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# The FISH (Fossils In SHropshire) project at Ludlow: digitising a superb regional geology collection

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## Introduction to the project

In 2015, The Friends of Ludlow Museum were successful in achieving a £250,000 award from Libor fines to support the digitisation of the geology collection held at the Ludlow Museum Resource Centre. Funding is being administered by the Natural History Museum and the project is being delivered by a team of volunteers and three museum consultants reporting to a project board led by the Friends of Ludlow Museum.

Ludlow Museum was first established in 1833 and Shrewsbury Museum in 1836 so there is a long history of collecting in the county.



Ludlow Library and Museum Resource Centre seen from the Tower of St Lawrence's Church. Opened in 2003, the library occupies the right

In 2014, the Shrewsbury reference collections were moved to Ludlow following an earlier merger of the museum services and the creation of the new museum exhibition space in The Music Hall in Shrewsbury.

By 2015, local authority austerity cuts had resulted in a

total loss of museum staff at Ludlow, curatorial support for the entire county reduced to one person and a threat closure of the Museum Resource Centre site by April 2016.

Museum support groups were anxious that some form of access to the collections should be maintained and as a result, the Friends of Ludlow Museum put together a proposal for a collections digitisation project which, with the support of the local MP Philip Dunne, achieved funding.

Material from Shrewsbury was not fully integrated but known strengths of the combined geology collection included:

Shropshire ore field minerals

The Ludlow bone bed material (the original Silurian/ Devonian marker horizon) and lots of fossil fish

The Grinshill Rhyoncosaur material

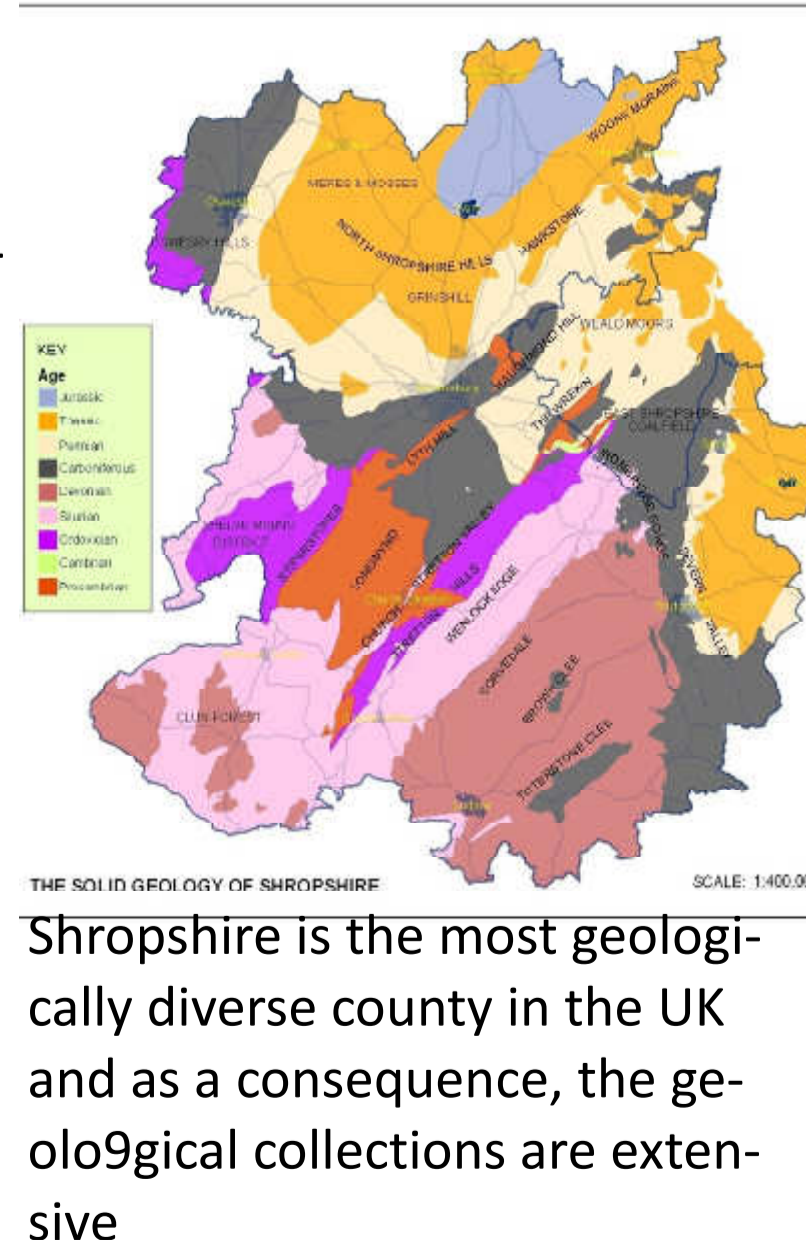
The Condover Mammoth (youngest mammoths in western Europe)



## Approaching digitisation

Work started in April 2016 and at this point, we had several unknowns which made planning the project tricky:

- How big is the collection
- What is in the collection
- What merits digitisation
- Might the collection contain Shropshire's equivalent of the conodont animal
- What is the best way to digitise this sort of material
- Does material require conservation
- What sort of collection management tasks are needed
- Where will the digital images be made accessible
- How long will access be possible to the collection
- Will people be willing to volunteer to help
- What are the best options for hardware and software
- Best prices for the equipment
- How much of the original LNHS collection is at the Natural History Museum



THE SOLE IN GREEN DIVISION OF SHROPSHIRE SCALE: 1:400,000  
 Shropshire is the most geologically diverse county in the UK and as a consequence, the geological collections are extensive

## Sampled survey

Our first activity was to devise a collections assessment spread sheet and commence a 1 in 10 container survey of the collection. Once this was nearing completion, this was extended to a drawer by drawer inspection of the entire collection using the same spread sheet. Coloured paper slips were added to specimen containers to indicate which required photography.



Surveying the collections onto an excel spread sheet



Three months into the project, we had established:

The size of the collection (40,000 specimens)

10% of the collection would merit good quality digital images

Approx 400 items merited 3D models

A considerable number of specimens already have lower quality images, but these were not attached to the collections database

30% of Ludlow material has only entry level data

The Shrewsbury collection needed to be incorporated into the collection

Specialist help needed to spot misidentified and unusual material

The LMRC would remain open until at least April 2018

At least 10 people were interested in volunteering



Incorporating material transferred from Shrewsbury Museum in brown boxes into the collection drawers took about 2 weeks of work

Originally we had planned to purchase a hand-held 3D scanner, but after testing various options with John Sears, our digital mentor (right) we decided that stitching images using software or borrowing a small NextEngine 3D scanner was more effective for this collection. The cost saving would allow more time to be spent on the project and hence more content to be created.

We also attended the SPNHC meeting in Berlin to find out about international museum digitisation projects.

## Our hardware and software selections

- Canon 5d SLR cameras and lenses
- Two copy stands to hold two different set ups for smaller and larger specimens
- LED light units
- Gorilla pod mini tripods for manipulating lights
- Small fabric cubes and card reflectors for lighting effects
- Polarising filters to reduce reflections from mica grains
- Mini spirit levels to ensure specimens are level
- Grey and colour scale bar
- Stackshot automated system to allow multiple images to be taken and thus achieve focus across the depth of the object
- Capturing images as RAW files
- High specification gaming laptops with large graphics cards
- Photoshop Pro to cut out images from background, add standard scale bars, edit grid references on attached labels to 4 figure only
- Agisoft Photoscan software to stitch multiple images into 3D models
- Storage of files on 12Tb mirrored Nas Drive

## Testing digitisation approaches

We spoke to the museums who had participated in the GB3D project led by the British Geological Survey, visited the NHM to look at their digitisation experiments and thanks to support from an MDO scheme, worked with John Sears to test a number of techniques and approaches to capture and process digital images.

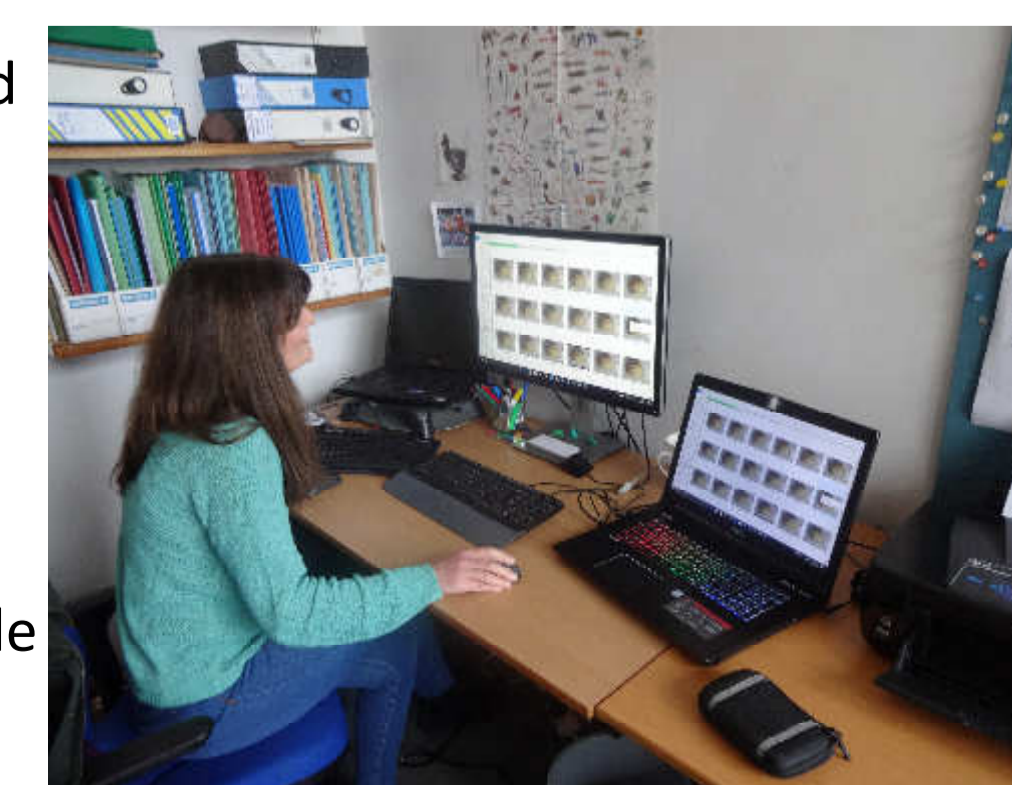


Above: Daniel photographing specimens

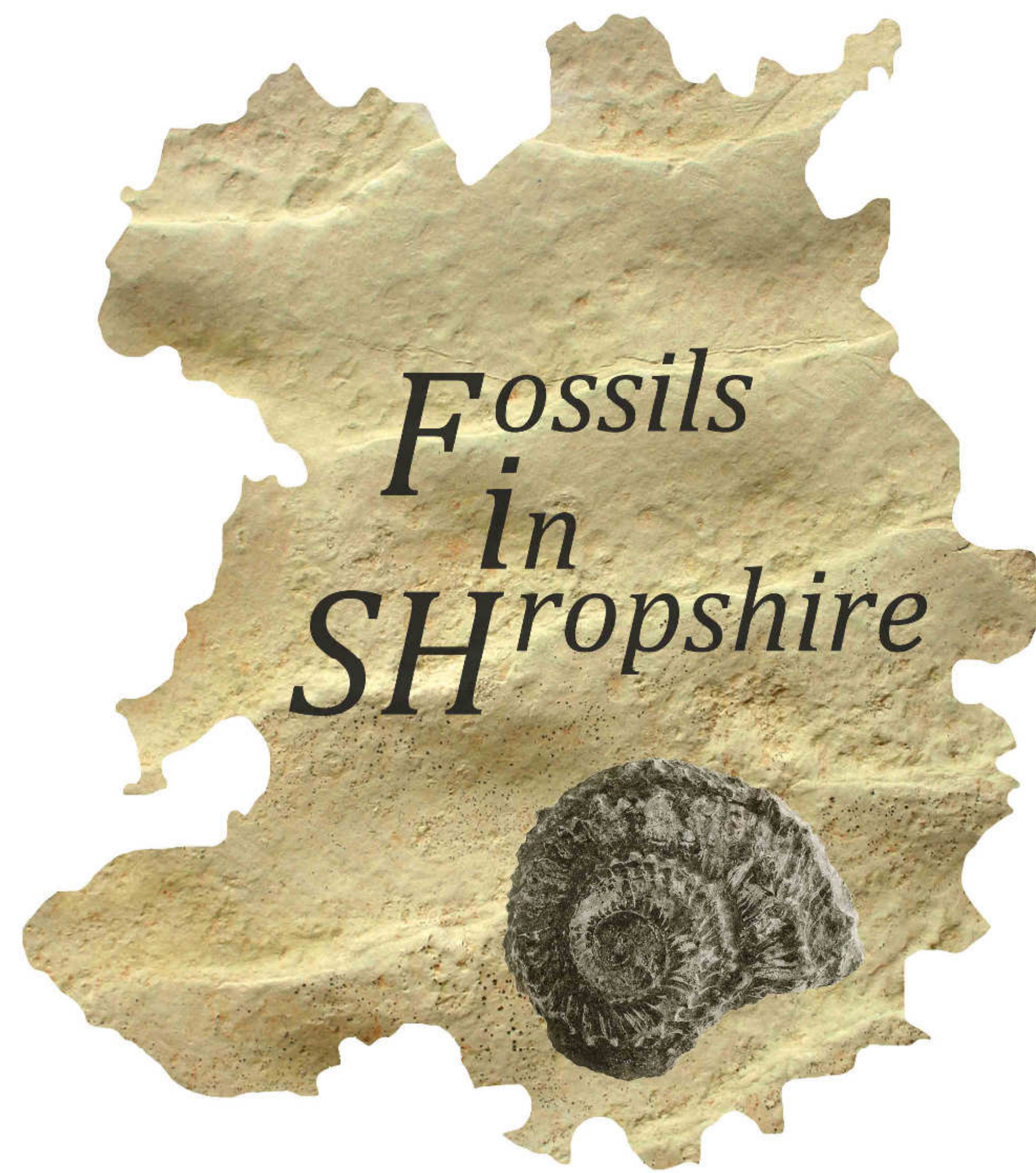
Below: Jackie processing images in Photoshop—this is proving to be very time consuming



Above: Daniel photographing specimens



Below: Jackie processing images in Photoshop—this is proving to be very time consuming



## Ludlow Natural History Society material from the 19th century

We knew that type and figured material had been sold to the NHM in 1947. A project team visit in July 2016 identified many more specimens from the LNHS collection (below left), helped us to link labelling and numbering styles to the original catalogue and identify further original specimens in the collection (below right). Greg, one of our volunteers, has now transcribed the original catalogue which means this data can now be added to the collection database. Other volunteers are researching collectors and localities.

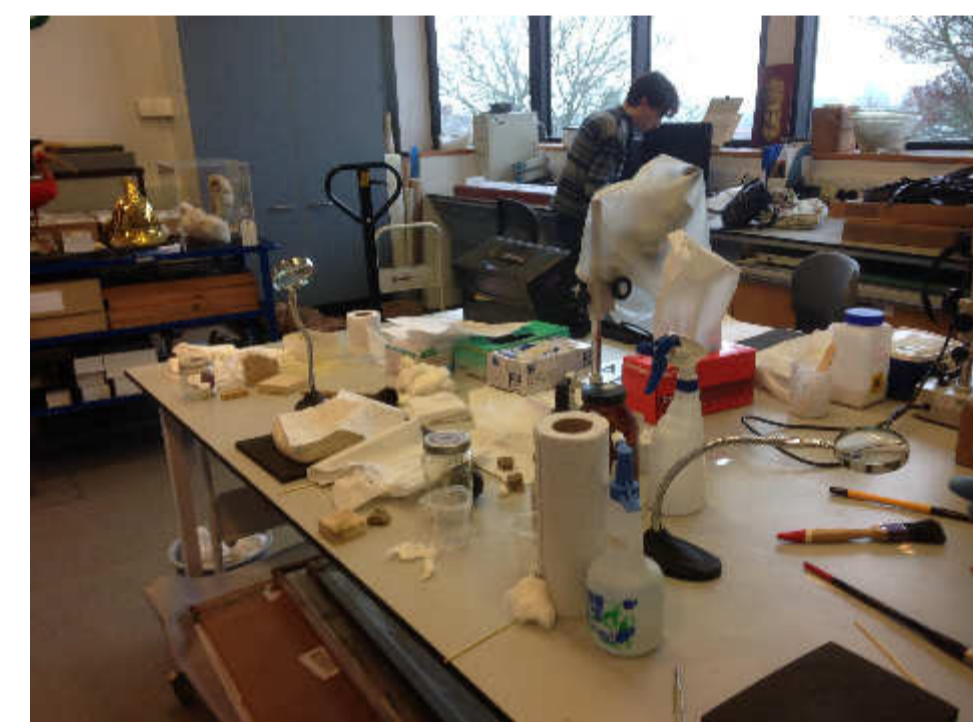


The museum service has with our help secured a "Ready to Borrow" grant which will pave the way for a loan of material LNHS material from the NHM in the summer of 2018. We plan to apply for further funding from the HLF to enable a more detailed piece of work on the material at the NHM.

## Conservation cleaning for digitised images

Taking high quality images, equivalent to looking at a specimen under x10 magnification really shows up flaws such as dust, fibres, excess adhesive and paint spots on specimens.

The smaller Ludlow specimens had been stored in lidded boxes from the 1960s to the present day, dust accumulation is therefore only a problem on larger specimens. Specimens had lain on cotton wool padding until the 1990s, some fibres still cling to specimens and these really show up in the detailed photographs.



Other specimens had been consolidated and repaired - excess adhesive squeezed out of joins, spills and splashes are unsightly and have been removed. Typing fluid used to create a background for accession numbers on specimens in the 1980s was often excessively applied and also needs tidying up.

The Shrewsbury specimens are mainly mounted on paper covered boards, in an attempt to cover over foxing, these boards have been painted at least once and specimens have a lot of white emulsion paint spread onto them in the process.

A work flow of brushing with a fairly stiff paint brush to remove dust and cotton wool fibres, tamping dampened paper towel onto specimens to lift more ingrained dirt and cleaning paper labels with smoke sponges has been developed for volunteers. Kate Andrew has been undertaking the more complex paint, adhesive and correction fluid removal or reduction. No major conservation problems have been encountered so far.

## Expert help

Drs Jo Botting and Lucy Muir (right) have been our first expert visitors, working through all the Cambrian and Ordovician material and Silurian graptolites and sponges. They have re-identified a lot of material and located one fossil that may be a new species.



## Making the information and images accessible

We will be uploading batches of collection data and 2D digital images to the NHM portal, the first batch of 240 jpeg images and 200 XML collection records were transferred just before Easter. We aim to transfer 4,000 images in total. The images will also be available of Shropshire Council's heritage portal, but this is currently undergoing a re-design so the protocol has yet to be fixed. We will be providing 3D images of type and figured material to the GB3D site administered by the British Geological Survey at [www.3d-fossils.ac.uk](http://www.3d-fossils.ac.uk). We also have an exhibition planned for the summer of 2018.