

Preparation of a set of fossils of Pleistocene mammals found in a cave: problematic cleaning and consolidation of wet material.



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Key words: Restoration, Preparation, Paleontology, Humidity, Moisture, Conservation.



INTRODUCTION

The Pleistocene mammalian fossils extracted from cave sites present several conservation problems such as a high percentage of moisture (around 100%) and the presence of soluble and insoluble salts formed from the surrounding matrix. During the preparation works, it was clear that a rapid loss of humidity and the exposition to air produced the hardening of the salt crusts and the cracking of the fossils.

PREPARATION

The preparation works lasted for 3 months, and they combined cleaning treatments, with controlled moisture loss, until reaching around 30%. To control this latter process, fossils were kept into boxes that were open daily to make them lose moisture gradually (Fig. 1, Fig. 2), extracting only those fossils that were going to be prepared.



Fig. 2: Rapid and uncontrolled drying can lead to cracks in fossils.



Fig. 3: Hydro-alcoholic solutions and anionic surfactants, applied with a poultice.



Fig. 1: The pieces were wrapped inside the box to ensure the controlled loss of humidity.

The procedure to remove the matrix and salt crusts were both mechanical and chemical, and consisted in the use of hydro-alcoholic solutions and anionic surfactants, applied with a poultice (Fig. 3); these treatments were allowed to act between 3 to 15 minutes, depending on the hardness of the material, removing the remains with absorbent paper.

For consolidation the fossils, we used Paraloid B72® dissolved in acetone in a concentration of 5% (Fig. 4). We applied this solution when the moisture of the fossils was around 30%, as for higher values, the resin loses adhesion.

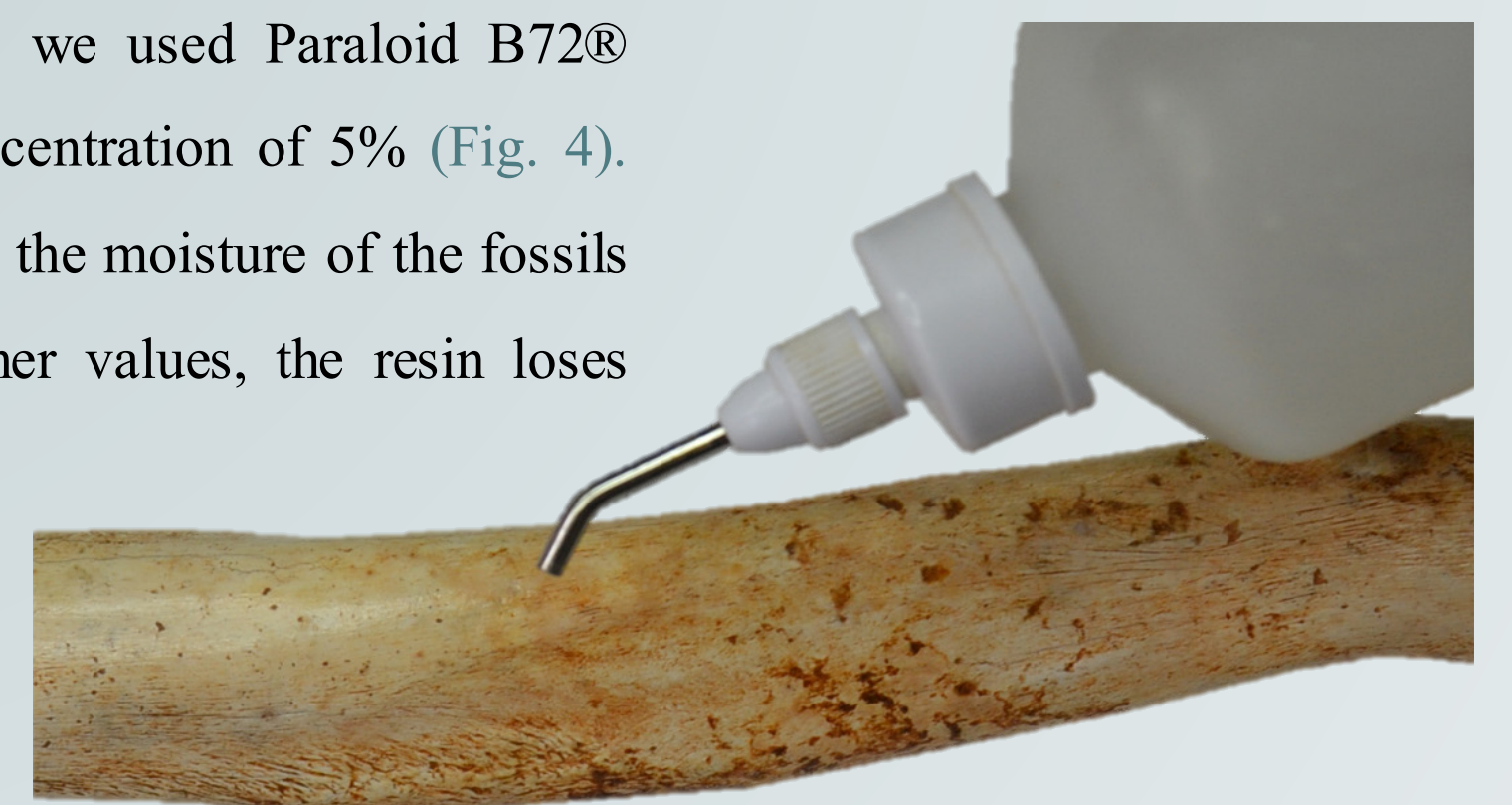


Fig. 4: Consolidation by dripping with Paraloid B72® dissolved in acetone to ensure the stabilization of the material.

CONCLUSION

The relative moisture and the presence of salts are important variables to consider when choosing the most appropriate treatment to be applied to fossils. For that reason, it is very important to control and check both parameters during all the preparation process.

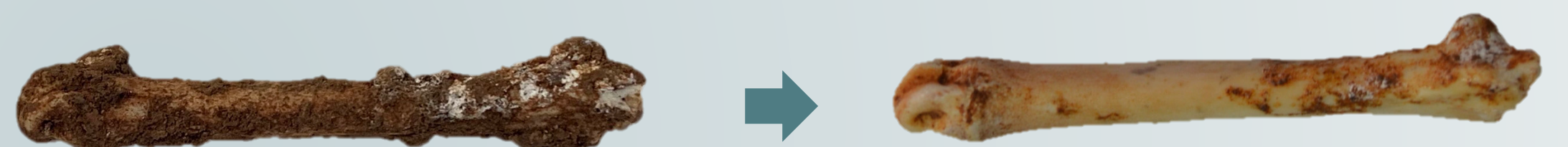


Fig. 5: Controlling humidity during the preparation process allowed the matrix to be eliminated, preventing the fossil from being altered.