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Conservation of the ‘Great Bass Rock’ diorama - an ICON internship at Ipswich Museum

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Introduction

In 2006, financed by the Heritage Lottery Fund, ICON launched a new training scheme for conservation. Sixteen internships were offered in different disciplines such as stone, textiles, stained glass and of course natural history. The idea was to bridge the gap between graduating and finding work and also to create training opportunities in areas where it was lacking. The interns were a mixed group of both postgraduate conservators and people, like me, completely new to conservation. When I spotted there was a Natural History placement I was delighted, as I have been interested in this field for a long time. This is how I came to the world of natural history conservation.

The main objective of my internship was to conserve “The Great Bass Rock” diorama.

‘The Great Bass Rock’

‘The Great Bass Rock’ diorama has been on display in Ipswich museum since 1903. Museum curators brought back specimens, sketches and photographs from the Bass Rock, to help create the representation (Fig. 1). The large plaster rock face, constructed on wooden scaffolding, was built and painted by Robert Hall of the British Museum, and originally contained 52 birds as well as eggs and sea weed. The birds were, prepared coloured and set by the Ipswich museum curator (1983 – 1920) Frank Woolnough (Fig. 2).

However, after more than 100 years on display, the whole diorama was in need of attention. My task was to consolidate and clean 30 bird specimens, eggs and rocks, seaweed and a very large plaster rock face. The conservation of such a large and impressive diorama was very daunting. The floor was covered in rocks and with a number of birds suspended from the ceiling it left little room to work in.

Methodology

I carried out a risk assessment, with special reference to any insecticides used, the enclosed working area, and the solidity of the plaster construction (Marte, *et al*, 2006, Thompson, 1986). Appropriate PPE was sourced and obtained.

To assess the condition of the specimens, a simple quick and easy to use tick sheet was devised (Fig. 3). This took into account bird species, mounting, body setting (flying or sitting), evidence of insect attack, feather loss, possible damage, condition of armature, etc (Metcalf, 1981). All loose stones and rocks lining the base of the case were removed to provide access. All the birds were individually numbered and an outline plan of the case was drawn to indicate the exact position, location and number of each bird. Once the

Bass Rock Case built with legacy from
The late Lord John Hervey.
Contents as follows.

1	Seamut	2 days old
1	"	5 "
1	"	14 "
1	"	21 "
1	"	6 weeks
1	"	6 months
2	"	1 year
1	"	2 "
1	"	3 "
8	"	Mature

Nests and Eggs
8 Razor bills
10 Gull's nests + 2 immatures
7 Kittiwakes + 1 do
12 Puffins
Total 56 specimens

Fig. 1. Museum records from 1903 listing the



Fig. 2. The great Bass Rock diorama, Ipswich Museum.

condition reports were completed the birds could be removed and stored safely to await conservation.





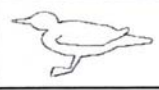
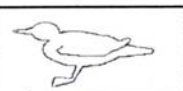
BASS ROCK CASE - Bird Specimens									
Examined By		Date		Acc No		Con No			
Photograph		Present Location		Species		Age			
Dimensions	Height		Length		Width				
Mounted Position					Other				
Cosmetic									
	Head	Back	Wings	Tail	Underside	Feet	Beak	Eyes	
Dust									
Varnish Flaking									
Light Damage									
Discolouration									
Pest Damage									
Structural									
Stuffing Showing									
Loose Areas				Loose Feathers					
Missing Parts									
Armature/Wires	Type								
	Showing								
	Corroded								
	Damaged								
Other Comments									
1 = Requires minor treatment 2 = Needs treatment to be displayable 3 = Requires major treatment 4 = Unstable, will deteriorate more in the next 12 months									

Fig. 3. The tick sheet used for creating a condition report.

inside the case, and carefully replaced later. After cleaning, the rock face was retouched where necessary. A protective layer of Paraloid B72 was applied to the plaster prior to painting with acrylics (Fig. 4).

Conservation of the birds

The birds had been mounted in various positions of flight or rest, their feet, legs and beaks had been painted and in some cases this had started to fade or peel away. All the birds had a thick layer of dust and grime and many had suffered from pest damage. Some had yellow staining on feathers or splashes of paint and others had detached wings or tail feathers. They were frozen for a period of 7 days at a temperature below -30°C to destroy any pest infestations (R. Entwistle, Colchester and Ipswich Museum Service, *pers comm.*, 2006).

Cleaning

Taxidermists and natural history conservators were consulted for advice on the cleaning of the birds and their feathers. Tests were carried out using Pastosol AZ degreasing agent on some bird feathers (Dickinson, J. Conservation Officer, Lancashire Conservation Studio, Lancashire Museums. *pers comms*, 2006). This cleaned the feathers much better but left them rather dry due to its degreasing power. Removing and rinsing out the agent was also time consuming so it was decided to use Synperonic A7 instead. On one bird a small area was tested with a poultice of magnesium carbonate and sodium hydroxide 2%. This did not appear to harm the feathers in any way and worked very well. Therefore, it was decided to continue its use on a larger area of the bird. The feathers that were stained from ingrained dust and dirt were returned to their former colour.

For the most part the birds were brushed and vacuumed (S. Moore, Natural Sciences Conservator, HCCMS. *pers comms.*, 2006), cleaned with distilled water and a small amount of Synperonic A7 detergent on cotton swabs, this was then rinsed off with distilled water (R. Entwistle, Colchester and Ipswich Museum Service,

Dismounting the display

Most birds were secured by armatures that had been inserted into corks, which were recessed into the plaster rock face. These could be carefully pulled out and their corks were retained when possible. Others were hung from the ceiling with strong thin wire. The wire had to be cut whilst they were supported from beneath. Enough wire had to be kept to reattach the birds after treatment. Some specimens were very awkward to access and it is likely that they were originally put into the display before it was glazed.

Conservation of the rocks

Next, all the other movable objects were taken out and the whole case was thoroughly cleaned. A small force of regular volunteers assisted with the cleaning using back pack vacuum cleaners, brushes and damp cloths.

Some areas off plasterwork had been damaged over the years and these had to be repaired. We replaced like with like and used plaster. Again some willing work experience students assisted with this operation. Due to the size and shape of the rocks and the narrowness of the door, these had to be worked on

pers comm., 2006). The feathers had to be kept as dry as possible during this process as wetting caused the feather barbs to matt. When this occurred they were brushed back into place whilst being dried with a hair-dryer (Fig. 5).

Draft clean was used on one bird (S. Moore, Natural Sciences Conservator, HCCMS. *pers comms.*, 2006). This cleaned the bird quite well. However it was very difficult to remove it all from the feathers afterwards. Groom stick was used on an area of another bird, however this was deemed inappropriate, as it could have pulled out loose feathers due to its tacky nature (Rae, A. Freelance conservator, Peacehaven. *pers comms.*, 2007).

Paint stains were removed with IMS and acetone and attempts were made to remove the yellow fat stains with trichloroethane but this only worked to a certain extent

Consolidation

Some specimens had been subjected to virulent insect attack and had large areas of detached and loose feathers. As a last resort these were consolidated with a fixing spray. Detached feathers could be reattached with HMG, cellulose nitrate adhesive (S. Moore, Natural Sciences Conservator, HCCMS. *pers comms.*, 2006).

One kittiwake had a loose wing. The wing was removed fully from the body and corroded wires removed from the wing (Fig. 6). The wing was in two separate pieces. The lower part was reattached to the body, using a fibreglass rod and quill dowel, adhered with HMG. Once dry, the area where the upper part would be attached was consolidated using HMG and IMS and the area built up with Japanese tissue paper (Fig. 7). This was repeated on the underside of the upper wing (Fig. 8). This created a good base for adhesion and the upper part was attached to the lower (Fig. 9).

Another Kittiwake's tail had come become loose. It was carefully removed from the wire armature (Fig. 10) and consolidated with a fixing spray and HMG and gently pushed back onto the protruding wire armature (Fig. 11).



Fig. 4. Work experience students working on the plaster rock.



Fig. 5. Using a hairdryer and brush to keep the feathers in



Fig. 6. Kittiwake with wing detached.



Fig. 7. Kittiwake with lower part of wing and Japanese tissue paper.



Fig. 8. Upper part of the wing with Japanese tissue paper attached.



Fig. 9. Kittiwake with the wing reattached.



Fig. 10. Kittiwake before tail feathers reattached.



Fig. 11. Kittiwake after tail feathers reattached.

Restoration

The balance between preservation and display had to be considered when looking at the birds' legs, feet and beaks where the paint had started to fade and peel. It was decided that it was unethical to remove or overpaint old and faded paint on these areas. Where the damage was very bad and would have shown clearly when on display a protective layer of B72 was applied to protect any remaining original paint. Then the colour was carefully matched. The 'hidden' areas were consolidated with B72 to prevent further damage (R. Entwistle, Colchester and Ipswich Museum Service, *pers comm.*, 2006). Where pests had damaged the webbed feet, they

were consolidated with Japanese tissue paper, on top of which a layer of paraloid B72 was applied and then painted with acrylics (Moore, 2006).

Conservation of the seaweed

The seaweed was very grimy and brittle. It was washed and left to dry, spread out on netting over a frame. Klucel G was applied to consolidate and give it a 'damp' look. However after a few days the 'damp' effect was lost. Glycerine had been considered but it was decided this might attract pests.

Conservation of the eggs

Tests were carried out on cleaning eggshells. Solvol Autosol on cotton wool, then rinsed off with white spirit was tried. However the use of distilled water on swabs worked just as well.

Remounting the display

Returning the birds to the clean case proved to be considerably more difficult than removing them. It involved reattaching the birds to the plaster or wires, several metres up on a ladder in a dimly lit case as well as squeezing in-between the glass and the rock face. (Our rock climbing skills were put to good use!) The original wire was used, where possible, to re-hang the birds. If the original wire could not be used thin fishing line was substituted. Unfortunately the fishing line showed clearly when new, bright lighting was set up, and had to be retouched to the same colour as the old wire. The older wire blended in much better.

Eggs, seaweed and the loose rocks were returned and laid out as close to their original setting, using photographs taken before work started. New lighting in the form of spotlights completed the project along with recorded sound effects of sea birds and crashing waves.

Below lists the Health and Safety issues with the resins and solvents used on my project;

Resins

Paraloid B72 - Extremely Flammable. Avoid sources of ignition. Avoid skin contact.

Kluacel G – If used with IMS – Highly Flammable. Wear gloves, wear eye protection whilst decanting. Use adequate ventilation or extraction. It is advised to decant no more than 100ml into a beaker at any one time.

Alkalis

Sodium Hydroxide – Corrosive. Protective clothing (gloves and goggles) must be worn during preparation.

Degreasing agent

Pastosol AZ - Harmful. Ensure sufficient ventilation of the area. Wear dust mask or respirator, protective gloves, safety goggles and protective clothing.

Solvents

IMS – Highly flammable. Wear gloves, wear eye protection whilst decanting. Use adequate ventilation or extraction. It is advised to decant no more than 100ml into a beaker at any 1 hour period. Cover the beaker and any swabs.

Acetone - Highly flammable, Irritant. Wear gloves, wear eye protection whilst decanting. Use adequate ventilation or extraction. It is advised to decant no more than 100ml into a beaker at any one time. Cover the beaker and any swabs.

Trichloroethane – Irritant, Harmful. Wear protective gloves. Use adequate ventilation or extraction. It is advised to decant no more than 50ml into a beaker at any one time. Cover the beaker.

Land and Sea Collections

I was also involved in a variety of smaller projects. These included cleaning a mounted Caribou head (Fig. 12), consolidating a partly fossilised mammoth tusk (Fig. 13) and reconstructing the facial features of a large seal (Fig. 14). I worked on the bird skin collection bagging and freezing them to treat and prevent further attacks from pests (Carter and Walker, 1999).

Another fascinating project was working with the fluid-filled collection. The collection contained an intriguing array of the weird and the wonderful from preserved millipedes and scorpions to fish and mice. This collection was stored in a variety of containers. Some were not airtight and therefore could not prevent the preservation fluid from evaporating. Specimens that had dried out were re-hydrated with a 10% solution of tri-sodium orthophosphate in water. Each specimen was rinsed in IMS (Fig. 15), placed in a kilner jar and refilled with IMS (Bowdrey, J. Curator of Natural History, Colchester and Ipswich Museum Service. pers comms, 2006).



Fig. 12. The author cleaning a mounted caribou head.



Fig. 13. A sub-fossil mammoth tusk after treatment.

Widening the Experience

Throughout the internship I have been continually learning and receiving training. I have also had the opportunity to attend relevant courses and seminars and meet up with experts prominent in this field. I have learnt about important issues such as climate control and pest management and worked on a large variety of projects, increasing my conservation skills and knowledge of natural history collections. Altogether this has proved a very interesting year.



Fig. 14. A seals eye before (left) and after (right) treatment.

Acknowledgements

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Fig. 15. A specimen being rinsed in IMS.

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- Metcalf J.C. 1981. *Taxidermy, a complete manual*. Gerald Duckworth & Co. London.
- Moore S. 2006. Japanese tissues: Uses in repairing Natural Science Specimens. *Collection Forum*. 21(1-2): 126-132
- Thompson G. 1986. *The Museum Environment*. Butterworth-Heinemann Series in Conservation and Museology

Materials and Suppliers

Acetone, IMS, Synperonic A7, Trichloroethane – Surechem Products Limited, Lion Barn Industrial Estate, Needham Market, Suffolk, IP6 8NZ.

Kluacel G - Conservation Resources UK Ltd, Units 1,2 and 4 Pony Rd, Horspath Industrial Estate, Cowley, Oxford, OX4 2RD

Paraloid B72 – Conservation Resources UK Ltd, Units 1,2 and 4 Pony Rd, Horspath Industrial Estate, Cowley, Oxford, OX4 2RD

Pastosol AZ, Trumpler UK Ltd, Unit 2, The Maltings Industrial Estate, Whitley Bridge, Goole, DN14 0HH

HMG – HMG Paints Ltd, Riverhurst Works, Collyhurst Rd, Manchester, M40 7RU