BIODETERIORATION: RECOVERY OF WOODEN CONTAINERS USED IN PALEONTOLOGY COLLECTIONS

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Introduction

In 2011, a new comprehensive conservation project was initiated for the Vertebrate Palaeontology collections of the Museo Argentino de Ciencias Naturales 'Bernardino Rivadavia'. Between 2011-2012, diagnostic assessments were carried out and urgent needs of the collection were resolved (Alvarez, 2012; 2020). Then, three stages were established according to the containment structure of the fossils: large wooden boxes, shelves and cabinets. In the first stage (2013-2015), 560 wooden boxes containing 3,814 records (including 39 type specimens) were worked on with the collaboration of volunteers and museum maintenance staff.


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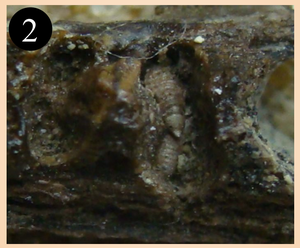
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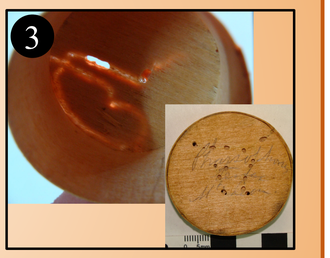
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These wooden structures were damaged by insects identified as *Anobium punctatum*, Coleoptera (Fig. 1). Larvae were found in the tooth sockets of a fossil (Fig. 2). Long, winding circular tunnels and sawdust were observed (Fig. 3, 4, 5; Pinniger, 2012).

Results and Conclusions

Hot melt technology wadding is useful in conservation because the polyester fibers are surrounded by a low melting point copolymer that welds the fibers together when heat-bonded. In addition, it is self-extinguishing (burns without flame), resistant to frequent washing, odor and resin free, resistant to mold and rot, does not absorb moisture, etc. After treatment, the boxes were protected from attack by insects, fungi and algae, as well as from water absorption. Comparison of the lists made and the databases showed that 2.1% (80 exemplars) of the material checked did not correspond to the location in these boxes, making it difficult to locate them in the collection. On the other hand, 1.5% (59 exemplars including one type fossil) of the fossils were not found in their corresponding box.

References

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Bicosoft SA. (wadding) http://www.guatayvellon.com.ar/guata.htm
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Methods and Materials

Cleaning

The fossils in some opened trays were covered with dust and required cleaning before treatment (Fig. 6). To clean the trays and the glyptodon plates, we used an air jet and then we cleaned with 70% alcohol with a brush. In this case, polyethylene foam sheets (0.5 cm thick) were intercalated with the fossils in successive layers vertically (Fig. 7).


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Treating boxes

01. From each box with lids (Fig. 8) we carefully removed, cleaned, consolidated and glued the fossils. The fossils were found mixed with tow, straw and paper (Fig. 9). While the wooden boxes were being treated, the fossils remained temporarily in cardboard boxes with their new packaging.

The wooden boxes were dusted and then treated with a preventive and curative wood preservative (PENTA concentrado®; Fig. 10). This work was carried out by maintenance staff in an outdoor area adjacent to the museum. Boxes were immersed in the preservative liquid for about 20 minutes. They were then left to dry and evaporate the gases for 15 days before being returned to the collection. The badly deteriorated boxes were replaced with others that were also treated.


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02. At the same time as the fossils were removed from the box, a list was made of their catalogue numbers (Fig. 11). We then compared this list with the database to verify the location of each material in that box.


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03. To separate the fossils from each other, 30x40cm wadding rectangles (100% polyester fibres bonded by a fusion process, THERMOBONDING®, Bicosoft SA.) were used (Fig. 12). To be conservative with the order and space of the collection, the fossils were returned to each box, arranged in successive horizontal layers interspersed with wadding. The fossils were placed from bottom to top, from the heaviest to the lightest, from the least fragile to the most fragile and, depending on the shape, decreasing fragile footholds (Figs. 13, 14). Handwritten labels were incorporated into airtight bags.


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04. After filling each box, these were identified with a label saying *censada* (censed). Finally, after checking the list of catalogue numbers, the label was painted orange, indicating the work completion (Fig. 15).


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