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Charcoal Production at Glendalough, Co. Wicklow

Glendalough Valley Archaeology Project

Newsletter 1, September 2012
Background

A large number of small – medium sized earthen platforms are present on the steep slopes surrounding the Upper Lake at Glendalough. These have been known about since the nineteenth century, and surveys in the late Twentieth century identified about 100 in total. Charcoal was frequently observed where these were disturbed. Healy carried out test excavations of one platform in the 1970s, which found extensive charcoal, evidence for burning and settings of flat mica schist paving and post holes. Healy did not obtain a radio carbon date, and on the basis of historical evidence suggested that the platforms dated to c. 1680–1740 AD and were associated with the smelting of iron ore before the collapse of this industry in 1740.

The presence of charcoal production sites is interesting given that evidence from drawings and paintings consistently shows that by the end of the eighteenth century the area was deforested. Clearly a charcoal production industry needs woodland, and such an industry might be supposed to have had significant impact on the woodland in a region. The charcoal production platforms therefore offer a potentially interesting perspective on the historical evolution of the Glendalough valley.

Excavation results

The two excavations confirmed that these features are charcoal production platforms, formed as described in the box below. Both platform surfaces showed evidence of extensive burning. One had a retaining wall at the rear and in the other a deep deposit of charcoal was sealed by a rock slip. The smaller platform we tested contained significantly smaller amounts of charcoal.

Section through Platform 78 recorded by Paddy Healy in 1972 showing scarping of the hill to create a working surface.

Given this background in August 2009 we excavated two platforms (including that excavated by Healy) and tested a third. These excavations were part of a student training programme. We sought to obtain direct dating evidence and charcoal samples to facilitate investigation of the woodland exploited for charcoal production.
Two radiocarbon dates were obtained; one date from each of the two main platforms. Both dates are very recent and probably lie between c. 1650 and the twentieth century. As noted above, Healy suggested that the platforms date to c. 1680–1740 AD. This interpretation is compatible with our radiocarbon dates, which may suggest that the platforms were in use at the earlier end of Healy’s range. We believe that the platforms date to somewhere around 1650–1730 AD. This interpretation is also strengthened by detailed consideration of the nature of the charcoal data and late eighteenth-century illustrations showing the valley devoid of trees.

**Charcoal production**

Two primary forms of charcoal production site are recognised in Ireland: pit kilns and mound kilns. In a pit kiln wood is stacked in a cut pit, sealed and fired whereas in a mound kiln the wood is stacked on the surface and sealed. Mound kilns are more efficient than pit kilns and produce higher quality charcoal. They are argued to become increasingly common from the seventeenth century in association with iron working. Due to the shrinkage of the wood within the mound during the firing it is important that a mound kiln is placed on a flat surface and in many instances this is created by forming a platform, excavated into the slopes with the spoil thrown out in front – sometimes termed a ‘platform hearth’.

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*Paul Sandby’s view of the Seven Churches in Glendalough, engraved in 1778 depicting the valley almost devoid of trees.*

*Platform 77 before excavation, facing northwest set in modern oak woodland with the Upper Lake at Glendalough in the background.*
Analysis of charcoal from the excavations

Charcoal analysis involves microscopic examination of fragments of charcoal to identify the species of wood, age, and whether the charcoal is derived from a branch, twig or trunk. Our charcoal analysis was carried out by Dr Lorna O’Donnell.

Nine wood taxa were identified, the most common of which are oak, birch and holly which likely formed the dominant woodland of the area. The high levels of birch, which is a pioneer species, indicate that these woodlands had been previously subject to clearance and trees like ash probably also grew in these cleared areas. This was clearly a disturbed woodland, not a pristine one.

In most charcoal production industries oak is the preferred wood species, and can be managed to produce consistent large fuel for the kilns. Management strategies might include coppicing or pollarding. The charcoal evidence at Glendalough demonstrates the use of oak, birch and holly and a range of branches and trunks for charcoal production. This diversity suggests a much more extensive use of local woodlands. There is no evidence in the charcoal for coppicing or pollarding, although these practices can be difficult to identify in the charcoal record.
Woodland exploitation

The rise of the iron smelting industry in the seventeenth century led to significant pressures on Irish woodlands, which were exploited heavily for charcoal. The exploitation of woodlands at this time appears to have been as part of a colonial, extractive economic system, with little attempt to sustain the woodland resource - which was simply utilised as cheaply as possible to feed the iron furnaces. The destruction of woodlands eventually led to the introduction of legislation making tree planting compulsory for ironmasters. This legislation became effective in the eighteenth century. We believe that the evidence from Lorna’s charcoal analysis (discussed above) from the excavated sites at Glendalough suggests strongly that the platforms should be associated with the earlier, un-sustainable exploitation of woodlands for charcoal production as part of a colonial economy. Most importantly, this was a previously disturbed woodland and the charcoal producers used a broad range of wood types and parts. This has all the hallmarks of an unsustainable exploitation. This extensive and damaging use of the woodlands in the charcoal industry may have played a very significant role in the removal of woodlands from the hill sides of Glendalough, where a range of evidence suggests significant deforestation by the end of the eighteenth century, if not before. It should be noted that this deforestation was most likely associated with increased erosion of the hill slopes. The nature and scale of this activity offers a new perspective on the industrial and political history of the Glendalough landscape.

A seventeenth century depiction of some of the stages in charcoal making in woodlands: preparation of the ground and erection of a central post (center); cut lengths of wood stacked around the central post which is removed prior to firing to create a flue (left) and the completed clamp during firing covered in earth to limit airflow (from John Evelyn’s Sylva 1670). The clamp would be constantly attended for a number of days to control the firing.
Acknowledgements

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Further Reading

Further information on charcoal production sites:


Further information

The excavations discussed here were undertaken in Lugduff townland, Upper Lake, Glendalough, Co. Wicklow under excavation license number 09E0380. Based on Healy’s 1972 catalogue the sites excavated were Platform 77 and Platform 78.

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<th>Site</th>
<th>S.M.R. No.</th>
<th>14C date</th>
<th>Laboratory No.</th>
<th>Uncal. Date</th>
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<tr>
<td>Platform 77</td>
<td>W023–029003</td>
<td>1690–1920 cal. AD</td>
<td>UBA-16454</td>
<td>75±18 BP</td>
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<tr>
<td>Platform 78</td>
<td>W023–029004</td>
<td>1650–1960 cal. AD</td>
<td>UBA-16453</td>
<td>199±21 BP</td>
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Further detail on archaeological sites in the Glendalough Valley can be found on the Archaeological Survey Database at www.archaeology.ie. Glendalough Valley forms part of the Wicklow Mountains National Park under the management of the National Parks and Wildlife Service.

Recommended citation:


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