

# Long-time No See – Updates from the natural science collections community

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## **The Natural History Museum of Denmark: a new museum, new exhibitions and new collaborations**

### **Bethany Palumbo**

The Natural History Museum of Denmark, located in Copenhagen, is currently undergoing monumental change. A brand new museum site, located in the Botanical Gardens, is currently under construction with plans to open in late 2024. The new site will merge the existing museums (geology and zoology) and incorporate botanical collections into an exhibition space of approximately 7000 m<sup>2</sup>, with two underground levels and a magnificent glass dome. There are several exhibition streams currently in development, including Biodiversity, Human History and the Fundamentals of Life.

Part of this redevelopment is the creation of a new Conservation unit, responsible for the preparation and conservation of the hundreds of objects going on display. This includes historical museum collections but also new acquisitions and models. This presentation will give an overview of the new museum and discuss the varied work planned for the conservation unit over the next 2 years, including the development of new preparation methods.

## **Introducing the “IUGS Geocollection Subcommittee” – the new international body to represent geological collections.**

**Rachel Walcott**

The International Union of Geological Sciences (IUGS) has played an important role in the promotion and professional development of the geosciences – from providing formal definitions of geological time periods (IUGS - International Commission on Stratigraphy), and development of international data standards (IUGS Geoscience Information), to helping to develop the UNESCO led Global Geoparks Network scheme among many other activities. However, until recently there was little representation of geological collections, despite their great geoheritage, scientific, and cultural importance.

This gap in representation was closed in early 2022 with the formal launch of the IUGS Geocollection Subcommittee. I will introduce the key objectives of this subcommittee. This includes: 1) setting up a road map for the development of a collection designation scheme that will acknowledge the important geoheritage of specific specimens and collections, 2) developing a centralised resource for information on geocollections; and 3) developing a network to acquire and disseminate knowledge about geocollections.

## **It takes a village to fill a herbarium: how a small team can accomplish big things**

**Clare Booth-Downs**

The Royal Horticultural Society Herbarium (RHS), which holds approximately 150,000 specimens and associated collections, had outgrown its original storage space. This necessitated a move to a new larger herbarium, located in the Hilltop building, which opened at RHS Garden Wisley in June 2021.

Despite Brexit and Covid-19, a small team of herbarium staff worked alongside a specialist removals company to ensure the collections arrived intact into the new facility. The new building not only provided the room to expand the collection, but also to expand the team to include a tremendous group of volunteers, who were generously sponsored by the National Lottery Heritage Fund.

The addition of the volunteers has generated new workflows and enthusiasm across the team, as it will help the RHS to achieve ambitious growth of the collection in a way unachievable in the original

building. For the initial phase of the project five plant collectors and 10 specimen preparation volunteers were coached in collecting, colour charting, pressing and mounting of specimens. So successful has the project been over the past few months the RHS now have the impetus to expand the programme to two of our other gardens.

As one of the Herbarium Curators at the RHS' newly named 1851 Royal Commission Herbarium, the last 18 months have included the re-curation of the collection, packing and unpacking of boxes, testing for the migration to a new collections management database and looking for the specimen stories that would engage the public in the new exhibitions spaces.

Whilst working in a herbarium during a pandemic has certainly had its challenges, the camaraderie and commitment of the staff and volunteers has been an unexpected highlight. This talk is less about the safe relocation of the plants, as it is about the people who facilitated the move and how we are looking to the future with renewed vigour together.

### **Breathing New Life into Collections**

**Klara Scharnagl**

Natural history collections are in simultaneous disrepair and expansion around the world. Larger collections take up orphaned collections, but in the meantime support for collections and collections staff is dwindling. How can smaller groups of curators, collections managers, staff, volunteers and students find a way to breathe new life into collections to promote and preserve their importance for future generations? Here I share my experience with the Tucker Lichen collection at the University & Jepson Herbaria at Berkeley, which has included tracking down misplaced specimens, a massive digitizing effort, forming a volunteer cadre to help curate a backlog of unaccessioned specimens, and forming unique collaborations to help share our rich collections with both local and global communities. My main takeaway is that enthusiasm for natural history collections is out there - we just need to find a way to locate and harness it!

### **An Agate a Day Gets the Public Engaged**

**Emily Brown**

Introducing @ScottishAgates, National Museums Scotland's newest twitter account showcasing our extensive Scottish agate collection to the general public. Inspired by a flippant comment about how we had enough pretty agates to show one a day for a year, this account now delivers effective public engagement to new audiences while feeding into the Museum's digitisation strategy. With the increased expectation and demand for online content during various lockdowns, this project has been a fantastic way to share a beloved part of our collection that doesn't usually get seen and has also fed into other novel engagement methods.

### **Keeping the doors open (Virtually) – Natural Science events during lockdown. Changing the way we deliver public outreach events at Amgueddfa Cymru National Museum Wales.**

**Andrew Haycock**

The Department of Natural Sciences at Amgueddfa Cymru National Museum Wales (AC NMW) has run a very successful program of curator-led public outreach events for a number of years, on and off museum sites. This has included meet the curator events, hands-on displays, behind the scenes

collection tours, museum sleepovers and late opening events in partnership with local artists and musicians.

When Wales went into the first of several lockdowns during 2020 and 2021, our museum sites were closed, events cancelled, and most curators worked from home. As a result, it was impossible to deliver public outreach in the same way as we had before.

This talk will look at the work we did with our Events Department to continue delivering public outreach. Going online, we were able to deliver fantastic virtual events like 'Amazing Astronomy', 'Museum Sleepover - Outer Space from Home' and 'Nature on your doorstep'.

### **Crystal Model Collections in UK Museums**

**Peter Davidson**

This year (2022) has been declared the "Year of Mineralogy" by the International Mineralogical Association. 2022 was chosen as it marks the bicentenary of the death of Rene Just Haüy, one of the most important people in the history of mineralogy and, in particular, crystallography. His legacy for the history of our science cannot be understated but one of the most intriguing, long-lasting and recognisable are his sets of crystal models, usually of wood, which he created in and around 1801 to accompany his seminal work in mineralogy the *Traite de Mineralogie* in which he illustrated the crystallography of minerals with some beautiful line drawings. The models were made to give a 3D view of the 2d drawings as well as allowing for measurement of the interplanar angles. Haüy's models were not the first as twenty years earlier, Jean-Baptiste Louis Rome de Lisle another famous French mineralogist had created models in terra cotta to illustrate his own book on crystallography, but they were probably more influential and many makers across Europe began to produce sets of models in a variety of materials based on Haüy's system.

### **Connect-Conserve Cyswllt-Cadwreath Cymru - a new way of working together as conservators in Wales**

**Kate Andrew**

Connect-Conserve/ Cyswllt-Cadwreath Cymru is a new Community Interest Company (CIC) set up in the summer of 2021. The Covid pandemic has seen conservators often working alone and in very rural locations isolated and unsupported and frequently competing with each other or larger commercial conservation companies for work.

Dr Vicky Purewal started in the early days of Covid lockdown seeking out fellow local conservators in Wales, meeting for coffee, and visiting each other's workspaces. Being able to talk about life and businesses was invigorating and great relationships developed. However, she realised that when Covid fully retreated and normal working practice resumed, conservators could be in competition with each other. Every one had struggled in some way during lockdown but having developed a network and relationships, working together would allow individual conservators to be more supportive and stronger as a team.

The conversations also highlighted that collections had suffered during lockdown. Limited access to collections for staff meant that spaces and specimens had begun to moulder, a particular problem in Wales for small collection owning community groups.

The CIC structure we set up in October 2021 enables Accredited Conservators to work collaboratively and to therefore effectively tender for projects as a team. Any profits made can then be used to support smaller Welsh museums and community organisations with free collection care initiatives. Three of Connect-Conserve Cymru's four Directors are natural science conservators, two are long term SPNHC members, encouraged and supported in their early careers by knowledge sharing, exchange of ideas, enthusiasm and buzz of SPNHC meetings.

By January 2022, we had employed 8 conservators, undertaken 3 projects and appeared on prime time television on "David Attenborough and the Mammoth Graveyard". We are working with students and non-accredited conservators too, who are offered the opportunity to work alongside accredited conservators undertaking varied and interesting roles to broaden their experience and add to their portfolios. We actively support emerging professionals and those on the accreditation pathway and have already offered training and student placements.

### **Remote Volunteering: Publication Round-up**

**Nicole Volden**

The New Mexico Museum of Natural History and Science (NMMNHS) collections were closed to volunteers due to COVID-19 from March 2020 to November 2021. During much of that time, staff were working remotely. One of the big challenges staff faced was keeping our dedicated volunteers engaged. We saw an opportunity in Arctos, the database NMMNHS had recently migrated into. Arctos has an excellent framework for publications and citations (linked to identifications), and NMMNHS had not previously tracked citations. We designed a data entry spreadsheet for paleontology publications based on the Arctos bulkload format and ease of use for volunteers. We recruited a group of six volunteers who usually work in our paleontology preparation lab and collections. They received training on data entry over video conference before using the spreadsheets to enter citations and identifications from publication pdfs. The collections manager gathered publications by scouring digital archives, curator bibliographies, and Google Scholar. Volunteers read and entered approximately 900 publications. After data entry the collections manager checked the data and uploaded it to Arctos. Progress was tracked through an Arctos project page. Upload is currently 38% percent complete and by the end of upload we expect to have added at least 15,000 specimen citations and identifications. The project was very successful at keeping this group of volunteers engaged. All but one volunteer stayed with the project for the full ten-month duration, and all reported they enjoyed the work. Particularly they appreciated the opportunity to learn more about fossils by exploring paleontology literature and were thrilled when the literature discussed specimens they had interacted with during their volunteering.

### **Conservation and photogrammetry of subfossil Quaternary walrus (*Odobenus rosmarus*) from the Bay of Fundy, Canada**

**Dee Stubbs-Lee**

This presentation explores how the New Brunswick Museum, a small provincial museum, was able to successfully stabilize the waterlogged semi-fossilized remains of two Quaternary walrus dredged by scallop fishermen working in the Bay of Fundy using very simple, low-tech and accessible materials and methods. The specimens were first desalinated by gradual replacement of sea water with tap water, followed by a controlled and monitored slow drying process that took place over many months, using only minor surface consolidation where necessary at the end of the process. By using

this method, the museum avoided the problem of the dramatic spalling and disintegration upon drying so common among wet fossil specimens retrieved from salt water environments, while at the same time not precluding the possibility of future analytical testing of the specimens since they were not subject to irreversible immersion consolidation. Thus, the specimens remain useful to the museum for future exhibition and scientific research purposes. Partnering with St. Mary's University allowed for inexpensive detailed recording of the morphological details and creating of a 3D digital model through photogrammetry. The results of the project were published in the journal *Geological Curator* and presented virtually as a poster at the Symposium on Palaeontological Preparation and Conservation in 2021. It is our hope that other museums with limited resources will find this method to be a useful and practical way to preserve and record fragile marine faunal fossils in house.

### **Digitisation of the National Herbarium of Ireland (DBN)**

**Wuu Kuang Soh**

The National Herbarium (DBN) at the National Botanic Gardens of Ireland houses a growing collection of c. 600,000 specimens of plants and fungi from Ireland and around the world. The collection comprises of historical specimens collected between the early 1800s and the present day. The DBN collection is therefore important from the perspectives of cultural and natural heritage. It is a valuable resource for science and education, and for understanding the natural world. The specimen data provides records of spatial and temporal changes in the Irish flora. In 2021, a herbarium digitisation programme was established at DBN with an initial focus on digitising the Irish collection (c. 100,000 specimens) and specialised collections of historical importance (e.g. the Robert Brown and McNab herbaria). We created a viable digitisation workflow specific for DBN, modified from iDigBio recommendations. Our imaging station consists of a mirrorless interchangeable lens camera mounted on copy stand with LED lighting. This workflow enables specimens to be imaged at an average rate of 50 sheets per hour. Our future plan includes using crowdsourcing to transcribe specimen labels and subsequently making the data and images available online through a web-based collection management system (e.g. BRAHMS).

### **Updates on the Natural History Collections Club Network (NHCCN)**

**Kevin Krajcir**

Throughout 2020 and 2021, the Natural History Collections Club Network (NHCCN) was mostly dormant. Workshop and outreach plans for the network were put on hold in 2020, and in 2021 we started working toward bringing the network back together. Early that year, we reached out to network participants and found that some clubs were totally dormant, some were waiting to see what fall 2021 would bring, and a few were still going strong. We were able to send 22 students, 5 faculty members, and 4 curatorial staff members to virtual SPNHC 2021. After the annual meeting, we hosted an NHCCN workshop on Zoom. We have many exciting activities for our Arkansas State University (A-State) Natural History Collections Curation Club chapter, and we are hoping to create some collaborative experiences within the network. Already in 2022 we have hosted an herbarium specimen mounting workshop attended by 11 students, and we have scheduled a "DNA from specimens" show-and-tell panel, a fishes collection reshelving day, and a work day in the mammal and insect collections. A-State club members are already volunteering in collections after curator-directed trainings. In 2022, we plan to leverage renewed enthusiasm at A-State to reach out to network participants and offer support for those that wish to build back their clubs. We encourage

interested students and faculty sponsors to contact us so that we can grow the NHCCN.  
(<https://thenhccn.wixsite.com/nhccn>)

### **New focus and new audiences for the engagement programme at the Museum of Zoology during the pandemic and into the future**

**Rosalyn Wade**

As for all Museums, the Covid-19 lockdowns completely changed the way we could interact and engage with our audiences. In response, we shifted the focus of our work to engaging with the zoology on the doorstep, exploring how we could use online platforms to support our audiences in spending time in nature for its wellbeing benefits as well as providing safe learning opportunities during this difficult time. We developed a mix of livestreams and online resources, and strengthened relationships with other local organisations to plan and deliver outdoor activities. Even with a focus on local wildlife, our online activities extended our reach to a global audience, and the use of green spaces has given us new perspectives on how we use our collections in learning programmes. As we move back to more Museum-based activities, we are now working to keep this outdoor and online learning as a permanent aspect of our programming. In this talk, I will give a brief overview of our programming for the past two years, what we found worked well, and how we plan to incorporate this way of working into our upcoming work.

### **The ZooMu Initiative: Enhancing the Value of Zoo Collections to Advancing Biological Sciences by Bridging the Gap Between Zoos and Museum**

**Gregory Watkins-Colwell**

Like museums, zoos and aquariums hold a wealth of biological resources in their collections that are unique to these institutions. As modern zoological institutions transition from exhibits to conservation organizations, zoos are starting to focus on ways to enhance their contribution to the advancement of biological sciences. Driven by this need, in 2021 iDigBio hosted a 3-day workshop bringing together zoo and museum professionals and researchers in the larger scientific community to discuss plans for improved access to zoo collections and increased collaboration across institutions. Thus began the ZooMu initiative. These efforts catalyzed a much-needed discourse on the underutilization and appreciation for living and preserved collections and the tremendous capacity they hold for scientific research and biodiversity conservation. The similarities between traditional museums of natural history and living collections are numerous; including databases, archiving, biological sample collection and care, as well as the more obvious shared interests in biodiversity conservation and education. The cultures may differ, but zoos and museums share many goals. This presentation will summarize where things are now and what the next steps are.

### **Making Nature: Preventive Conservation and Sustainability Challenges in Contemporary Diorama Construction**

**Claire Dean**

As part of a recent refit of the Natural History Dome at Tullie House, we aimed to construct elements for a series of habitat dioramas from low-cost, conservation safe and sustainable materials. In this 5-minute talk, I'll share some insights from the making process, tips on using limited construction

materials, and stress the importance of a consideration of preventive conservation in natural science displays.

### **Curatorial handover in the time of Covid**

**Mike Rutherford**

Starting a new post can be an overwhelming time for a curator as they have to cope with learning new systems, new ways of working, unfamiliar databases, collection histories, which are the prized objects and so on, doing this whilst working from home during a pandemic adds a whole host of further issues. It is also a worrying time for the curator moving on, what will happen to the collections and displays that they have cared for over the last few years or even decades?

Fortunately my start at the Hunterian in March 2021 was made all the much easier by the steps taken by the departing curator and other colleagues and due to having a period of several months when the old and new curators could work side by side, hopefully alleviating the concerns of both. This short talk will examine the handover process with some hints and tips to make it easier for all involved, including how long a to-do list is too long, finding out who really gets things done and where to get a good coffee.

### **Exploring and Evolving: Bringing over a million specimens out of the shadows at the Cambridge University Herbarium (talk)**

**Lauren Gardiner**

Four years ago, I spoke at the NatSCA conference in Leeds, not long after becoming the first Curator of the Cambridge University Herbarium since the early 2010s, full of excitement about the volume of material in the collection and the significance of so many of its specimens (an estimated 50,000 types and 1,000 Darwin specimens turned out to be just the tip of the iceberg), but also some trepidation about the lack of staff or current research, teaching, or public engagement activity using the specimens, and the virtual non-existence of any kind of digital presence for the collection online. Even without the global pandemic, it's not been easy, but a lot of exciting things have been happening behind the scenes...

## **Poster Presentations**

### **Improving the Smithsonian National Museum of Natural History Collections Data Quality (poster)**

**Ducky Nguyen**

As part of our pandemic adjustments to staff being offsite, NMNH decided to focus on a large scale data quality project to improve discoverability and use for better alignment with FAIR data principles. In early 2020, the NMNH received internal funding for this deep dive to discover areas of improvement for the data and the infrastructure of our Collections Information System, plus updated guidelines for continued efforts to increase digitization and data migration of our collections. This initiative starts at the ground up with departmental data verification and cleanup projects, occurring in parallel with a top down pan-department data analysis and data standards working groups. This brief talk will discuss the successes and failures of the initiative and future plans to address deficiencies.



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## **Reimagining informatics at the National Museum of Natural History (NMNH)**

**Rebecca Snyder**

NMNH is in the process of revitalizing and reimagining informatics through the creation of the Informatics and Data Science Center (IDSC). IDSC will be a hub for informatics innovation for research and collections data at NMNH. Through IDSC we look to collaboratively answer the challenges presented by modern museum work like eDNA, shared authority data models, extended/digital specimens, alignment with FAIR and CARE principles, and beyond.

Our updated approach for informatics unifies core capacities, focuses on community and engagement, and strives for an innovative and flexible environment. New approaches to enhance and extend our data ecosystem and network of information will be needed both locally and globally to improve discoverability, use, and digital stewardship.

Rooting our foundation within our community is critical to the success of informatics and the new center. Using a Community of Practice model, we aim for broad engagement and sense of belonging for members of our local community and a clear way for members of the global community to connect and collaborate with us. We look forward to sharing this new development with the SPNHC community.

## **Curation and Digitization of the University of California Museum of Paleontology Cambrian and Ordovician collections: Insight into early animal evolution**

**Ashley Dineen**

At the University of California Museum of Paleontology (UCMP), we are currently working on rehousing, curating, and mobilizing our Cambrian and Ordovician (~541 to 445 mya) marine invertebrate collection via a Museums for America grant from the Institute of Museum and Library Services (IMLS). This collection records one of the most important intervals in life's history, providing insight into early animal evolution and the rapid diversification of life in the oceans. The Cambrian (541-485 mya) marks the time when most of the major groups of animals first appear in the fossil record, such as molluscs, echinoderms, arthropods, and brachiopods. As such, these fossils and their associated archival data represent an important scientific resource with incredible historical value, however much of the data is in danger of being lost due to deteriorating field tags and notes and lack of a digital catalog record to track the data. Our goals for this project are to: 1) rehouse specimens to improve their accessibility and prevent future deterioration; 2) create a digital record

for every specimen that captures both taxonomic and locality data for roughly 14,000 Cambrian and Ordovician marine invertebrates; 3) digitize archival records, photographs, and field notes that provide important context to the age and history of the specimens; 4) provide the scientific community and the public with this information and data online; and 5) use the collection and associated data to develop web content containing short highlights of Cambrian and Ordovician fauna for education and public outreach. Our overall aim is to preserve this historical and scientific collection and increase the integration and accessibility of the collections and associated data for both research and educational purposes. Overall, this unique and idiosyncratic collection of fossils provide vital clues for understanding how life originated in the oceans, while also adding to our understanding of how early life shaped the evolutionary and ecological context of our world today.

### **Celebrating an herbarium milestone: CONN's 200,000th databased specimen**

**Sarah Taylor**

The George Safford Torrey Herbarium at the University of Connecticut initiated a major effort to database its entire vascular plant herbarium in 2009 supported by an NSF Collection grant. A small army of over fifty undergraduate students digitized most of the specimens within the five-year grant period. Since the grant ended, the pace of digitization has been steady at about 5,000 specimens per year. We are looking forward to celebrating our milestone 200,000th databased specimen in early 2022. An undergraduate student conducting an independent study in the herbarium will collect, mount, and digitize a specimen of a native shrub (*Lindera benzoin* L. Blume, Lauraceae) for this honor. This milestone provides an opportunity to highlight the mission of the collection to the university community and to draw attention to the importance of student participation in documenting our native flora.

### **Musings of a paleontology community of practice at the Museum of Comparative Zoology**

**Christina Byrd**

Paleontology collections at Harvard University's Museum of Comparative Zoology (MCZ) are spread across three departments and have historically been managed in various ways. We established the All-Paleontology Working Group in June 2020 with the purpose of standardizing practices and strengthening collaboration across the Entomology (Fossil Insect), Invertebrate Paleontology, and Vertebrate Paleontology departments. Inspired by the Paleo Data Working Group (an interinstitutional community of practice associated with iDigBio), the Curatorial Associates of each department decided that the best way to make improvements to the database records was through the formation of an institutional community of practice. A community of practice consists of people who engage in a process of collective learning who share a concern or a passion for something they do and learn how to do it better as they interact (Wenger-Trayner, 2015). This group was formed from a need to clean and georeference specimen collecting locality data, to share knowledge and resources, and to build connections with departments who can contribute to the goals of the group.

### **Symbionts with Secrets: What We Have Learned from Avian Feather Mites**

**Kevin Krajcir**

In the Boves Lab at Arkansas State University, USA, we have continued to develop our studies of feather mites (Arachnida: Acariformes: Analgoidea and Pterolichoidea) associated with passerine

bird hosts. By collecting mites from birds in the field primarily during the host breeding season and migration, we have been able to describe new feather mite species, explore aspects of their life history (e.g., life span, diet), and assess their symbiotic relationships with their hosts (e.g., associations, consequences on hosts). We have used wet, slide-mounted, and living feather mite collections as well as host specimens to conduct our research projects. This work has allowed us to explore this symbiosis at multiple levels, including the individual (e.g., feather mites' relation to host condition/physiology, contextual mediation of mite abundance), population (e.g., mite evolution and speciation), and species (e.g., mite-host associations and host specificity) levels. Our studies provide insight into the mechanisms underlying the feather mite-bird symbiosis, as well as other symbioses involving tightly associated organisms more generally.