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A conference report on the 'Caring for Natural Science Collections: A one day conference exploring advances in conservation' 17th October 2018

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Abstract

The Natural Sciences Collections Association (NatSCA) hosted a one-day conference at the Oxford University Museum of Natural History in October 2018. The conference was dedicated to advancing the care of specimens, objects and archives that form natural science collections, providing the opportunity to explore recent projects, discuss new methodologies and meet others involved in collections care. The following paper summarises the talks and sessions of the day.

Keywords: NatSCA, Natural science collections, Conservation, Conference, Collections care, Networking.

Introduction

Caring for Natural Science Collections was a one day conference held at the Oxford University Museum of Natural History to explore latest projects and developments and network with natural science conservation colleagues. Lucie Mascord, the conservation representative of the Natural Sciences Collections Association (NatSCA), opened the conference by briefly examining where the conservation profession currently stands and the anticipated future of conservation. Lucie emphasised the strong specialist network and skill sharing which is facilitated by NatSCA and related museum bodies. The three key aims of NatSCA as an organisation were endorsed, including supporting current museum professionals, training of non-specialists, and advocacy of the hard work done by collection specialists.

Talks

Eleven presentations were provided from eight different UK and international academic and museum sector organisations in based in the UK and internationally. Eva Fairnell presented on behalf of Historic England on recent efforts to manage pests and mould in Zooarcheological collections in Portsmouth. Eva provided an overview of the challenges and logistical issues of having multiple stores and preparation laboratories and the outcome of their 2016 audit. In order to bring about greater stability within the collections, silica gel was used to control relative humidity, freezing of collections and new sealed storage to greatly reduce the risk of damage to specimens from grease, moulds and pests. Eva also presented a case study on the Père David's deer, which was heavily infested with casebearing clothes moths, and an overview of her process for repairing this rare specimen.



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The Oxford University Museum of Natural History, the setting for the first Caring for Natural Science Collections one day conference. (Image by Bethany Palumbo)

An overview of issues faced by conservators of geological collections, was given by Kathryn Royce, a postgraduate student at University College London. Kathryn emphasised that geological collections are rarely stable objects, as fossils, minerals and other important specimens often require specific storage conditions close to their in-situ natural conditions. Stressors and degradatory factors are often the same as those which affect other natural science collections such as pollutants, relative humidity, exposure to light and physical damage. Kathryn aims to use her project to assess the efficacy of treatments and create better guidelines on the management of geological collections.

Lyndall Pereira-da-Conceicao from National Museums Scotland presented on her recent efforts to digitally conserve entomological collections including DNA sequences and eDNA (community wide DNA samples). Lyndall spoke about the transition of museums in the 19th Century from relatively inaccessible and somewhat elitist organisations to the modern day, where accessibility and digitisation is increasingly at the forefront of the ambitions of many museum professionals. There are many benefits of digitisation including increasing accessibility on an international scale, the addition of valuable new data to accompany physical collections such as photographs, the digital 'back up' of collections and the reduction in need for physical handling. Lyndall provided a very

interesting summary of the various digitising techniques her and her colleagues have used including high resolution photography for important specimens, using draw scans for the 'rest' of collections, the importance of DNA and eDNA digitisation.

A very engaging presentation on research of in-situ petrified forests in Ban Tak, Thailand was given by Evangelia Kyriazi from the University of the Peloponnese. Evangelia spoke about the complexities of management of petrified wood, including a lack of suitable governance, the difficulties of fully understanding the type of fossilisation and what conditions may be affecting petrified forests. An excellent overview of this work was provided including the use of 3D scanning, environmental data collected and the various lab-based experiments to understand the pathology of the petrified wood. Evangelia aims to tie together the pathology to the morphology of the wood statistically and will carry out GIS analysis and salt analysis amongst a whole host of other experiments. The aim of the project is to provide guidelines on conservation in tropical environments.

Samuel Suarez Ferreira of Cambridge University Museum of Zoology provided an overview of the history of Leonard Jenyns notebook 'Entomologia Cantabrigiensis' which is a historically important book on the insects and arthropods of Cambridgeshire written in the 1800's. This important book is currently

informing wildlife conservation methods of the swallowtail butterfly and the large copper butterfly in Cambridgeshire. Samuel spoke about the replication process of the book for handling and elaborated on various methods of printing, binding and the correct handling of books with different spine types.

Dr Victoria Purewal from Pure Conservation provided an interesting talk on the challenges of working with 18th century bound herbaria specimens collected by Dr Arthur Broughton and the process of improving the accessibility and use of these important specimens. There are issues with working with such collections, such as the accumulation of biocides and damage to the books and specimens themselves. These specimens are now bound in a more useable fashion, digitised, categorised according to recent taxonomy, can be frozen for IPM and has reduced the health and safety risk of having the collection in the workplace.

A visually engaging talk on needlefelting work to improve the aesthetics and usability of taxidermy specimens of high priority for display was given by Natalie Jones of the Cambridge University Museum of Zoology. Natalie explained the process and diversity of needlefelting and spoke about two of her recent

projects; the aye-aye and red panda. The talk elaborated on the versatility and cost effective manner of needlefelting and highlighted the reversibility and structural support that this technique can provide.

Erica Read, a freelance conservator, played a series of aesthetically pleasing videos on the process of using Japanese tissues as a fill material in damaged collections. Erica highlighted that Japanese tissues are very useful to guide the visitor's eyes away from obvious damage and the benefits of using this method for collections which are regularly handled. The talk showed step by step videos to create a gap fill for a feather, fur plugs and patches to fill missing hair on taxidermy specimens and how to recreate scales and skin.

A fascinating talk on Blaschka models which were primarily used as teaching and exhibition models from the late 19th century was given by The National Museum of Ireland. Paolo spoke about the history and the components of the Blaschka models were explained, highlighting the various media involved such as wood, glass, wax, wool and wire, how each model has different requirements which need to be considered when in storage and on display. Paolo told



The conference delegates at the Caring for Natural Science conference. (Image by Bethany Palumbo)

the audience about damage he has observed and about the potential health and safety risks of working with these models, such as the use of cinnabar, a red pigment, which can release mercury when laser cleaned.

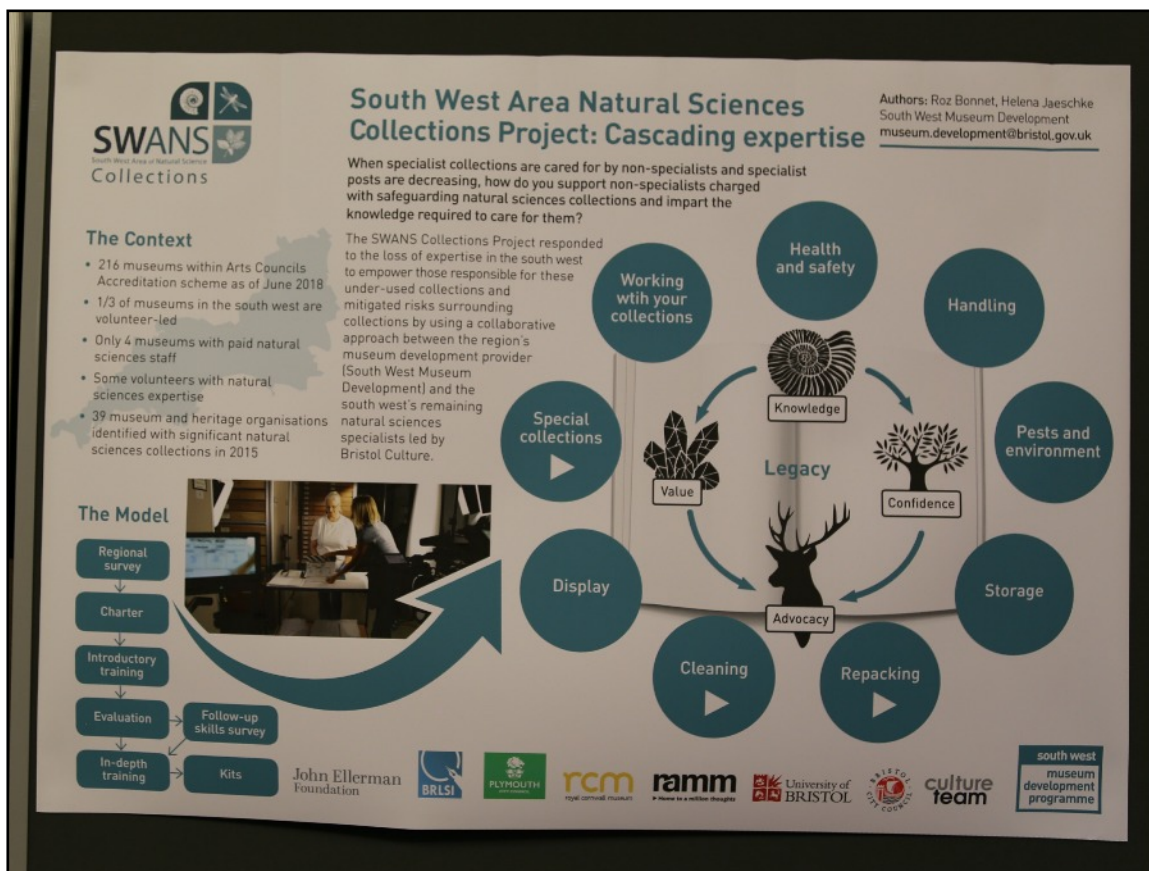
Beth Hamilton of the Cambridge University Museum of Zoology provided an overview of the conservation and restoration of a cast of the extinct amphibian *Eryops megacephalus* Cope 1877. The cast was damaged and unstable due to issues with the metal support frame and plaster and the distracting colour scheme. The conservation process including the reinforcement of structural support, the fill techniques and the new paint scheme. The importance of casts in museums was highlighted as they provide visitors with a realistic display of fossils and facilitating interactions with collections.

Anastasia van Gaver of the Cambridge University Museum of Zoology provided an interesting talk on the conservation process of an Aldabra giant tortoise. The specimen of the endangered species was acquired

by the museum in 1896, but unfortunately was heavily damaged in multiple areas. Anastasia explained how she remedied these issues to achieve an aesthetically pleasing, scientifically accurate specimen that fitted the needs of the museum. She used gap fill methods including a mix of plaster, papier-mâché, microballoons and epoxy sculpts. The specimen is now being used in outreach events to encourage children to engage with conservation work.

Lightning sessions

Five 'lightning sessions' were held where each speaker had five minutes to convey their key messages. Signe Bonnichsen and Ruth Murgatroyd from the University Museum of Bergen discussed the redevelopment of the museum, from the first stages of clearing the museum for redevelopment in 2015, to the new development of the building due to be opened in Summer 2019. Signe and Ruth also discussed their recent projects in reconstructing and rejuvenating various bird, possum and Cetacean specimens using Japanese tissue, the 'compo' technique and how to rejuvenate specimens through the application of pigments.



The South West project, 'SWANS', supporting non-specialist curators who care for natural science collections. (Image by Bethany Palumbo)

The importance of 'digital surrogates' to aid in the preservation of collections and minimise deterioration through handling and other means was discussed by Dr Mike Howe from the British Geological Survey. Mike shared information on the techniques of his recent digitisation project such as high resolution images, 3D imaging models which can enable to printing of 3D casts and the use of scanners in displaying core samples. The talk emphasised the many benefits of digitisation including the avoidance of deterioration, the speed at which the public and researchers can access collections information and the 'freeing up' of museum professionals' time by reducing the need for supervised access to physical collections.

Lu Allington-Jones from the Natural History Museum London spoke about the use of cyclomethicones in the conservation of taxidermy. Lu discussed the many beneficial properties of cyclomethicones, such as being a 100% barrier to water and 100% volatility, meaning no residue is left behind on specimens. After various careful experiments on taxidermy specimens, she found that the use of D4 cyclomethicones were not as useful as first expected, as, amongst other reasons, a large amount was required to form a waterproof barrier and only had approximately 5 minutes working time on average. Lu noted that cyclomethicones can be used as a solvent for silicone oil, in microemulsions and as a solvent.

Roz Bonnet and Helena Jaeschke from South West Museum Development spoke about the South West Area Natural Sciences Collections Project (SWANS) strategy for supporting essential curatorial skills in the South West region. Spurred on by the 39 museums in the area that had significant Natural History collections, they have developed an accessible, peer reviewed, and freely accessible handbook with essential information and best practise. Supported by an accompanying video library, the handbook covers legal and ethical requirements for Natural History collections, packing and handling, cleaning, display techniques, pest management and resources on specialist help and further reading which will be updated and supported annually until 2022.

Nigel Larkin from Natural History Conservation discussed the methodology for the processing through to the final display of a fin whale. Nigel's interesting talk showed the specimen from start to finish with particular focus on the cleaning, degreasing and gap filling of the skeleton. Nigel discussed his successful method of submerging the whale bones in horse manure after consultation with a specialist in processing specimens in elephant dung. The exact reasoning of why the process worked so well is still to

be discovered, with potential reasoning being microbial processing, the temperature or a combination of factors. Nigel highlighted that understanding this process in greater detail would be an interesting research project.

During the final question session various delegates in the audience and Lu Allington-Jones of the Natural History Museum London discussed the potential usefulness of a data portal or another means of communication for products used during object conservation tasks that have been tested and evaluated in the museum setting. This portal would aim to share knowledge of the products' use, the effect of the product on collections and the potential utility for other tasks if the desired outcome was not achieved in the first instance. This information exchange was partly inspired by ICONS previous conference on this subject and could potentially be shared on NatSCA's 'Notes and Comments' section of their website.

Speakers Roz Bonnet and Helena Jaeschke from South West Museum Development noted that the SWANS handbook discussed will be shared with NatSCA when the publication is ready to be circulated and this may occur via the NatSCA mailing list (NatSCA@jiscmail.ac.uk).

The Chair of NatSCA, Paolo Viscardi, extended his thanks to the NatSCA committee and those who had an input in the organisation of the conference. NatSCA also extended thanks to the host institution the Oxford University Museum of Natural History.

Summary

Several key themes ran throughout the conference, including the necessity of skills sharing and collaboration, both within the sector currently and the training and knowledge building of new staff. The conference noted many incredibly useful conservation techniques, such as the versatile uses of Japanese tissue and other materials, such as plaster mixes and needlefelting. One of the strongest themes throughout the day was the need and benefits of digitisation within modern collections. The conference highlighted the need and willingness of museum professionals to share techniques, successes and failures. NatSCA is an ideal platform where this knowledge can be shared across the sector.

Acknowledgments

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