

THE DEVELOPMENT OF THE LANDSCAPE OF IRELAND OVER THE LAST TWO THOUSAND YEARS; FRESH EVIDENCE FROM HISTORICAL AND POLLEN ANALYTICAL STUDIES

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ABSTRACT: Tracing the changing face of the Irish landscape over the last two thousand years has relied primarily on evidence from documentary sources. Sources mentioning landscape features in Ireland during this period are fragmentary, both geographically and temporally. Studies of fossilized pollen grains preserved in peats and lake muds which accumulated over this period provide an alternative means of investigating vegetative landscape change. Combining the evidence from these separate disciplines helps to reconstruct a more complete picture of landscape change over the historic period than from a single source.

KEYWORDS: documentary evidence, pollen studies, Ireland, interdisciplinary studies

There are two ways in which the landscape of Ireland, and especially that of the last two thousand years, may be traced. One may delve into the contemporary historical documents looking for comments and descriptions of the landscape, or one may examine the minute fossilized pollen grains which are preserved in the peat bogs which accumulated over the last two thousand years (Mitchell 1965, 1986). Comparative studies of the pollen and documentary evidence for landscape change in Ireland have revealed that neither study separately will describe the landscape in as much detail as will a combination of the evidence derived from the interdisciplinary approach. The tiny details in historical documents relating to landscape are mirrored in the minute fossilized pollen grains which are as specific to the tree species as its leaves or bark. This short paper will describe some of the advantages and shortcomings of the separate methods and then show the value of combining the findings from both.

In Ireland, pollen analytical studies of fossil deposits primarily from bogs and lakes have yielded detailed information on changes in the vegetation of the landscape since the end of the last Ice Age. Variations in the types and proportions of fossilized pollen grains in these old deposits reflect a landscape increasingly dominated by trees. Initially, vegetational changes occurred because of natural agencies such as increasing climatic warmth but later the effects of man on the environment have been of interest to archaeologists, historians and palaeobotanists. Studies of deposits associated with archaeological sites have provided detailed information on innovations like pastoral and arable agriculture during prehistory but, in general, little interest has been shown in deposits which have developed during the historic period.

Over the last 2000 years the landscape of the British Isles underwent a number of changes (Rackham 1986). During the medieval period, most especially in southern England, there was extensive woodland depletion. In later times in Britain and Ireland, much of the foundation for the landscape of today was laid during the 18th century as agricultural land was enclosed by hedges (Robinson 1977). Until fifty years ago, much of what was known about the landscape of the extensive area which is the British Isles was gleaned from ancient documents and maps. These provide useful sources of information about the land and its management but the picture which is reconstructed from such sources is fragmentary as no

area has a complete sequence of documents spanning even the last one thousand years. Pollen analysis of numerous deposits has revealed much about the landscape of the prehistoric period. Pollen analysts are now researching the landscape of the recent past through the peats and lake muds which have accumulated over the last two thousand years.

It is true that, for parts of southern Britain where the documentary records provide information about the landscape over the last thousand years, one may gain a grasp of the nature of the landscape over the last one thousand, not two thousand years. The same cannot be said of any part of Ireland where written evidence for any aspect of the historic landscape is fragmentary (Boate 1652; Hore 1858; McCracken 1971). This is not to say that none exists but we have little to guide us when trying to assess the time period or the extent of an area over which somewhat hazy descriptions of the landscape remain accurate. The further one goes back in time the fewer and rarer are the useful documents. The further one goes west or into the uplands the more sparse become the descriptive documents (McVicker and Hall, in press).

Reliable accounts, still less maps, are very scarce for many parts of Ireland prior to the 17th century. The comments and hints in some state papers from the 16th century imply that Ireland had a more varied landscape than some of the well known but biased statements made by the English military writers and diplomats would imply. Unfortunately many of the accounts from the 16th and 17th centuries are influenced by military or commercial interests when periods of unrest succeeded each other rapidly. The following is an example taken from the Calendar of State Papers Ireland for 1601 (p 253):

"... the woods and bogs are a great hindrance to us and a help to the rebel, who can, with a few men, kill many of ours in a wood through which they can pass only at certain paces [passes]. The rebels can then remain in the woods till they recruit their strength. In the bogs the old soldiers who know [sic.] them, can fight at no great loss, and can see the enemy's strength; but in the woods they may fall into an ambush. If the country is quieted by cutting off the principal rebels much good could be done to the bogs by our labour and by Irish churls felling, dressing and burning the trees in heaps. This could be done while leaving sufficient timber for the use of the country, if a tree is left every twenty yards and shrubs either stocked up at the first or continually cut up".

In some of the accounts written at this time, particularly those pertaining to the northern counties, descriptions of the landscape give an impression of nothing but terrible, wet, boggy and woody wildernesses in which it was almost impossible to conduct a successful military campaign. Nicholas Pynnar's Survey of 1619 describes many parts of the north as little else (Hill 1877). Yet, among these writings there are comments about copious quantities of linen thread produced in Co Derry and the extensive fields of corn in Co Down (Harris 1744). Statements like these indicate that some areas were given to arable agriculture but it is not clear where these were.

Commercial interests are evident in some of the references to exports of natural products, not all of them legal! From the early years of the 17th century, the time of the great Tudor Plantations, there are flattering accounts of the extensive oakwoods remaining in numerous areas throughout the country just waiting to provide all manner of timber products the sale of which would enable those who were prepared to work hard to 'get rich quick'. Referring to the woodlands just north of Lough Neagh on the Co Derry side of the Lower Bann, Sir Thomas Phillips observes the following some time around 1609 (Moody 1939):

"I have a lease from Tyrone (the earl of) for certain woods, if he had thought I would have enterprised as I have, he would never have granted unto me. This business being well employed, great profit and commodity will arise. The like profit is to be made by joists and other sorts of timber, which the Scots buy for building and other uses. So that by flyboats of good burden, requiring small charge, we may furnish Scotland and other parts upon the seacoasts in England, and as I remember, good ware in Spain. The likes are clapboards, wainscott and long boards for other uses. Oaken planks are saleable in all places, which, with devices of mills as Dutchmen have them, will not be chargeable. Fair ash and oaken hoops will yield a great profit in England. By this means London may be furnished with all sorts of timber, as joists, clapboards, wainscots, barrel boards, hogshead boards, oaken planks for shipping, and other uses. These kinds of commodities, I hope, in time may be afforded here [in London] cheaper than the boards and timbers which the Dutchmen bring hither. By this means the undertakers shall reap the profits which the Dutchmen do now, and be a means to set our shipping and mariners on work, for I have seen at one time, within these eight weeks, twelve great Flemish hoys and flyboats all laden with timber".

The pastoral agricultural component of the landscape is glimpsed through references to textiles such as the Irish cloak or brat so popular with old and young in England and the European countries. The thriving export trade in woollen goods to Bristol in the 16th century would not have been possible unless there were sheep to provide the wool and people to process it.

Although evidence for woodlands and varied agricultural practices are useful to archaeologists, historians and palaeoecologists, they can never provide an accurate and detailed picture of the entire landscape during the historic period. Practically nothing is said of the extent of other major ecosystems such as sand dunes and salt marshes and little is known about the ways in which, more recently, increasingly sophisticated agricultural technology affected the countryside (Hall 1994).

Pollen analytical studies have some advantage over the written word as they can provide information about the landscape which is less politically biased. Pollen analytical studies do not select only the aspects of the countryside which are of commercial value or a problem to the military. The pollen record shows most if not all of the species which gave the landscape its character. Trees other than oak and ash will contribute their pollen grains to the deposit so we can reconstruct a picture rich in detail. In fact, such studies of deposits from lakes and bogs which contain pollen evidence related to agricultural development and changes in forest cover provide a means whereby we can estimate the scale, and to some extent, the area over which changes took place.

An example of the latter is provided by a study of deposits from two lake sites in Co Down. Long Lough (Hall 1990a) and Lough Henney are two of the larger interdrumlin lakes lying just north of Ballynahinch. There is documentary evidence for mid Down from the 16th and 17th centuries which describe this part of the county as full of good woods and water (Hall 1989). One delightful phrase, attributed to an Elizabethan writer in 1553, paints an idyllic picture of the centre of the county. His attractive word picture is of a county '*being full of woods, water and good land fit for English men to enjoy*'. He was not so impressed with the local inhabitants, saying that the men were '*big, soft and dastardly with their legs burnt from sitting too close to the fire*'.

Writers in the 17th century describe areas of oakwoods with commercial potential along the landward shore of Strangford Lough and around the town of Saintfield. Local documentary

evidence indicates that these woods were severely depleted by the mid 1650s. Lough Henney or '*Loghany*' is mentioned in the Irish Inquisitions, a type of 17th century public enquiry, dated 1605 and says that the lake was close to a morass called the '*Bog of the Dorney*'.

The pollen analytical evidence from the lake deposits in the area described did not support the view created by local historic record. There was no indication in the pollen record for massive woodland clearance during the 17th century, rather the reduction in the area under trees had been gradual, beginning about 1200 BC and probably completed during the 18th century. This is not to say that the historical information for the mid Down area is wrong but it should caution against assuming that local documentary evidence is reliable on a grander scale.

Recent pollen analytical investigations of lowland raised bogs in southern Cos Antrim and Derry have revealed that in this area, said to have been particularly heavily wooded in the early 17th century (McCracken 1971; Hall 1992), there had been rapid and extensive cutting of the woods with agricultural expansion in the mid 9th century AD. This period of extermination of the woodlands was much more rapid and detrimental than which followed in the early and mid 17th century (Hall et al. 1993).

This evidence for woodland clearances at the time of the Plantation of Ulster from Down and Derry is in contrast to that from Kildare where a radiocarbon dated pollen diagram from Carbury bog clearly showed dramatic reductions in tree pollen percentages strongly correlated with woodland clearance during the Tudor period (van Geel and Middelorp 1988). Comparative studies of historical and pollen analytical evidence for the oakwoods of Killarney (Watts 1884; Mitchell 1988) show a long and complex history of exploitation and regeneration. The Burren is today an area with much hazel scrub but new work on historical sources (O'Connell and Korff 1991) and pollen profiles (Jelicic and O'Connell 1992) from sites throughout the region show that during the medieval period woodland was extensive.

Radiocarbon dating of a deposit from Long Lough in Co Down (Hall 1990a) showed that cereal cultivation had commenced here about AD 400, at least two hundred years earlier than had been assumed previously for sites of this type. The substantial clay content of the soil in many parts of mid Down makes cultivation by primitive tools difficult (Mitchell 1986). For this reason it was thought that such soils were not tilled to any extent until the introduction of the mouldboard plough to Ireland sometime during the 7th century AD. At the Co Down lake site, the radiocarbon and pollen dating evidence would indicate that these soils would indeed have been successfully tilled before the introduction of the new plough. Evidence such as this forces us to revise our views on agricultural activity during the Early Christian period.

The pollen evidence for flax cultivation both there and at an upland site in Co Armagh (Hall 1990b) is particularly interesting. Down was one of the great linen producing areas of Ireland during the 18th century and this aspect of local history is quite well documented but little was known of the history of flax cultivation in the area. Flax growing has a long history in Ireland where linen was part of the national dress until about the Tudor period (Hall 1993). There is little written evidence for flax growing in either county but the pollen evidence showed that flax had been part of the agricultural system in mid Down probably only since the 18th century and not earlier as had been surmised by some historians. At Slieve Gullion in Armagh the pollen evidence from fossil deposits from the wide cultivation ridges, which might have been used to grow flax in other areas, showed that these had never been used for this purpose.

Lest the reader should think that pollen analysis offers a gazing crystal into past environments and that it can correct every error in the historic record for the landscape and fill in every missing detail, it must be stressed that this is not the case. Like the historic record, there are gaps in the fossil pollen record. There is no direct link between the percentages of individual species in a fossil pollen assemblage and the area covered by that plant. This makes it difficult to assess the size of the area under a particular vegetation type.

It is unlikely that a full picture of the flora of a locality would ever be reconstructed from the pollen record as not all of the plants growing in the vicinity of a lake or bog will contribute pollen to the deposit. The pollen of some species rarely moves any distance from the parent plants. There are some plants which are never represented in the fossil pollen record. Regrettably this is the case with potatoes whose pollen has only very rarely been detected in fossil pollen assemblages. This is most unfortunate in a country where the potato has played such an important role in the agricultural and social history of the last few centuries. The documentary evidence for the crop, although incomplete, is essential when trying to construct an accurate picture of agricultural development in Ireland since the 17th century.

Many of the most interesting plants known to have been cultivated in Ireland in the past cannot be identified through the pollen record preserved in peats and lake muds. Using pollen analytical criteria, many plants cannot be identified to species, perhaps at best only to genera. Among these is madder, a dye plant with an interesting history in Ireland which belongs to the plant family *Rubiaceae*. This family comprises a number of genera some of which are agricultural weeds, goose-grass or cleavers being an example. If pollen of madder was present in a deposit it could not be separated from pollen of native species. A similar situation would apply to woad, a member of the *Cruciferae*, a family of plants which also includes agricultural weeds.

Further investigation of suitable deposits, in which Ireland is uniquely rich, will not only contribute to our understanding of environmental changes in this country, they will add significantly to the international story. Among scientists throughout Europe and beyond the full potential of pollen analytical and related studies like sediment chemistry are only just being realised. We know little of changes in the environment of the last five hundred years during which our landscape has undergone rapid alteration. The part played by increasing industrialization is as yet uninvestigated. Recent worldwide concern about the rapidity of environmental deterioration requires reliable evidence for the time-scale over which these changes have taken place. Investigation of fossil deposits should provide part of the answer, particularly those deposits from Ireland, situated, as it is, at the outer edge of a heavily industrialized continent.

It is only for the last five hundred years that we have an independent bank of instrumental evidence in the historic record. Although incomplete, it is of enormous value to those investigating landscape and environmental change over the last half millennium. Interdisciplinary studies drawing on the information from historical, pollen and related studies should contribute greatly to a fuller understanding the local, national and international level.

NOTES

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