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## No way in: addressing a display-case access problem

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### ABSTRACT

Due to outdated and inaccessible display cases, as well as inappropriate furnishings, many of the exhibits in the London Natural History Museum whale hall gallery were subject to damage from dirt and pests. A proposed – but still to be realised - gallery redevelopment delayed plans to address the situation. But, once the necessity of the works had been agreed, the Exhibition and Conservation team carried out a full refurbishment of the cases so that any pest infestations would be more visible. This was achieved with a view to minimising risk, time and cost and, six years on, the cases have remained dust and debris free, and straight forward to inspect.

**Keywords:** IPM, exhibitions, display cases, taxidermy

### INTRODUCTION

The Natural History Museum's whale hall gallery is one of the most specimen-rich in the establishment. Purpose built in the 1930s in order to hang a huge blue whale skeleton from its roof, it is now joined by grey, bowhead, sperm and black right whale skeletons but its main attraction for visitors has always been its centrepiece, a 28.3 meter-long blue-whale model. It is one of our most popular galleries, hosting up to 8,000 visitors a day who, in addition to the whales, come to view the other 230-plus specimens, including taxidermy exhibition mounts, skeletons and fossil skeletons. 36 of the exhibits are on open display, while the rest are distributed between 80 display cases that date from the 1980s, when the gallery was redeveloped to explore the full range of mammal diversity.

In 2007, in seeking to improve the efficiency of our collection-care programme, the key problems we faced were dirty and dusty display-case interiors and specimens (due to inaccessibility of the cases). In addition, the nature of the case furnishings – which included wood chips, gravel, hessian, straw, sand and other inappropriate materials - served to camouflage both insect pests and rodent droppings.

Since the banning in 2004 of the majority of pesticides use in UK museums, we have relied solely on Integrated Pest Management (IPM), with its emphasis on good housekeeping and monitoring, and it is the museum's Exhibition and Conservation team that manages the programme in the galleries. However, in the Whale Hall gallery it was immediately apparent from the problems encountered that we were failing on the most basic level. The poor state of the specimens had even prompted many concerned letters from members of the public.

### WHAT WERE THE ISSUES?

The main issue in resolving the situation was one of access, and there were two possible solutions identified. The first – and most costly - would have involved replacing the large glass case fronts with glazed doors; the second was to employ specialist contractors to remove the case fronts to allow access for cleaning. This latter option was affordable, the main drawback being that after the

work was carried out, the cases would again be inaccessible to museum staff.

That something needed to be done was generally recognised. However, a number of factors were working against the commitment of significant resources to resolving the problem. Primary among these was the fact that a scheme for a major redevelopment of the gallery was already under consideration. The space had been identified as a less-than-ideal depository for an important taxidermy collection, and the plans included works to the building fabric to address the many ongoing issues such as the leaky roof, the damp walls, the uncomfortably warm and humid environment, and the narrow, congested visitor circulation route. The project had been initiated two years previously and, although insufficient funds had caused a delay, it was generally believed that it would be realised in the reasonably near future.

Another obstacle was that the gallery would have to be closed to the public for a period while the improvements were being carried out (an action that would also impinge on the work of the Learning and the Events departments), and such a situation was not regarded favourably by the Public Engagement Group. While sometimes it's viable to separate working areas from the public with portable screens, here the narrow circulation route did not allow for this. Alternatively, works can be carried out outside visitor hours, but the intensity of the operations we were proposing precluded this.

However, our efforts to bring about a change of attitude gained momentum. After submitting a detailed report to senior management, including an extensive survey of the cases and their materials, and the potential risks to the specimens (backed up with Oddy test results) we got the support we were looking for, and the option to remove the case fronts for a one-off overhaul was given the green light.

### **THE TAXIDERMY SPECIMENS AND THEIR DISPLAY CASES**

We were now faced with the practicalities of providing our valuable exhibits with an environment that would minimise their exposure to dirt, pests and other pollutants. Eighty of the specimens in the gallery are taxidermy exhibition mounts, most of which pre-date 1950. The largest of these – including elephants, rhinos, hippos and a giraffe - are on open display in the centre of the gallery, dominating the space. From these, any inappropriate ground coverings had long been removed and there was a successful cleaning and monitoring programme in place.

*Figure 1. Taxidermy exhibit case*

However, the majority of the taxidermy specimens are in cases situated around the perimeter of the gallery. The gallery walls themselves (including any columns, decorative mouldings and electrical conduit) make up either one or two sides of each case, while the room's balcony forms the top. The fronts are entirely glazed with 10mm plate glass, cemented at the joints. The internal lighting for these is accessed via a narrow hatch above the glazing and separated



from the display volume with an open para-cubing panel or acrylic sheet (Figure 1). Most of these panels have, however, been lost (probably in order to enable easier access for pesticide-dispenser installation). Now they served as a key entry point for contaminants, which had built up inside the cases over a number of years. In fact, the state of the exhibits served as a useful exemplar for the delegates on the IPM training course hosted at the museum.

In addition to the sheer presence of dust, dirt and pests, the materials used within the cases presented further problems. Some of the specimens were placed directly on pebbles or coarse gravel; others were sitting on wood chips (a by-product of the MDF industry intended as a garden mulching material), and a few were in placed on sand or straw scattered over modelled forms (in an attempt to present some context to the display). None of these materials were possible to clean, it is likely that they were all physically or chemically damaging the skins, and they all served as very effective camouflage for pests. (Figures 2 and 3).



*Figure 2. Wood chip ground cover*



*Figure 3. Pebble ground cover*

## **A RISK OF MOTHS**

It was clear that, in these conditions, a major pest infestation could easily develop unnoticed, and that the risk would be greatly lessened if the cases were thoroughly cleaned and de-cluttered. Added to this, we were battling moth infestations elsewhere in the museum, particularly in galleries that were linked via an under-floor ducting system that was believed to be the source of the problem. Fortunately, being a later addition to the museum, the whale hall gallery was not connected to this system and appeared to be moth-free. However, it was only separated by a single corridor from one of our worst-affected spaces, so we needed to exercise the utmost vigilance.

## **THE SCOPE OF WORK**

As mentioned, the cases had been designed with no opening solution in mind. The specimens inside couldn't be physically accessed without irreversibly breaking the cemented seals around the glass and then lifting out huge panels, some as wide as three and a half meters and weighing up to 180 kg. For this operation, the Exhibition and Conservation section did not have the specialist training or equipment and so appointing external contractors, though costly, was justified.

The glass removal aside, our solution was simple and cost-effective, to reflect the fact that this was assumed to be an interim measure only. We would clean and de-clutter the displays so that the museum's IPM programme, with its emphasis on monitoring, could be successfully executed. We could also take the opportunity to obtain full condition reports of all the confined specimens (previously this had never been possible due to the access issues). This would mean we'd have a reference to measure any future changes against. If live pest activity was suspected during the process, we would freeze the affected specimens along with their neighbours. Otherwise, if it were we would simply photograph, clean and remove signs of old pest debris.

One area of concern about the scope of the work centred on the fact that loose ground-works are often used to disguise other undesirable factors, such as mismatched taxidermy plinths and untreated construction materials or structural supports. Until these had been removed, the extent of 'making good' that might be necessary could not initially be assessed. Our approach would, however, need to be based on working with the present structure rather than rebuilding, in order to save time. We also established specific design objectives that we could apply to all scenarios: for example, the display- case floors should not be of a colour or texture that significantly camouflaged pests; they should be robust enough to stand on and clean with vacuum, and all new materials incorporated in the case should be environmentally safe. Finally, we would seal all obvious gaps with a neutral cure silicone sealant, although it was accepted that air tightness was unachievable so the cases would remain ventilated.

## **THE PROCESS**

The work was carried out over two months in 2008 by the Exhibition and Conservation team, with the help of volunteers from University College London (UCL) conservation course. Hoarding was erected at the entry and exit of the gallery as a security and safety measure, but a window looking into the gallery was included, along signage for the benefit of the public, explaining the works that were being carried out.

As expected, our approach had to be modified on a case-by-case basis dictated by the circumstances presented. We aimed to carry out the assessment of each specimen before de-stalling, because of the risk of damage being caused by the de-stall process. It soon emerged that this risk was a very real one due to the 'enthusiasm' with which the specimens had been fixed into the display. Typically, the feet of the animals were bolted through the base of the case, and then modelled into an undulating form constructed from chicken wire, polystyrene, plaster and other



materials, and then topped with the gravel, chips, or sand and straw. In many instances the bolt could only be accessed by forcing open (and thereby destroying) a panel concealing the void below, and even then was found to be welded on. Sometimes we were lucky and once the loose coverings had been carefully brushed away, an impressive taxidermy show plinth was revealed.

All specimens were dusted using soft brushes and a low-suction vacuum nozzle, and then inspected for live infestations. (None were found). Traces of old pest debris were removed. The museum photographer was employed to take good-quality images that could be included in the condition reports.

The specimens were stored in the gallery, housed in pest-impermeable tents – which we constructed from polythene, using our screen poles and bamboo sticks as supports - until their cases had been refurbished (Figure 4). The museum’s quarantine facility had not yet been built (it was completed in 2013), and although initially we had contemplated hiring a freezer, for which we’d have to negotiate space in the car park (no mean feat), this had its drawbacks. Our decision to keep the specimens in the gallery saved time and money, while also alleviating the risks associated with extensively handling and moving the items.



*Figure 4. A pest impermeable tent*

The cases were cleared as much as possible of inappropriate materials to reveal wooden structures and floors (Figure 5). Ideally these too would have been replaced with ‘safe’ materials or sealed with barrier film but both options were out of the question given the time scale.



*Figure 5. Clearing one of the cases*

Two of the cases were

left with the floor modelling in place because it contributed positively to the height distribution of the layout. This was neatly cut through, round the profile of the specimen plinth, so the specimens could remain salvageable in the implementation of disaster plan (Figure 6). The modelling was cleared, cleaned, strengthened and painted.

Figure 6. An example of a removable specimen



Finally the specimens were returned to their positions, albeit not bolted or fixed in any way, so that they could easily be salvaged if necessary in the future. The mismatched good-quality taxidermy plinths were cleaned and restored, but left

uncovered because it was agreed that they added interest to the displays and had a historic value of their own. Poor-quality plinths were remodelled with stable materials (such as Jesmonite® covered plastazote®) and painted with water-based acrylics. Contract glass specialists were brought back to return the windows, now with removable compression seals instead of cement. The gallery reopened on schedule, just in time for the busy Easter holidays.

## CONCLUSION

The refurbishment can be judged a success in terms of realising our IPM objectives, and we now feel confident that our inspections are effective and productive. Four years after the work had been completed we experienced a moth infestation in the seals case. Disheartening as this was - especially as it was the first insect infestation in this gallery since the move to IPM - we believe it would not have been detected as quickly (or at all) if the old furnishing of brown hessian and gravel had remained. Six years on, the gallery still has not been redeveloped. However, despite the fact that the case refurbishment was something of a compromise, the interiors appear to have escaped any noticeable ingress of dust. Apart from the one infestation mentioned, there has been no cause to access the cases to clean them, nor is there any apparent need to do so in the foreseeable future. And there have been no further complaints from the public.

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## MATERIALS

- Jesmonite® AC100, water-based, two-component, acrylic polymer/mineral resin system, <http://www.jesmonite.co.uk/>
- Plastazote®, polyethylene foam, <http://www.polyformes.co.uk/plastazote.html>