

**COMPLEX RESEARCHES IN SOUTHERN DOBROGEA,  
WITH SPECIAL REFERENCES TO THE MOVILE REGION**

(SECOND PART)

**NEW CONTRIBUTIONS TO THE MICROBIOTA  
NATURALLY OCCURRING IN THE MOVILE CAVE**

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In September 2000, nearly 15 years after the Movile cave (Mangalia, Romania) was discovered and it was demonstrated that this ecosystem is entirely chemoautotrophically based and thus able to sustain the energy requirements of all its components, a new campaign for sample collection was carried out. The sample collected were microbiologically and biochemically analysed using selective media for a large range of physiological groups of chemoautotrophic and heterotrophic microorganisms. It was possible to get new data concerning the naturally occurring microorganisms.

*Key words:* subsurface microbiology, chemoautotrophic bacteria, sulfur-oxidizing bacteria, Movile cave ecosystem.

## **1. INTRODUCTION**

The Movile cave was discovered in June 1986, when an artificial shaft dug at the edge of “Obanul de la Movile” sinkhole intercepted a natural cave passage that never had a natural entrance (CONSTANTINESCU, 1989). Two levels were explored: a 200 m long dry level and a 40 m long submerged level (CONSTANTINESCU, 1989; LASCU, 1989; BOGHIEAN and RACOVITĂ, 1989). In order to protect the inside of the cave from the possible invasion of surface species as well as to preserve the physico-chemical characteristics of the cave atmosphere, gates were installed at the surface and at the bottom of the shaft. The deepest gate is airtight and it should allow the cave to reestablish the original atmospheric conditions present before it was intercepted by the artificial shaft.

The gaschromatographic analysis of the chemical composition of the cave atmosphere indicated that the amount of carbon dioxide increases in the vicinity of the lake and that the remote air bells contain very high amounts of CO<sub>2</sub>. Oxygen concentration reach values as low as 10% in the remote air bells, where small concentrations of methane were also found. The elevated CO<sub>2</sub> levels in the deep hypogean environment associated with the thermomineral sulfurous waters may have influenced the evolution of the troglomorphic fauna (SĂRBU and POPA, 1992). These