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How to change vergency by urging divergency to inspire urgency in a climate emergency: A reflective account of using museum engagement and natural science collections to raise awareness of the biodiversity crisis and climate change

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Abstract

Over the last two years, Tullie House Museum and Art Gallery's Natural Science collections have undergone a large amount of cataloguing, in-house conservation, repacking, and relocation, allowing museum staff to use specimens to engage a diverse range of people, including professionals, young adults, and primary school children in a wave of projects, gallery updates and exhibitions. By combining museum learning and expertise, we explored new ways to work collaboratively with different audiences, using the collection to inspire visitors to learn about the biodiversity crisis and climate change on a local and international level and feel confident to make an impact in their own lives. This paper provides a reflection of our practise through case studies, successes, and learnings, and considers how museums can act as a platform to inspire a desire to change the world.

Keywords: Tullie House Museum and Art Gallery; climate change; biodiversity loss; engagement; natural history collections

Introduction

Sitting just below the border of England and Scotland, Tullie House Museum and Art Gallery, established in 1893, is nestled in the heart of Carlisle's cultural quarter, actively representing the Cumbrian identity and local biodiversity through collections of Fine and Decorative Art, Archaeology, Social History and Natural Science, (Tullie, 2023). Whilst the Archaeology and Social History collections document people from Carlisle and Cumbria across Prehistory, Roman, Viking, Medieval and contemporary objects, the fine art collections encompass nearly 5,000 objects, primarily British paintings, and works by local artists (Jackson, 2020).

Cumbria is a significant area for wildlife conservation, supporting 24 priority habitats (Eweda and Frost, 2014), including 84% of English willow heath and montane environments; important for RSPB red-listed species such as Dotterel (*Charadrius morinellus*, Linnaeus 1758) and Golden eagle (*Aquila chrysaetos*, Linnaeus 1758) (JNCC, 2019). Nearby translocations of the latter to the South of Scotland (Barlow, 2022) sparking hope that *A. chrysaetos* may return to breed in the area, which was the last nesting ground of the eagle before it became extinct in England, (RSPB, 2016). The county supports 278 geological and biological Sites of Special Scientific Interest (SSSIs),



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more than any other English county (Natural England, 2021), and the Lake District UNESCO World Heritage Site owes its beauty both to the county's biodiversity and geodiversity.

In 1902, the museum established what may have been the first biological records centre (Sellers and Hewitt, 2020), which is now Cumbria Biodiversity Data Centre (CBDC), who work in close partnership with the Tullie House Museum and Art Gallery collections (CBDC, 2017). CBDC holds around 3,000,000 archival wildlife records dating back to 1512, and continues to be hosted by the museum (CBDC, 2023).

The significance of the rich local area and close acquaintance with prominent naturalists and organisations have made the specimens within the natural science collections at Tullie House Museum and Art Gallery an invaluable resource, providing a snapshot of Cumbrian natural history. The collection consists of approximately 350,000 specimens dating back to the 18th century, including noteworthy examples of vertebrate zoology, entomology, and geology. The collection received Arts Council designation status in 2018; an acknowledgement of the outstanding quality of the collection and its position to support research and understanding of biodiversity and geodiversity in Cumbria and the wider area (Jackson, 2020). Of great significance is the Cumbrian focus of the collection, representing both the historic changing environment, and activity of prominent local naturalists, intrinsically connected Carlisle Natural History Society, (CNHS, 2024).

Wild Ways: Cumbrian Biodiversity Gallery

In 2022, the Natural Science gallery underwent a small-scale refurbishment to allow freezing of specimens which had been on display for thirty years. This was planned to work towards the museum's phased capital development, a rolling programme of work which began in 2021 with the opening of the Costume Collection gallery and aims to subsequently redisplay all of the museum galleries to a high standard over the next decade, (Tullie, 2024).

A key part of this redisplay was to honour the previous, much-loved diorama scenes, which celebrated key habitats found across Cumbria, including the Lake District Fells and North Pennines, local rivers, peatlands, and the Solway Firth. Through visitor interaction, feedback, and some audience co-curation, favoured specimens and display styles were established. The gallery was redesigned with a traditional twist, using archival-grade dioramas and a focus on the active

work and conservation across the county. This was a successful way to link stories such as regional extinctions, reintroductions, habitat management, careers, diversity in nature, climate change and the importance of natural science collections. The reinvigoration and reinterpretation of the displays recognised the role of dioramas as 'unique and essential learning tools for biological education for all' (Scheerso and Tunnicliffe, 2015, p1). The displays are complemented with accessibility considerations, tactile areas, interactive cases, and lighting changes to increase synergetic input between visitors and cases. The experience of tactile displays in museums can foster greater diversity of visitor perception, (Weisen, 2008), whilst supporting some SEND, blind, and partially blind visitors as well, (Davidson, Heald, and Hein, 1991; Fuadianti *et al.*, 2020).

To reduce environmental impact as much as possible, the team reused scraps and offcuts of archival materials, printed panels on recyclable cardboard and repurposed old panels. We found, as expected, that exploring innovative ways to reuse materials was essential in reducing waste (Ki Culture, 2021). The team considered sustainability when sourcing materials for the displays, by investigating the environmental footprint and archival suitability of different products, exploring the carbon footprint of suppliers, reusing, and repurposing existing display furniture and materials, and avoiding purchases that included single-use plastics in their contents or packaging. The project was able to move away from foamboard panels, instead printing on Falconboard corrugated cardboard which is both long-lasting and recyclable. Old foamboard panels were repurposed as separators for stored paintings and for crafts. This was then implemented throughout the museum, in both permanent galleries and temporary exhibitions, significantly reducing our waste. Key topics such as local biodiversity, climate change, accessibility, and diversity in inspiring and positive ways, were communicated throughout, which have led to invigorating conversations with Gallery Engagers and the public.

Whale Tales: The Story of Driggsby

Driggsby, Tullie House Museum and Art Gallery's articulated juvenile Fin whale (*Balaenoptera physalus*, Linnaeus 1758) skeleton (CALMG:2016.70), was initially washed up on a Cumbrian beach in 2014, and subsequently acquired and processed by the museum (Jackson and Larkin, 2018). It was named by public vote and can be viewed in the museum reception area.

A two-year NHLF funded project surrounding the whale and ocean pollution extended over the course of the COVID-19 pandemic and resulted in an exhibition, storybook and stop-motion animation. Over 150 Key Stage 1 children wrote a story, navigating the sea with Driggsby before exploring her untimely demise, creating characters like the “golden shark” and the “plastic monster” to come to terms with Driggsby’s untimely demise in a way that they could process and emotive with. The children took part in beach cleans, learned about pollution, lead on the stop-motion animation, and created their own artwork which was displayed in the exhibition and brought to life by volunteers who created large, plush versions of some of the children’s characters. Feedback from the schools showed a significant increase in reading level as well as improved awareness of reducing waste, reusing materials and recycling, with increased respect for nature, which was consequently imparted on to families, friends, and schools. We found that the length of time given to this was highly beneficial, and that we were not to underestimate the children’s comprehension of, or engagement with, the topic. As was noted of school children in Bristol by Gladstone and Pearl, children ‘expected the museum to raise its voice for nature’ (2022, p53), and the power of the resulting exhibition which empowered both the voices of Key Stage 1 children and young people through protest placards in the spirit of demonstration and positive change.

Across both the project and exhibition, we found that addressing environmental issues with primary school audiences required the inspiration of passion and emotion, which was dependent on collections engagement. As Carnall *et al.* writes, ‘[museums] must confront issues around difficult subjects such as the human impact on the natural world, the ethics of collectionS and collecting, biological conservation, and extinction. One way to do this is to break with the traditional empirical, authoritative and apolitical conventions of museum interpretation’ (2013, p55). Whilst the Fin whale specimen is mounted and installed high up in the museum atrium, there are bones from the left-side not included in the display, which we were able to bring out of the store to demonstrate the huge scale of these animals, as well as start to create emotive connections with the whale as a once-living being. Other marine collections supported this work, enabling object handling, story-telling, and creative projects inspired by seeing specimens up close.

It was important to empower the children’s voices and give them the freedom to lead aspects of the

project, whilst harnessing their artwork and creativity to overcome barriers to displaying difficult topics like this. Beach cleans and physical activities bestowed a clearer understanding and helped maintain positivity and the power to make a difference as an individual or group.

Once Upon a Planet

Once Upon a Planet (Tullie, 2022) was an ambitious and multi-faceted project, funded by the museums Association Esmée Fairbairn Collections Fund. It involved two years of co-curated work with communities, schools, exhibition, and collections care focusing on climate change and biodiversity, driven by young people to significantly grow our engagement with this age group currently under-represented in the museum. To ensure that this was going to have meaningful engagement, our existing Young Producer group was consulted to contribute their thoughts to the funding application. Knowing that museums have the power to use natural science collections to highlight local problems with reputable knowledge (Steele, 2018), it was essential to empower project stakeholders to contribute to the divisions of the project, outlined below.

Research

In the initial stages of project planning, student placement, Fiona Bower from Lancaster University Centre for Global Eco-Innovation, conducted her own research into the carbon footprint of Carlisle and the area around the museum. She collated and created infographics containing Cumbrian-specific information around climate change and sustainability, and explored ways of communicating these topics, as well as conducting research into sustainable display materials. This data was then used to communicate key facts in the Once Upon a Planet exhibition, including changes in local weather events, agricultural viability, and regional species loss, (Bower, 2021). Bower’s work also helped to advise how we as an organisation could reduce our emissions. The museum envisions a future student placement opportunity to explore museum environmental conditions and the effect of existing systems like double doors and their correlation to pest activity and environmental readings, further reducing our carbon footprint whilst maintaining suitable conditions for collections display and storage.

Young Advisors

A key aspect of the project was our work with voluntary Young Advisors, overseen by a paid “Assistant Young People Producer” post. We

attracted ten people between the ages of 16-24, through schools, universities, careers events and social media, who met on a weekly basis to discuss environmental issues and work on the project (Figure 1). These were carried out through a variety of group-led activities including store tours exploring specimens linked to Cumbrian biodiversity loss, training opportunities (for example, a Climate Museum UK course and collections management training), evening catch-up sessions with pizza and drinks, and creative workshops. Recruitment included taster sessions, an information evening, and a simple application process supported by the Assistant Young People Producer. The Young Advisors were also given the opportunity to visit Natural England National Nature Reserves, exploring local priority habitats and associated biodiversity with Reserve Managers, followed by artist-led workshops to create artwork and exhibition interpretation in response to their experiences. Additionally, the group were given transport to neighbouring museums, such as the Great North Museum and National Museums Scotland, to learn about how the topics of climate change and biodiversity loss were approached in other heritage organisations. Allocating project funding to provide transport and training, and meeting at flexible timings including evenings and weekends helped to remove barriers to accessibility which we were told by the group, would impact their ability to contribute due to their studies, work, and financial situations.

The young people were given the opportunity to feel ownership over the collections, by shortlisting collections for the exhibition and writing their own interpretation labels and panels for their chosen specimens, depending on their desired areas of development. They also created interactives and family activities for the displays, which included visitor feedback stations, climate pledge areas, and protest placard crafts; communications from which were collated and included in the project evaluation. Time and budget meant we were not able to provide interpretation training, and in retrospect this would have been very useful to support the Young Advisors and reduce the curatorial time required to fact-check and edit the labels.

On the completion of the exhibition, the Young Advisors were given the support, budget, and resources to host “Wild Futures”, a youth conservation convention at the museum, aimed at young people interested in conservation, biodiversity, and sustainability. The event gave the Young Advisors experience of event planning and management, whilst creating an exciting new opportunity for networking, information sharing, and careers advice for both the delegates and organisers.

An important concept was to continue to work with the Young Advisors and listen to their feedback past the project’s end; those interested were offered a further flexible project exploring



Figure 1. Members of the Once Upon a Planet Young Advisor group examine *Sphagnum* mosses at Wedholme Flow lowland raised bog, part of the South Solway Mosses National Nature Reserve on the Solway Coast AONB, North Cumbria. Image copyright Tullie House Museum & Art Gallery.

urban habitat connectivity and wildlife corridors in and around the museum garden, with opportunities for training and research centred around species recording and beneficial planting and garden design for species recorded in the area, to report to the museum's senior team for consideration in the capital redevelopment project. The aim of this opportunity was to continue to support relationships between the Young Advisors, Tullie House Museum and Art Gallery, and CBDC, with potential for dissertation projects and work experience to further engage and prepare the young adults for work in the museum sector and natural sciences.

Meetings were planned to fit around education and jobs, as most of those involved were studying in some capacity. It was important to provide support and reflection through social sessions, creative opportunities, and positive, hopeful approaches to the work, in consideration of the potential effects on wellbeing around a frustrating and worrying topic (Manning and Clayton, 2018).

There were varied levels of input from the young people, and that some of this needed closer management to ensure every individual had the same control over the project. The budget and time limitations surrounding the exhibition meant cuts in display materials; not all of the project work and chosen specimens were able to be included, which could have been communicated and managed better with the exhibitions team alongside managing expectations from the initial stages.

Feedback from in-person group discussions, surveys, and 1:1 informal chats was gathered, and a range of evaluation methods to support all learning styles were assessed. Reflective findings showed that the convention, creative opportunities, and trips were particularly appreciated and led to further engagement and empowerment of the Young Advisors. Some Young Advisors became volunteers in the collections, some found paid work in wildlife conservation, whilst others transferred to our Young Producer team to stay on past the end of the project. The Wild Futures convention is planned to repeat next year and has created good relationships between the Young Advisors, Cumbria Biodiversity Data Centre, Carlisle Natural History Society and local conservation organisations.

The project has given us the confidence to work closely with young people in all stages of planning, development, and delivery in other areas of the museum, ensuring that the museum is a platform

for young people to co-create future projects and have their voices heard.

Exhibition

The exhibition ran over the summer quarter in 2022, themed around deep time, local habitats, biodiversity, extinction, and a call to action. Displays were co-curated and co-produced between Sustainable Carlisle, Natural England, Young Advisors and Heathlands, a local charity supporting disabled and neurodiverse individuals to access natural spaces. The partners were involved in using a mixture of art, science, and Natural Science collections to support each area. A wall of the exhibition space was given over to Angry Dan of Blank Wall Assassins, who created a thought-provoking piece of street-art, which led to street art workshops and exploration of environmental activism. The artwork was interpreted using digital videos and text, supported by artist-led talks, school sessions, and linked craft activities.

Staff were keen to confront barriers to accessibility in the space, and took advice from Cumbria Deaf Association to create videos in British Sign Language (BSL), as well as closed captioning and BSL interpretation on digital aspects of the exhibition. An Impacts and Insights visitor survey suggested a significant increase in audience understanding and awareness around climate change following a visit to the exhibition.

Schools

Research has shown the substantial educational value of engagement with natural history collections in museums (Gkouskou and Tunnicliffe, 2017) and with outdoor learning opportunities (Prince, 2019). It was important for this aspect of the project to combine both collections and outdoor education with creative activities to intensify the children's learning and engagement. Three county schools of varying location, size, and socio-economic background were invited to participate in the project, working with Key Stage 2 classes from each organisation. The schools were chosen based on their locality to National Nature Reserves, diversity from each other, and prioritised if the museum had not engaged with the groups previously.

The programme started with an introductory assembly, during which the Biodiversity Curator and Learning Officer visited the classes to discuss the project and start the children thinking about biodiversity, connectivity, habitats, and climate change. Museum specimens and handling

collections were taken to the schools for this outreach, and the physical act of touching the specimens was a popular aspect of the session.

The children visited their closest Natural England National Nature Reserve led by museum staff and the Senior Reserve Manager, with each school focusing on a specific habitat type linked to their local area (Figure 2). These were lowland raised bog, upland hay meadow, and semi-natural woodland. The museum then hosted each school on site, where they created posters to display on the reserves, explored artwork techniques supported by a local, upcoming young artist, created stop-motion animations, and engaged with both stored and displayed collections through play, art, and poetry to create an emotional connection with our regional biodiversity. Taxidermy, osteology, and botany specimens were brought out as reference and inspiration for the artwork, and to support the learning around each species. The museum was also able to facilitate a minibeast hunt in the museum gardens, where the children learned how to carefully handle insects and other terrestrial invertebrates and discover how to use reference materials to identify the animals they came across.

At the end of the year, the schools came together back at the museum to share their learning and celebrate the project. They gave fantastic presentations to each other on their habitats and projects, created soundscapes, chose relevant specimens for their own case in the gallery and decided on how they should be displayed from what they had learned about the species and habitat. They helped create a printed magazine, which was given to each student, summarising the project, recapping the learnings, and showcasing the artwork, writing, and adventures that they had created.

This aspect of the project has built and maintained new relationships and has a legacy of further engagement between the schools, museum, and Natural England. Working with children can successfully influence communities as a whole, (Vaughan *et al.*, 2003), and witnessed the ripple effect of children involved in the project passing this new-found passion and advocacy on to family, friends, and wider schools.

Communities

The museums' "Secret Garden" space (a private



Figure 2. Year 5 take core samples and learn about the species present at Bolton Fell Moss National Nature Reserve in Carlisle, Cumbria, to understand the importance of the lowland raised bog habitat. Image copyright Tullie House Museum & Art Gallery.

green space behind the museum) was used to host art workshops and planting for our local refugee communities. This provided an incredible insight into their experiences, languages, and the biodiversity of their homelands. A key aim was to increase the access and display of our herbarium specimens, which are not currently on permanent display due to environmental requirements. The museum also wanted to explore ways of creating tactile examples of these specimens to improve accessibility in the gallery. The "Unearthed" exhibition by Amy Williams at Blackwell Arts & Crafts House (Lakeland Arts, 2023) was visited as a study trip, to think creatively about adding colour and definition through art to support pressed flowering plants.

The museum also hosted Heathlands, a charity enhancing wellbeing and health through supported daytime opportunities across the county and explored some of the stored plant collections with them, from fossil ferns to modern herbarium volumes. This was another way of engaging new audiences with the collections.

Collections Care

Part of the project allowed budget for collections care and a new curatorial project support post. This has allowed for considerably more work to be undertaken with the Natural Science collection including outreach and documentation, as well as the purchase of three new cabinets to replace unsuitable, detrimental shelving in our stores. Staff training has also been included, which demonstrates investment and the importance of the expertise.

Climate Museum UK

In partnership with Climate Museum UK, staff underwent workshops and training focusing on climate change and sustainability in a museum setting. The museum also hosted a young, local artist, Megan Bowyer, as Climate Museum UK Young Associate, to create a display inspired by the collection, exploring human interaction with nature and the archival nature of museums.

Evaluation

It was found that time and communication were the largest barriers, likely because it was spread across different departments and very multi-faceted. Evaluating throughout, and being adaptable were key to the success, and it was inspiring to watch young people gain confidence and take their experience forward, children grow in their passion and protectiveness of the environment and our local communities interact with and find inspiration from the collection. Once Upon a Planet was

nominated for Museums + Heritage Awards Sustainable Project of the Year, and won the Kids in Museums Youth Climate Project Award.

Art Fund: Wild Escape

Funded by the Art Fund, the museum were able to host two weeks of "Big Nature Takeover" activities through the Easter holidays, including a collections trail, talks and handling sessions. Specimens of petrology, mineralogy, palaeontology, taxidermy, entomology, osteology, and botany supported the events through handling, illustrative reference, and demonstration. This culminated in a "Party for the Planet" event on Earth Day 2023, where the activities focused on sustainable crafts, activities, talks, and workshops around biodiversity and climate change. These workshops allowed visitors to engage with stored collections, and allowed us to offer a high standard of free, accessible activities to visitors along with a positive and actionable outlook.

Our future

As the museum capital redevelopment progresses, staff are exploring feasibility for a heat source pump to reduce our environmental impact, along with other opportunities to integrate sustainability and ethics into our future work. The staff aim to preserve, use, and grow our collections, developing them in a way that represents the county and the impact of climate change on our native species, which will inform crucial future research.

Tullie House Museum and Art Gallery will continue to advocate for local biodiversity and maintain partnerships and relationships, taking an active stance in the protection, representation, and conservation of Cumbrian wildlife through communication, representation, and advocacy. Most of all, staff will continue to learn, listen and keep emboldening our stakeholders, to give a thorough understanding of climate change and biodiversity, along with the power to actively make a difference.

Conclusion

The curatorial input has been enormous, but the resulting levels of engagement have proved the effort worthwhile. The projects have worked with motivated people and maximised the potential of the collections in our care, to inspire a passion for the natural world and the energy and enthusiasm needed to help in protecting it.

Overall, school projects benefitted from longer input periods, opportunities for collections

handling, and learning across outdoor spaces and classroom environments. It was observed that young adults were empowered by being given a platform to advocate and lead on the subjects they were passionate about but required motivation and support to do so. Financial incentives, provision of food, and the exchange of training and trips in return for Young Advisor input were key in this success, as well as the paid role of a young person to lead on this aspect of the project. A climate-themed exhibition was well received when reinforced with underpinning knowledge and achievable actions for visitors to take away. A key finding across all of the aforementioned projects was that the opportunity to utilise specimens both in museum displays and as supporting resources for handling, demonstrating, and observing was a valuable tool to engage all of the different groups. It was noted increased emotive connections when people were able to handle specimens, and significantly higher levels of engagement when collections were available to examine within <1 m distance.

As a result, Tullie House museum and Art Gallery aims to continue to harness creativity, co-production, and sustainable thinking to preserve and grow the collection and inspire a long-standing passion for biodiversity, where engagement with natural science collections will sit at the forefront of displays, events, exhibitions, and collaborative practise with audiences of differing ages and backgrounds.

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