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Environmental history and archaeology of nature reserves. (submitted draft)

Nature reserves have in some cases been in existence for nearly seventy years now. Long enough to have developed new environmental histories and for the creation of their own unique archaeological features (Fig. 1). Rackham made the point a long time ago that ancient landscapes and their vegetation are 'historical monuments in themselves'. It is regrettable that whilst archaeologists may study the archaeological remains in an ancient woodland, or an ancient heathland, seldom will they consider the vegetation present as part of both the cultural rather than natural heritage of that place. That however is now changing and archaeologists particularly in significant gardens now tend to regard the plantings as part of the elements that they need to record to understand the landscape as a whole.

Similarly, there is a recognition in land management, that many of the places of greatest significance for conservation are the result of interactions between past farming and forestry practice. That is recognised by environmental historians such as Rackham, Peterken and Rotherham to name a few who have gone on to develop an holistic approach using history to help inform conservation practice. Similarly, archaeologists have developed surveying tools such as Historic Landuse Assessment in Scotland as a means of incorporating certain broad ecological types into their interpretation of landscape development, which in turn influences development and heritage management plans.

Ecological or environmental history then is an attempt to cross traditional academic and practical management disciplines to bring together a wide range of groups to consider how to incorporate different strands of evidence to produce sustainable outcomes both in nature conservation but also in the wider landscape. It has been argued that ecological history and archaeology can be used to research traditional management techniques to help when management changes from farming to conservation. Knowledge of past environments can help inform choices when setting out to wild particular environments. History is a great way to enthuse the public and engage volunteers, and to encourage support for local nature reserves.

Early work on environmental history was often focussed on woodlands such as Hayley Wood, Cambridgeshire where continuity could be shown in both documents and archaeology over centuries. Research into the past history of this wood and others was often helpful in informing early experiments in different kinds of management that would best sustain the wood going forward. An understanding of the ancient nature of woods was often crucial in protecting them and ensuring their preservation e.g. Bradfield Woods (Fuller et al. 2019).

Collaborations with archaeologists in local nature reserves can inform the construction of trails and other public facilities, to illustrate how history has affected the development of the woods - the trail at Worcester Woods being a good example of this type of cooperation.

The re-wilding effort at Carrifran by the Borders Forest Trust is an excellent example where palaeoecological work coupled with a clear strategy has produced remarkable results in a relatively short space of time (Fig. 2). The Scottish Southern Uplands are a seriously denuded pastoral landscape interspersed with monocultures of conifers, and to see Carrifran develop in the way it has since I first took students there in the early 2000's is a remarkable testament to the benefits of replanting with native tree species.

I would argue that archaeological and environmental historical approaches can make a significant contribution to understanding the landscape and habitat changes that have occurred since 1945. The post-war period has been one of rapid change with the introduction of new farming techniques which in turn have destroyed or limited many traditional agricultural habitats for wildlife. By studying how land managers have changed their approaches and the impact that has had it is hoped to use that longer time dimension that comes from environmental history to help manage change.

As an archaeologist my recent interest has been that of post-war nature reserves in Worcestershire. We are investigating why they became nature reserves, what is special about them and how the public sees them and uses them. We do this by using first year students on our archaeology and heritage course to survey the archaeological remains, examine documentary records such as maps and newspapers, and record veteran and notable trees. Each site has proved to have an interesting and unique set of characteristics which confirms Rackham's arguments about how important it is study sites at the local level.

We have studied four sites, but I just wish to discuss two in this paper. The first is the Devil's Spittleful near Kidderminster (Hoaen 2019) and the second is St. Wulstans near Malvern (Hoaen, Loney and Ruffle 2019).

The site at Devils Spittleful was designated as a SSSI in 1955 as a rare example of lowland heath in the county. It is part of a contiguous bloc of reserves (Devils Spittleful, Rifle Range, Burlish Top) located between Kidderminster and Stourport on poor quality agricultural land. For much of the nineteenth century the Spittleful was pasture land with initially a racecourse and then latterly a Rifle Range to the East. In the mid- twentieth century it formed part of an extensive military estate used for training soldiers in tank and mortar manoeuvres, and as a temporary camp for the US Army (Europe) Corps. It is assumed that the land continued to be let to farmers and that grazing continued during most of this period.

All of these nature reserves had with the change of use from military activity undergone subsequent woodland regeneration after 1945. Our interest was what had led to the creation of the heathland and if other periods of woodland regeneration could be identified and, if possible, understand what the environmental drivers behind these processes had been. We used standard sources in our research (see box).

Archaeological features were mapped by standard walkover survey combined with LIDAR data. Data about past vegetation came from various botanical surveys the earliest being 1909 which recorded ling, together with mapping data dating back to 1815. During the late 19th century the site was shown as enclosed with a small area of heath, around the crag, plantation woodland and open pasture and a racecourse. In the early twentieth century the site saw a change in use and a mixture of woodland and heath expansion occurred after 1919 to 1939 (Fig. 3 shows the maximum pre-war expansion of woodland regeneration, heathland and rough grazing). Heathland gained its maximum extent by 1945 and the area appears to have been completely deforested. With the transfer from military to civilian control, a complete change in management occurred. Over the next forty years woodland came to dominate the Spittleful. Eventually, this was removed from the Spittleful in the early 2000's by contractors as an attempt to return the site to heathland.

Reconstructing environmental histories in such a dynamic landscape is complex. However, in this case photographs, maps, newspaper articles and the vegetation of the site itself all offered clues. The main land use for this poor-quality land over the past 200 years appears to have been largely recreational and as pasture. The fields were enclosed before 1815 but there is little evidence for either ploughing or drainage. The railway which runs through the site was constructed in 1878, and around the same time the field system was reorganised. It is likely that the coming of the railway led to an increase of fires, which in turn impoverished these already poor soils and encouraged heath to develop. There is a newspaper report of a large fire in 1911 which "destroyed large areas of bracken, trees and fences" (County Express 1911). The Spittleful was therefore a dynamic landscape with shifting areas of heath, grassland and woodland, responding to fires, changes in grazing pressure and woodland clearance.

Finding a balance on such sites which maintains heathland, has proven difficult, in this case the origins of the heathland may lie with the introduction of the railway line, leading to an increase in accidental fires which in turn impoverished the soils leading to heath development. The tendency of such sites will be either to succeed to woodland or revert to

grassland. In such situations traditional agricultural techniques such as moor burn, overgrazing during the day and folding animals elsewhere at night, scalping and paring are likely to maintain heathland but however may be beyond the resources of the Trust and possibly not desirable either. Long term maintenance of lowland heath requires nutrients to be removed or a cycle of woodland regeneration followed by clearance. Interestingly, because of the difficulty in removing vegetation cleared by scrub bashing a whole series of “clearance” mounds has been created (Fig. 1). Ironically, these mounds then mimic the Bronze Age cairns so typical of heathland in the UK. More research is clearly needed to see what stocking densities are needed to maintain heathland and prevent woodland regeneration at this and similar sites. By using a variety of strategies however, the Trust and the local council have managed to balance heath, wood and pasture to create a picturesque environment (Fig. 4) which is well loved by the local community, and which satisfies a range of biodiversity outcomes.

The site at St. Wulstan’s is a Worcestershire County Council nature reserve and is an example of a ‘new’ nature reserve brought into existence thanks to being a well-loved and well-known local ‘environmental resource’. During World War 2 the area was redeveloped as one of a series of military hospitals in preparation for D-Day casualties. Between the end of World War 2 and 1986 the site was used by the NHS first as a TB hospital then as a rehabilitation hospital for returning long term mental health patients to the community. During this time the grounds were developed by planting exotic trees, orchards and gardens to soften the utilitarian buildings. After the hospital’s closure a local group was set up and assisted by the council developed a Nature Reserve on the eastern half of the site. The other half was redeveloped as housing and the housing contractor helped with clearance and demolition of the remaining buildings.

The management plan was able to incorporate much of the plantings that had taken place and retained key features from the hospital such as the matron’s path and hedged garden, the flagpole and a large number of specimen trees, both those planted during the years of the hospital and from the earlier agricultural landscape. By retaining significant elements of the earlier landscape, the nature reserve has become a popular spot for walkers and is reputed to be a popular spot for the local GP’s to prescribe for light exercise. A survey conducted by the University of Worcester as part of a study of the environmental history of the site revealed that there was a high awareness of the past use of the site as a nature reserve and that this contributed to the well-being of the users of the site.

Environmental history and archaeology are eminently practical activities that can have a number of benefits for nature reserves and the management. They can be fundamental to their establishment and design as in the cases of Carrifran and St Wulstan's. Further the awareness of the range of habitats that existed in the past gives managers choices as to the type of habitat that is most suitable for the reserve in current and future conditions. The blending of woodland regeneration, heathland and grassland at Devil's Spittleful for example reflects the complex history of the site and produces great cultural and natural benefits. Finally, the use of history at reserves helps build links and understanding with the public that can only benefit the conservation movement.

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Figure 1. Mounds created at the Devil's Spittleful by vegetation clearance, such mounds mimic those created in the Bronze Age. Photo Author 2014

Figure 2. Carrifran Wildwood Photo Author 2019

Figure 3. 1938 Ordnance Survey Map showing extent of heathland and regeneration of woodland.

Figure 4. Devils Spittleful in 2014 after woodland clearance.

Photographs:

Clearing Birch at Devils Spittleful.

St Wulstns Nature Reserve

Survey at St. Wulstans

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- Fuller, F., Casey, D., & Bullion, S 2019 What can reserves deliver for conservation in lowland cultural landscapes? A case study of Bradfield Woods National Nature Reserve. *British Wildlife* vol. 30 (3) February: 173-183.

Text Box of helpful archaeological/ mapping resources for environmental history research

The National Museum of Scotland has good coverage of the first edition maps of most of the UK <https://maps.nls.uk/os/>

Key to OS maps in the National Museum of Scotland Collection

<https://maps.nls.uk/os/characteristic-sheets/>

Vision of Britain Maps has the first edition OS maps for the UK

<http://www.visionofbritain.org.uk/maps/>

The Heritage gateway is the key website for information on archaeological and heritage sites

<https://www.heritagegateway.org.uk/Gateway/>

Most archaeological research is now done commercially and may not be published. This so called grey literature can be accessed either by local county Historic environment record services or through the archaeological data service based in York

<https://www.archaeologydataservice.ac.uk/>

Local archives will carry records of helpful documents many of these are now online and are searchable within the library building e.g. <https://www.britishnewspaperarchive.co.uk/>

Historic Land Character Assessment (England)

<https://archaeologydataservice.ac.uk/archives/view/HLC/>

Historic Landuse Assessment (Scotland)

<https://hlamap.org.uk/>

European Pollen Database: A database of pollen sites throughout the UK and Europe- still very much in development.

<http://www.europeanpollendatabase.net/index.php>

Images



