

ABSTRACT LIST

Trials and Triumphs: sharing practice across the museum sector

AGM & Conference 18th & 19th April 2024 in
partnership with

The Oxford University Museum of Natural History

Thursday 18th April

First Session

10:45 – 11:35 **Lightning Talks** (5 minutes each)

1. **Importance of natural sciences collections for biocultural research. A view from the Global South.** Mariana Mondini, Florencia Agliano, M. Florencia Arias, A. Carolina Moreano, *Mónica V. Pia, Daiana Coll, Camila Neveu Collado: Laboratorio de Zooarqueología y Tafonomía de Zonas Áridas (LaZTA), IDACOR, CONICET-UNC, Argentina*

The Laboratory of Zooarchaeology and Taphonomy of Arid Areas (LaZTA, IDACOR), belonging both to the National Research Council for Scientific and Technical (CONICET) and the National University of Córdoba (UNC), is part of the public academic system in Argentina. It is oriented to support research in human-animal interactions and in the formation of the archaeological (and fossil generally) record. To that aim, it has built a reference collection of modern animal materials, consisting mainly of bones but also of other faunal materials –like hair and faeces– and animal traces –like bite and digestion marks–. All of these materials and traces have the potential –although variable– of preserving in the fossil record and are thus necessary in the reference collection, as they provide important, complementary information on the past. At the crossroads between social and natural sciences and intersected by historical sciences, archaeology is key to unravelling past human-environmental interactions, including the long-term roots of the Anthropocene. And natural science collections play a key role in those investigations on the past. Also, they are a significant reservoir of regional biodiversity, which is part of our biotic heritage, and is key to preserve in the face of its future loss. Both modern and archaeological biotic collections are also part of our biocultural heritage, as they inform of past and present human-environmental interactions. For these reasons, it is crucial to preserve these collections, and to do it in the countries where they are generated, which is often more difficult in the lower-rate countries. Some examples from the LaZTA will be shown to illustrate these ideas.

2. **Imaging amber: Creating a novel workflow to digitise Natural History Museum's amber collection.** *Joseph Deane: Natural History Museum, London*

The Natural History Museum is currently preparing for a historic move of 28 million specimens to a new site in Thames Valley Science Park (TVSP) near Reading. Ahead



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of the move, the digitisation team has been working on various novel workflows to ensure the collection is properly digitised so that it can be tracked during the move.

The Amber collection is one of the more significant collections moving. It has important scientific significance as it perfectly preserves the morphology of specimens contained within the amber and high commercial value as it may be cut and shaped in jewellery. As such full digitisation of the collection was a priority ahead of its move to TVSP.

An initial batch of ~3,000 Arthropod Amber specimens were audited, barcoded, and imaged. Full transcription of the images was then completed by the collections move team. The methodology used was based on two pre-existing mass digitisation workflows; the entomology slide workflow and the iCollections workflow for pinned insects (Allen *et al* 2019, French *et al*, 2022, Blagoderov *et al* 2016, Jardine *et al*, 2022). With these as a basis, we created a new workflow to digitise amber that allowed for switching back and forth between the various specimen types. Some specimens were mounted on slides while others were not, some registered as an individual piece of amber, others as the individual insects and arthropods preserved in the amber. This lightning talk will discuss the creation of this new workflow, benefits achieved and problems encountered.

We are then taking all we have learnt into digitising the remaining ~2,000 specimens of Amber in the collection as well as other high value specimens that will need to be digitised as preparation for the move.

3. **Suspicious specimens: a new tool to find potentially misidentified and misnamed specimens in biological data.** *Sophie Roberts: Edge Hill University*

Natural history collections contain a vast quantity of biological data that allow information to be gained on past populations, the impact of invasive species or diseases, evolutionary changes, as well as the effects of climate change. Specimens which are misidentified or misnamed will produce problems for researchers, however checking identifications in large datasets is time-consuming. The new tool described here can be used to screen collection data using three analyses to generate a list of specimens that are likely to be misidentified or misnamed – termed ‘suspicious specimens’, flagging them for curation. The package identifies outlying biological specimens whose metadata indicates a higher risk of misidentification as well as comparing the collection dataset with a reference dataset and flagging up discrepancies. It is free to use and can be adapted for any collection of biological data. This study uses data from bryophyte specimens in National Museum Wales (NMW) and British Bryological Society (BBSUK) herbaria as a case study to demonstrate the functionality of the package. Of the ten most suspicious specimens produced by the analysis and examined in this case study, 70% of the specimens required redeterminations, showing the effectiveness of this tool in improving the accuracy of collection records.

4. **IPM insect monitoring in UK collections – Glue Traps (Offences) Act 2022.**

Armando Mendez: Natural History Museum, London

We are now at the point that England has passed the Glue Traps (Offences) Act, however, any kind of ban will only come into effect in England after the accompanying licencing system has been created which is due to happen in April 2024. This is something that will affect everyone currently using blunder traps as part of their IPM programme!

In this Act “glue trap” means a trap which—

(a) is designed, or is capable of being used, to catch a rodent, and

(b) uses an adhesive substance as the means, or one of the means, of capture. Therefore, all the commercial blunder traps for insect monitoring available through UK suppliers potentially fall under the definition and the scope of the new legislation. How do we avoid prosecution and continue running an effective IPM monitoring system will be discussed.

5. The Herbarium Handbook: Collecting knowledge and expertise from around the world. *Grace Flanagan: Royal Botanic Gardens, Kew*

The Herbarium Handbook was first published by Kew in 1989 following the success of the Herbarium Techniques Diploma Course, with a recent edition being published in 1999. The purpose of the newest edition was to update techniques but to also bring together the many voices of herbarium curation. The collaboration between global herbaria and communities makes this edition so special. During its creation, curators and scientists from small and large herbaria were approached to share knowledge gathered during their careers both in their academic facilities and out in the field; knowledge from how to collect and prepare plants in the field to the legislation that helps protect endangered species for future generations. The Handbook is a guide for any organisation around the world wanting to start their own herbarium by outlining everything from environmental control, through collection, protection and maintenance of collections to sharing of information and skills.

The Herbarium Handbook's focus on the knowledge of the botanical community as well as the impact on local and global communities by guiding herbariums on public engagement, outreach programs, and sharing the importance of recording and preserving species for the centuries to come. The book also focuses on the wide range of herbaria across the globe from centuries old collections in Cambridge and Herbarium Bogoriense (Java) to collections formed within the past 30 years such as the National Herbarium of Guinea and the Kochi Prefectural Makino Botanical Garden (Japan). The diversity of herbaria and the extent of their knowledge is what makes the collaboration in the Herbarium Handbook so important to the future of botany.

6. Mining the Gaps: Geographical biases and colonial history in the Natural History Museum, London. *Noah Hearne: Natural History Museum, London*

The historic establishment of the world's natural history collections has created sources of biological specimens and data from across the planet which are invaluable to research, education, and engagement. Much of the specimen collection conducted over the past three centuries, however, was non-random and thus more likely to accumulate geographical biases, even in collections with global breadths. Intimately intertwined with these biases are the colonial systems of the British Empire that provided significant material to natural history collections through the exploitation and commodification of nature from around the world, a connection that has been little researched.

As specimen data become increasingly accessible through digitisation, limitations of our natural history collections data need to be described and addressed to facilitate effective use and development of these collections, as well as a holistic decolonisation that includes collections beyond those on display. To begin detailing these biases, I used statistical models to analyse digital records of the bird and mammal collections of the Natural History Museum, London. I found that the British Empire's historic territories and modern socio-political factors, such as global development and official languages, contribute to the structure of spatial and sampling biases in the data of these collections.

These results illustrate that colonial history and patterns of global development have shaped the views of the world's biodiversity that natural history collections provide and

how these methods could be a useful tool in untangling them. In my lightning talk, I will share my methods and highlight some of its applications that could contribute to research, engagement, repatriation, disposals, and acquisitions, as well as ways of visually communicating these patterns. Ultimately, I hope analyses of geographical biases and their historic origins can help cultivate deeper and more powerful understandings of our collections and their data.

7. **Making friends and influencing people: how to work together effectively.**

Sebastien Lherondel-Davies and Kanchi Mehta; Swansea University, partnered with Swansea Museum and Amgueddfa Cymru (Museum Wales)

Students from Swansea University are working with Swansea Museum and Amgueddfa Cymru (Museum Wales) on the digitization and conservation of the Mary de La Beche Lepidoptera collection. The collection has over 9000 specimens to digitize and conserve, with the goal of helping to ensure the longevity and accessibility of the collection for the future.

Our core team of colleagues, all from different backgrounds within museums and academic settings, bring different skills sets and perspectives to the table. We've created a host of resources and processes that have enabled us to better work together and overcome the hurdles before us.

Meticulous planning gave us a strong start. By developing robust protocols and writing guides for each other as we progressed, we have been able to share knowledge effectively, learn practical skills needed for digitization and lepidoptera conservation, and develop a strong working relationship.

Regular meetings kept the knowledge flowing and the communication going. We developed useful plans and habits which helped keep us on track and focused on our priorities.

We hope that collaborations between museums and university students in the future can benefit from our lessons learnt and take from us the habits and systems that are making this project not only successful but also enjoyable.

8. **Against all Odd(y)s – Where have all the oddy testers gone.** *Amalia Lempriere, Sebastian Foxley: Royal College of Surgeons of England*

When the redevelopment of the Hunterian Museum was taking place, there was a need to have all materials and paints proposed by the designers for the new galleries Oddy tested, however, finding a provider for these tests proved difficult. The world was in the midst of the Covid pandemic and few companies/museums seemed to be offering a paid Oddy testing service. The British museum had also taken down their Oddy test results spreadsheet and very little information was available online.

A provider of a new type of test that claimed to rival an Oddy test and improve on it by looking at changes on a molecular level was found and used however it was in its infancy and the results received were too inconclusive for them to be considered as a final signoff.

With time pressure mounting for confirmation of materials the RCS conservation team therefore decided to undertake testing themselves. Equipment and materials were bought and the long process of testing undertaken.

An outcome from this is that the RCS has since been approached by other institutions who are having similar issues. As a small museum we are unsure if we have capacity to provide a testing service for others, however, we are keen to find out if there is appetite

for this type of service and how we could best provide this whilst making results available for others to utilise.

9. Bryozoans on the move.... *Abbie Herdman: Natural History Museum, London*

The Natural History Museum, London (NHM) is currently undertaking the biggest collections move in history, around 28 million specimens total. A diverse range of collections are expected to move to the new site in Reading including fossils, wet, dry, taxidermy and osteological specimens. The talk will introduce the ways in which the Bryozoa collections are being prepared for the new NHM site in Reading for 2028.

Bryozoans are an astounding yet little known phylum of predominantly colonial aquatic invertebrate animals, found in both freshwater and marine ecosystems. Known as the 'moss animals', for a long time, they were thought to be plants which still confounds the record of this group in aquatic collections due to their growth patterns encrusting on rocks, as seaweed-like and sometimes as gelatinous blobs. There are Bryozoan reefs which support diverse marine species, they are recognised bioindicators in aquatic habitats and are 'blue carbon' stores.

The NHM Bryozoa collection is globally significant due to its age and size, from this legacy it continues to attract new material from current international researchers in taxonomy and ecology. There are many different preservation types in the collection from herbarium sheets to microscope slides, wet ethanol preserved or formalin fixed specimens, as well as a growing collection for DNA tissue analysis.

10. Maximising student engagement through non-major interns. *Patti Wood Finkle: The Earth and Mineral Sciences Museum & Art Gallery at The Pennsylvania State University*

At the EMS Museum, we have launched an aggressive student engagement campaign with two staff members and are working to engage with students from across campus, not just from our college. Through these efforts, we can also expand our visibility and the number of faculty, students, and administrators that utilise and value the museum. In this lightning talk, I will present on maximizing student engagement through internships, however, this talk will focus on students who are NOT Earth and Mineral Science students. Examples include a Communities and the Environment student and two liberal arts/ history student internships that are facilitating new engagement avenues for our understaffed museum.

Second Session: Learning and engagement

11.55 – 12.15 Biodiversity: Inspiring teachers and KS5 students. *Kathy Moore & David Waterhouse: Freelance and Scott Polar Research Institute (recently of Norfolk Museums Service)*

We all know our collections and stories can support teaching and learning about the Climate & Earth Crises and yet many teachers don't consider museum visits or programmes.

Kathy Moore with David Waterhouse will share how they developed and honed an A level conference format on Biodiversity that has run annually since 2010, with regular feedback. Their model is readily transferrable to other museums and regions.

The project developed relationships with a wide variety of delivery partners who were very keen to take up the rare opportunity to share their work with Young People (16-19), an audience they often struggled to engage. These partners included, Norfolk

County Council Environment Team, Norfolk Wildlife Trust, the Broads National Park, UEA Science and The Tyndall Centre, amongst others.

In addition to supporting A level studies, Kathy wanted to inspire students to study further, work and volunteer in Nature and Conservation. As well as tours of the Natural History Galleries and stores, students discovered more of the work of a Natural History Curator. Students were invited to 'Meet an Alien' with the Norfolk Non-Native Invasive Species Initiative, make a virtual biological recording beside the dioramas in the Norfolk Gallery, discover work on novel antibiotics from work on leafcutter ants and consider wildlife winners and losers in projected Climate Change impacts on the Norfolk Broads.

Kathy Moore has followed up on her previous work with a recent session with Biology PGCE students on using museums, heritage, and culture to teach and learn about the Climate and Earth Crises. David Waterhouse is currently adapting the biodiversity conference model for possible use with teaching about the Climate Crisis focusing on the Poles.

12.15 – 12.35 Dead inspiring: how to encourage secondary schools to engage with natural science collections. *Clare Brown: Leeds Museums and Galleries*

It's a common problem: museums have excellent levels of take-up with primary schools but rarely with secondary schools. Cited barriers include timetabling and the expense of getting to the museum.

In 2022/2023, Leeds Museums and Galleries delivered a school engagement project with funding from the Esmée Fairbairn Collections Fund. 'Dead Inspiring' was designed to connect with pre-A-level female and non-binary pupils in the hope that they would be more comfortable choosing science subjects after working with our entomology collections.

We delivered 37 entomology lessons to 830 pupils in Leeds over two school terms. 51% of pupils felt that they were more interested in pursuing science, STEM or entomology afterwards.

This presentation discusses the barriers to engaging secondary schools, how we overcame some of them and the successes and problems we faced during this project. Whilst we did benefit from project-funding, this talk discusses the practical and realistic ways museums can work with secondary schools, whatever the budget.

12.35 – 12.55 Discover our dioramas. *Su Hepburn: Brighton & Hove Museums / Booth Museum of Natural History*

The Booth Museum of Natural History in Brighton was awarded a £50,000 grant for a community project which has culminated in the creation of the first diorama in 92 years. The new diorama will provide scientific information for future generations and will provide a contrast to the wildlife experienced in the city in the past.

The diorama has been designed after a consultation period with our main audience – the under 10s and their families. Along this journey we have got to know our under 10s more and have found out what their thoughts and feelings are around the museum, wildlife and the climate emergency. This is now leading the displays, public programmes and collections work at the museum.

We have also run a year of public events, from pop up crafting to installing our own seasonal displays including a teddy bear's picnic.

We have also been funded by Rampion Windfarm for a new display 'Peopling the Booth' – stories about all the people past and present involved in the museum.

We would like to share:

- What our under 10s audiences are sharing with us
- How we engaged with the under 10s
- What changes we have made in response to their thoughts
- What has gone well and what hasn't
- How we are weaving our findings into our future work
- How we are addressing climate anxiety in children in the museum
- Being playful and joyful in our work and with the public

The museum showcases stuffed British birds collected by Edward Booth in the nineteenth century and displayed in dioramas he had made, the first known examples of birds displayed in recreations of their observed natural habitat and behaviour.

Third Session: **Collections moves**

14.30 – 14.50 Dust in the wind: how to design exhibits with an eye for upkeep.

Becky Desjardins: Naturalis Biodiversity Center

In 2019 Naturalis opened a new building filled with beautiful exhibits. Collection staff maintain these displays and the specimens therein, keeping them clean and in good repair. We would like to share what we have learned in the last 5 years to anyone planning new exhibits, from a small gallery space to a new building. Suggestions will include: best use of physical space, specimen selection and placement, location of power sockets, and lighting. In addition we will share our favourite products for cleaning and best techniques.

14.50 – 15.10 30,000 fossils in 8 days: From mammoth move to CMS integration – lessons for museum acquisitions. *Spyridoula Pappa: Natural History Museum, London*

In 2021, the Natural History Museum (NHM) was offered over 30,000 scientifically important and rare fossil mammal specimens, with associated documentation, from the Harrison Institute (Sevenoaks, Kent) and transfer to our stores in central London. The acquisition would ensure the safety and research accessibility of this important collection for future generations. With funding secured, how do you best plan the logistics of packing, moving and fully integrating so many specimens into the national collection? What are the limitations and how do you make the right decisions in a limited time?

This is one of the largest and most significantly important collections that the NHM Fossil Mammal collection has ever acquired, with national and international interest because it includes several types and many figured specimens from important UK and European sites, including SSSIs, dating to the Paleogene and Quaternary. There is great potential to involve this collection in future research projects and grant applications, as well as public engagement activities.

Several limitations had to be overcome during this mammoth project: limited time, limited space, specimen/environment-related issues, including pest and conservation issues such as mould and pyrite. Flexibility was needed to make the right decisions, with effective communication, backup plans and teaming up across the NHM and Harrison Institute. In 2023, the 30,000 specimens were swiftly packed, rapidly documented and transferred into the NHM in just eight days. Over 13,000 related

index cards have now been digitised, while narratives per site have been created and incorporated into the Collections Management System. This project provides a practical test case for the NHM as the entire process has been fully documented. In this talk, along with the results we present the project plans and workflows which can be used as a guide for other museums that are looking to acquire similar collections.

15.10 – 15.30 Behind the glass: Practical lessons from diorama deinstallation.

Anastasia van Gaver: Natural History Museum of Denmark

The Natural History Museum of Denmark is currently preparing a new exhibition building, featuring seven innovative galleries, with themes ranging from the rainforest to outer space. In conjunction to this major project, the Zoological Museum, opened in 1970, closed permanently to allow the conservation team to access the exhibition space. Fortunately, several of the taxidermy specimens from habitat dioramas in the museum were chosen for the new galleries. Last June, the dioramas containing these specimens were opened for the first time in decades: three dioramas of tropical forests (housing a rhinoceros, okapis, and orangutans), two dioramas of Arctic landscapes (featuring walruses and muskoxen), and one diorama of a bog (presenting cranes). Once the glass windows were removed, the conservation team was able to thoroughly document the dioramas before removing specimens.

Each diorama presented its own challenges, and this presentation will share the pitfalls and successes encountered during this project. During the first deinstallation attempts, the team lacked coordination, with members having varying expectations about the approach to be taken, resulting in unintended damage to specimens and habitat materials. The critical oversights were the failure to anticipate the weight of the specimens, the lack of space, and the concealed mounting systems.

However, amidst these challenges, notable successes emerged from the project, showcasing the positive outcomes of a collaborative and thorough approach. Collaboration with the digital team offered a unique opportunity to 3D scan the dioramas prior to deinstallation, complementing traditional conservation photographs and condition reports.

Fourth Session

15.50 – 16.45 Discussion panel

Trials and Triumphs: gallery redisplay projects from across the museum sector

Mark Carnall: Oxford University Museum of Natural History

Sara Merritt: Leeds Museums & Galleries

Tannis Davidson: Grant Museum of Zoology, UCL

Friday 19th April

First Session: [Sharing museum practices](#)

10.35 – 10.55 Surprising Steedman's successes (and a disappointing disaster).

Claire Smith: Cole Museum of Zoology, University of Reading

In the late 1980s, the rapid and unexpected disintegration of a number of fluid-preserved zoological specimens called the long-term preservation properties of phenoxetol-based methods into question. It has since been widely discredited, and current best practice is to remove it from fluid-preserved collections. Protocols for the preservation of marine invertebrates using propylene phenoxetol were developed by Hugh Steedman and G. Owen, beginning in the 1950s. By 1976 Steedman had

developed a fixation and preservation method focussed on plankton, and its use was adopted for a much wider range of organisms in museum collections.

At the Cole Museum of Zoology we have a number of specimens that were transferred to Steedman's Post-Fixation Preservative in the mid-1960s. A survey of our collection showed that the majority of these remain in surprisingly good condition, showing no signs of deterioration after more than sixty years. Some are in need of conservation work where they have become detached from their mountings, but only one of our Steedman's specimens has suffered an unexpected deterioration.

As part of my PhD research, I have been studying the effects of various commonly used museum preservation methods on the retention of colour. While Steedman's was not particularly successful in this regard, it did show a greater stability in recorded measurements of reflectance than the most commonly used preservatives, ethanol and formalin. Further investigation under the microscope suggests that Steedman's also causes less cell damage, particularly when compared with ethanol, but this study is ongoing. I have also been tracking down the conservation history of our Steedman's-preserved specimens, in the hope of understanding why so many remain successfully preserved where others have failed. It remains to be seen whether a version of Steedman's Post-Fixation Preservative could be brought safely back into use, but these early signs seem promising.

10.55 – 11.15 From microfossils to mammoths and everything in between – how do you measure 28 million specimens? *Katherine Hudson & Ellie Clark: Natural History Museum, London*

The Natural History Museum is embarking on one of the largest ever collections' moves – relocating approximately 28 million specimens to a new, purpose-built science and digitisation centre in Thames Valley Science Park, to ensure their safety and accessibility for future generations. But just how do you set about planning a move of such scale, and preparing the collections in question? The first goal was to measure the total volume and footprint of collections moving to the new facility, to facilitate space and storage planning.

Many questions arose, such as how exactly do you measure a cabinet and its contents? How do you assess how 'full' a drawer of fossil molluscs is? And how might this compare to how full a drawer of mammal skins is? All collections are different and come with their own individual storage requirements and nuances which must be taken into consideration when making such assessments. In addition, it was important to consider not only how collections are stored currently, but also how they might be stored more optimally.

Over several months, our team gathered data on furniture measurements, drawer and shelf occupancy or "fullness", as well as other details such as item type and specimen counts. Navigating the trials and triumphs of this survey work has led us to develop a comprehensive methodology for assessing collections' volume and footprint, which accounts for the current and ideal storage scenarios and the needs of different collections.

The resulting data was then used to calculate how much space collections currently occupy within their storage units (drawer, shelf, etc.), and how much additional space would be necessary to ensure specimens are stored according to their ideal storage requirements. Here, we present this methodology, along with the lessons learned, pitfalls, and edge cases we encountered during its development and execution.

11.15 – 11.35 Oh crumbs! Responding to a biscuit beetle infestation within the Economic Botany Collection at RBG, Kew. *Gayathri Anand and Erin Messenger: Royal Botanic Gardens, Kew*

This paper focuses on proactive measures taken in response to a pest outbreak within the context of a biocultural collection. In January 2023, the Economic Botany Collection (EBC) at Royal Botanic Gardens, Kew faced a daunting infestation of *Stegobium paniceum* (Biscuit Beetle). Home to over 100,000 plant and fungi-based objects, the EBC is a historic and interdisciplinary collection that includes archaeological, botanical, ethnographic and scientific material dating from 6,000 years ago to the present day. It provides insights into the human uses of plants and fungi and is regularly accessed, particularly for research and community projects.

The physical and operational risks posed by *Stegobium paniceum* to the EBC were severe and impacted around 14,000 objects. Exploring Kew's comprehensive response to the unexpected situation, this paper shares the perspectives of staff with generalist collections experience who had not previously developed and implemented immediate pest mitigation strategies. It sheds light on how the existing infrastructure was navigated for preventative conservation and how gaps were addressed. Involving the wider organisation of Kew, this task required engagement from stakeholders at all levels from senior colleagues to trusted volunteers and interdepartmental staff.

Through caring for the EBC's diverse collection of cultural and biological material, the experience proved to be a valuable learning curve for the team. This paper reflects on the skills, facilities, resources, and collaborative networks that evolved during Kew's emergency response, highlighting the key challenges and successes. The collective efforts not only contained the immediate threat but also initiated positive, enduring changes and improvements in Kew's approach to safeguarding its heritage collection. As a case study, it highlights the resilience and dedication of those across the sector who willingly come together in times of need.

Second Session: Decolonial practice and digital repatriation

11.55 – 12.15 Perspectives from an East African museum: natural history collections, colonial legacies and the potential of thematic approaches.

Charlotte Wood: University of Cambridge

This paper analyses how competing ideas about nature are constructed in natural history museums in Britain and Tanzania and highlights the advantages of thematic approaches to taxonomic collections. It centres the recent thematic Elephant Exhibition/Onyesho La Tembo at the Arusha Natural History Museum in Tanzania and compares this with the East African collections at the Natural History Museum in London and the Powell-Cotton Museum in Kent. By treating natural history collections as reflections of ways of thinking, this paper considers how the construction of nature relates to the perpetuation of intangible colonial legacies, most notably in the nature/culture divide. It demonstrates how processes of categorisation, classification and display are key to establishing the idea of a natural order, which, as revealed through comparison, is a contested and political claim. Drawing from Samuel Alberti's (2008) 'cultural cartography', the comparison aimed to cut across taxonomic categories to reveal the political and cultural undercurrents in these collections. The methods included critical discourse analysis of 186 museum label texts, 400 specimens on display and interviews with 14 curators and researchers. The Arusha National Natural History Museum showed how taxonomic hierarchies reproduce Eurocentric ideas about nature in East Africa, and alternatively, how thematic

approaches to collections management and display can intervene in the perpetuation of colonial legacies. By centring the cultural significance of elephants the museum was able to promote inclusive solutions to human-animal conflicts. The paper will show how integrating the cultural significance of species into the organisation of collections will practically contribute to bridging the nature/culture divide in both the construction of the meaning of nature and humanised approaches to its conservation.

12.15 – 12.35 Cetacean (re)sources at the Natural History Museum, London.

Sophia Nicolov and Richard Sabin: Natural History Museum, London

Under a pilot Arts and Humanities Research Council (AHRC) scheme supporting early career researchers in cultural and heritage institutions, Sophia Nicolov (ECR Research Fellow) is undertaking a project at the Natural History Museum, London, (NHM) exploring how British Empire and whaling contributed to the Cetacea collection. The Cetacea collection's links to imperial activities are relatively understudied and this represents an opportunity to work with it in novel ways. Focusing on Antarctic Exploration and imperial presence in the Southern Hemisphere, the project will uncover specimen acquisition histories of colonial exploration, territorial and administrative expansion, and whaling. At the project's core is working with NHM's Cetacea collection and close mentorship from Richard Sabin, Principal Curator, Mammals, and cetacean expert. It brings an environmental historian (Nicolov) together with a museum curator and scientific specialist (Sabin) to generate new perspectives from within. How might we make the most of these different skillsets, expertise and experiences coming together?

We reflect on how the AHRC scheme and also NHM and Sabin's approach to supporting the researcher enhances the collaborative potential of the fellowship. The innovative approaches expand the opportunities for: exchange and development of knowledge, skills and experience; research having practical application within a natural history collection and broader museum context; and developing interdisciplinary research and outputs. It offers ways for humanities researchers to develop new skills (e.g. 3D imaging) and understandings of the significances of natural history collections. It gives internal insights about how curators work, their breadth and scale of responsibilities, and how curation and research function in an overarching museum framework. The Fellow gains unparalleled insight into the collection and the unique knowledge that the Curator has developed. In turn, rigorous historical research is enriching the Curator's knowledge further about the origins of specimens, historical depletion and in identifying what collecting biases manifested.

12.35 – 12.55 SIGNIFY – recollecting Singapore's historical biodiversity digitally.

Lydia Gan Xinjie: Lee Kong Chian Natural History Museum, National University of Singapore

Singapore has deep-rooted ties with many countries in the field of natural history. The city-state (and its surrounding territorial islands) has been frequented by collectors, naturalists, and researchers for over two centuries. Through extensive biodiversity collecting, there are now specimens that originated from Singapore housed in museums worldwide. SIGNIFY (Singapore in Global Natural History Museums Information Facility), an initiative of the Lee Kong Chian Natural History Museum (LKCNHM) at the Faculty of Science, National University of Singapore, endeavours to trace the footsteps of these specimens held in custodian institutions. In collaboration with the relevant institutions, the project aims to collate, document, digitise and make available online approximately 10,000 historically important zoological specimens collected from Singapore over the last two centuries, with a focus on type specimens,

which serve as the exemplars from which species are described scientifically. All digitised material (including high-resolution images, accompanying metadata, and where possible, histories associated with it) will be readily accessible through the web platforms of partner institutions and the SIGNIFY website—thereby providing ‘anyone-anywhere-anytime’ access to these resources. Beyond enhancing the scientific value of collections, the project actively studies and shares about the history of the specimens (i.e., the events and/or people that made these collections possible, and how the materials found their way into the respective custodian institutions) with a wider audience. This maximises the potential and reach of historical specimens, through education and promoting understanding/appreciation for Singapore’s natural heritage.

Third Session: **Digitisation and data management**

13.45 – 14.05 DiSSCo UK: Unlocking the potential of UK Natural Science

Collections through digitisation. *Helen Hardy: Natural History Museum, London*

The Distributed System of Scientific Collections UK (DiSSCo UK) is the national plan to revolutionise how we share and use UK natural science collections, creating a distributed network that provides a step change in research infrastructure and collections impact. There are more than one billion natural science specimens worldwide, and some 10% of those are managed in the UK. They are the physical basis for understanding the natural world and our place in it. Making these collections digitally accessible is key to unlocking this potential.

We will share the latest progress on DiSSCo UK planning and funding, led by the Natural History Museum in collaboration with the Arts & Humanities Research Council as part of the UKRI infrastructure programme. We’ll discuss how this will offer opportunities for training, digitisation and data mobilisation for collections of all sizes across the UK. We will highlight the resources developed to date, including insights into the collections; training materials; economic impact research; and a UK data portal and data publishing tools (working with the Global Biodiversity Information Facility). We will discuss how the community can help to shape the programme as we develop the Treasury business case, and how together we can be much more than the sum of our parts.

14.05 - 14.25 Kew in the Digital Age. *Magda Steele: Royal Botanic Gardens, Kew*

The Royal Botanic Gardens Kew houses the world’s oldest purpose-built herbarium. The plant and fungi collections housed here contain around 8.5 million specimens, including over 95% of known vascular plant genera and 60% of described fungi. The herbarium and fungarium are an invaluable resource for botanical and mycological research, however the necessity of in-person visitation to view specimens can be limiting to research opportunities. To address this challenge, RGB Kew has embarked upon an ambitious large-scale digitisation project of these collections. By capturing high-resolution images and cataloguing data of specimens, we aim to provide global accessibility to this unique biological resource.

As we approach the half-way milestone of the project, we would like to provide an overview of our teams and share the challenges and solutions from the project so far. The strengths of the project lie in dedicated teams of specialists including photo imaging experts, curator-botanists/mycologists, quality assurance specialists and data managers. These teams work together in a series of interacting workflows to ensure optimal quality and productivity in their respective disciplines. Custom workflows have been tailored to suit the unique requirements of specific collections such as Orchids,

Palms and Fungi. The age and variety of specimens at Kew means that every new day brings new exceptions to each rule. Standardisation of image and data quality can prove tricky when navigating through historic collections, so perhaps the greatest strength of the Digitization Project is an agile and responsive team, always looking forwards and not back.

Currently over 2 million specimens stored at Kew have been fully digitised, and many lessons learned along the way. We hope that our example can help inform future large-scale digitisation efforts to come.

14.25 – 14.45 You've got what in your collection? (Or, a practical overview of the Latimer Core data standard). *Laurence Livermore: Natural History Museum, London* Museum specimen digitisation is happening worldwide, gaining pace and momentum with the development of new techniques and workflows. However, despite progress, the complete digitisation of museum collections remains a long-term goal due to the significant time and resources required. In the meantime, we need to be able to capture, share and publish information about our collections at a higher level. Amongst other objectives, this can help us to audit and manage our collections, make our holdings (digitised and undigitised) more discoverable, aid in publishing engaging narratives about our collections, and plan and measure progress in our curatorial and digitisation activities. Many past and present examples of these activities already exist, from the level of global aggregators like the Global Registry of Scientific Collections (GRSciColl) to local initiatives within individual institutions. However, there is no standard approach to capturing, defining and structuring this information, meaning that sharing and aggregating the data is difficult and effort is often duplicated.

To address this challenge, the Biodiversity Information Standards (TDWG) organisation has developed Latimer Core as a new data standard. Complementing existing specimen-level data standards like Darwin Core and the Access to Biological Collections Data (ABCD) Schema, its focus is on the standardised representation of information about groups of specimens. Depending on the use case, these groups might be the entire collection of an institution, thematic or historic collections, or even just the objects contained within individual drawers or cabinets.

This presentation will provide an overview of the Latimer Core standard, exploring some of its potential applications at global, national and institutional levels, and introducing proofs of concept demonstrating how Latimer Core could address some of our real-world challenges.