

TARDIGRADES FROM THE “SIERRA DE SAN MIGUELITO” AND “SIERRA DE ÁLVAREZ” NEAR THE URBAN AREA OF SAN LUIS POTOSÍ, MEXICO

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Tardigrades are microscopic extremophilic organisms classified as the most resistant organisms on the planet. They are of great interest for Astrobiology due to their ability to survive in extreme environments such as radiation, high and low temperatures (-272° to 150° C), high and low pressures, space vacuum, and exposure to extraterrestrial environments (Persson et al. 2011). In this preliminary study, we observed some species of the genus *Macrobiotus* sp.

The state of San Luis Potosí is very diverse in terms of physiography, climate, and vegetation. San Luis Potosí, the capital city, is surrounded by the “Sierra de San Miguel”, where yucca (*Yucca schidigera*) and cactus (*Opuntia ficus*) forests predominate, and by the “Sierra de Álvarez”, where pine (*Pinus* spp.) and oak (*Encinus* spp.) forests predominate (CONANP 2004). There is also a system of caves distributed in this mountain range, belonging to the “Sierra Madre Oriental” (Sánchez et al. 1999). Moss samples were collected inside the neck of the vertical cave “Pitacoches” (depth: 72 m, diameter: 18 m), in the Sierra de Álvarez. Sampling was performed at the entrance of the vertical cave neck and at 15 m depth. The collected samples were stored in paper bags and transferred to the laboratory of Museo Laberinto de las Ciencias y las Artes. The sample was hydrated in a Petri dish with distilled water for 24 hours. The moss was then squeezed to analyze the sample by stereoscopy (Motic). One dormant organism was found, which was isolated, observed, and photographed under a compound microscope (Motic) with a 40x objective for future identification (Fig. 1). Preliminary analyses indicate that it is possibly a specimen of the genus *Macrobiotus* sp.



Fig. 1. Specimen observed with a 40x compound microscope collected in the vertical cave “Pitacoches”, Sierra de Álvarez, S.L.P.

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REFERENCES

- CONANP. 2021. Programas de Manejo (April 27, 2021). Ficha SIMEC-CONANP, Sierra de Álvarez. Gobierno de México, (consulted June 5, 2021), <https://simec.conanp.gob.mx/ficha.php?anp=157®=4>
- Persson, D., Halberg, K. A., Jørgensen A., et al. 2010, *J Zool Syst Evol Res*, 49, 90
- Sánchez, F. G., Rivera, J. R. A., Díaz, J. V., et al. 1999, *Polibotánica*, 10, 73

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