (6 cm)  $0.59 \pm 0.19 \times 10^8 \text{ cell g}^{-1}$  (8 cm) and  $0.50 \pm 0.22 \times 10^8 \text{ cell g}^{-1}$  (10 cm). There was a gradual decrease in prokaryotic density at different depths of the sediment suggesting a different nutrient cycling along the depth profile. The study demonstrated that superficial depths present higher prokaryotic density suggesting a greater prokaryotic activity in the first depths.

**Keywords:** aquatic ecosystems, freshwater, environmental microbiology

**Development Agency:** Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)