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Recent Developments in Wetland Research

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Seandálaíocht

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Front Cover: Derryoghil 28 trackway, Co. Longford, Ireland. Date 1524-1401 cal. BC (Photograph: B. Raftery)

Back Cover: Delegates to the WARP conference in Dublin (Photograph: David Jennings)

Chapter 2

Trekkers through time: Recent archaeological survey results from Co. Offaly, Ireland

Conor McDermott

Introduction

The work of the Irish Archaeological Wetland Unit (IAWU) is primarily focused on surveying the raised bogs of the Irish midlands. In this region the State peat company, Bord na Móna, industrially exploits 85,000ha of peat for energy, horticulture and domestic fuel (Fig. 1). The main brief of the archaeological survey is to fieldwalk this area, to identify archaeological sites and to facilitate their protection under National Monuments legislation. Given the nature of industrial peatlands it is also important that the sites identified be recorded in sufficient detail to gain some understanding of the structures in the event they are destroyed before protection or preservation.

The Bord na Móna bogs are cut by drains at c.15m intervals running the length of the bog, which can be several kilometres. The fieldwalking system used by the IAWU involves walking one out of two of the drains, giving an interval of approximately 30m.

This strategy has been used since 1991 and to date c.26,000ha have been covered and some 2,000 archaeological sites have been identified. The identification of new sites remains the primary objective of the survey. This has required a skilled and experienced project team to identify the full range of extant sites, in particular the low-visibility material.

Beyond the basic fieldwalking principles the strategies, recording systems and targets of the IAWU are continually being revised and improved.

An increasing level of recording has enabled us to recognise and document the increasing complexity of the sites. However, this has not always been rewarded with a greater understanding of the material and this issue will be addressed below.

The patterns that will be discussed in this paper deal with the overall results of the survey rather than the details of individual sites. They are based on current survey results from Co. Offaly, and Lemanaghan bogs in particular, and may change as further work is carried out. In this context, it is necessary to recognise the limitations of the survey in terms of research particularly in the absence of an understanding of the chronology, classification and function of many of the sites. The IAWU has developed a set of criteria to be addressed when documenting archaeological sites in peatland prior to their destruction (Fig. 2): however, such criteria cannot be addressed by survey alone. This paper is intended to outline the nature of the material uncovered to date and the progress that has been made in addressing some of these criteria.

Co. Offaly - site distribution and density

There are 64,000ha of peatland in Offaly, comprising the raised bogs and fens in the east and west as well as the blanket bog of the Slieve Bloom mountains in the south. This represents one third of the land surface of the entire county, half of which is owned by Bord na Móna. This is one of the largest percentages for an Irish county.

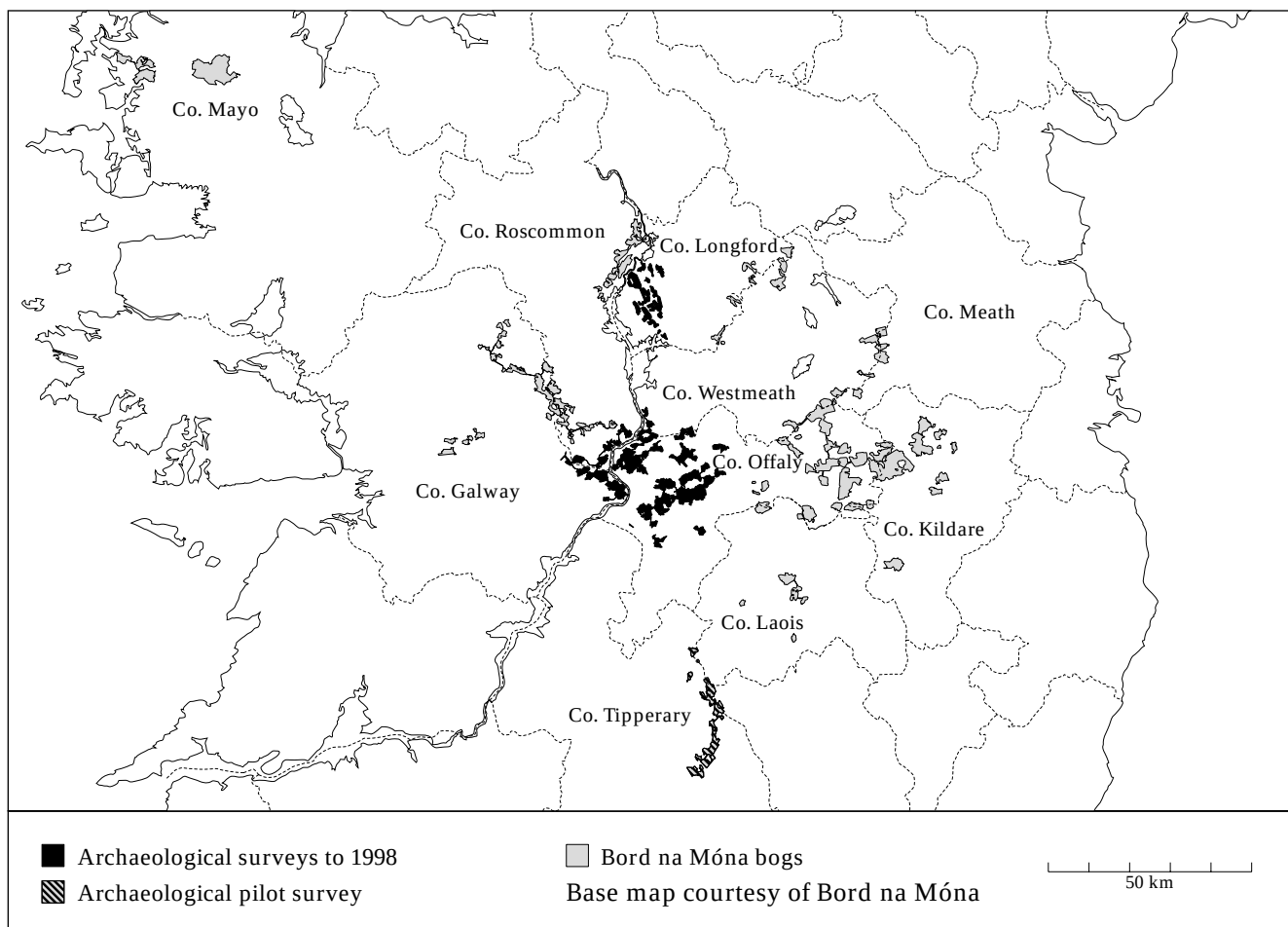


Figure 1. Distribution of Bord na Móna bogs in Ireland and extent of archaeological surveys to 1998

If the prehistory of Co. Offaly is studied from the perspective of the dryland monuments and artefacts alone the evidence could easily suggest a relatively low level of human activity compared with other counties. The wetland archaeological surveys carried out in recent years go a long way in redressing this balance and show widespread activity over long periods of time.

The archaeological inventory of Co. Offaly recorded 990 mainly dryland monuments from the county, whereas 966 wetland sites have been identified from the north-west of the county alone. We can only presume that dryland areas were equally exploited and that traces of dryland settlement remain elusive. The wetland sites not only prove the existence of dryland sites but can indicate areas where they are likely to be located.

One of the notable features of Raftery's work in Longford was the identification and recording of a considerable number of sites in close association (Raftery 1996). This, for the first time, gave an

indication of the intensity of human activity in peatlands. This pattern has continued to be seen in the surveys carried out by the IAWU and further complexes and clusters of sites have been recorded in other counties and in the Lemanaghan area of Offaly in particular.

Lemanaghan is located towards the northwest of the county and was surveyed between 1993 and 1997. The area is located north of the River Brosna and takes its name from a large island of dryland located at the centre of the region. Bord na Móna exploits 1,200ha of bog at Lemanaghan, which is part of a larger area of wetlands in the region. The IAWU surveys identified over 630 archaeological sites making this one of the highest densities of wetland archaeology in the world. Figure 3 shows the distribution of known archaeological sites in the Lemanaghan complex where 50 primarily Early Medieval dryland sites are known, compared with over 1,100 sightings of archaeological material in the peatlands representing the 715 sites already mentioned (McDermott *et al.* 1998, 207).

Two important new features have emerged in these surveys that were not seen in earlier work. Firstly, clusters and complexes have now been identified far into the bog, sometimes up to a kilometre from the current dryland margin. Secondly, sites are increasingly being observed in close association with deep stratigraphy. In these cases, like the Bell-Beaker complex in Somerset (Coles and Coles 1986, 81), activity appears to have been ongoing for a millennium or more. While the structures do not directly replace each other they do show recurring activity in the same small areas over long periods of time suggesting a near permanent presence in the bog. An example of this can be seen in Curraghalassa Bog where 140 sites were recorded (Fig. 4). Many of the sites are very close together with successive horizons of archaeological material visible in some drain faces. There are two small islands in the bog, c.200m apart, both less than 50m in diameter. Apart from these islands the nearest dryland is more than half a kilometre away (Fig. 3). Around the eastern side of each island there are complexes with relatively deep stratigraphy. The example illustrated shows a complex including 10 sites spread along a 20m length of the drain face. The uppermost deposits at the northern end consisted of a post-Medieval leather shoe and a short distance away the last remains of a light hurdle panel. Wood is visible at many levels along the drain face and was also recorded in the base of the drain. Twelve metres further along is a possible platform of roundwoods dated to the late 6th or early 7th century AD (Fig. 5). This is one of seven very similar dendrochronological dates from oak timbers in this bog. Eight metres further along and 80cm lower was another site from which a number of wooden artefacts were recovered. The stratigraphy of the drain face suggested that these lower sites and artefacts were at least of late Iron Age date and this was confirmed by a recently returned radiocarbon date of 196 BC -AD124 (Beta-118041).

A second example comes from Roscore Bog. Here again the sites are located c.500m from the dryland and although the overall number of sites is lower, the vertical density of the material is repeated with almost 1m of stratigraphy recorded

Objectives in the Mitigation of Wetland Sites

-  Nature of structure / deposit
-  Association with other sites
-  Local environmental conditions of the site
-  Regional environmental context
-  Dating
-  Surrounding archaeological landscape
-  Classification
-  Function

Figure 2. Questions to be posed during the mitigation of archaeological sites in peatland. In multiple site projects it may be sufficient to infer the answer to some questions from adjacent sites

(Fig. 6). The upper site in the section dates to between 381 BC and AD 22 (Beta-118033) and successive horizons of wood were recorded below this. The depth of the peat strata suggests the lowest visible horizons date to the Late Bronze Age, again indicating a degree of activity in this location over a number of centuries.

The densities of some complexes mean that it is difficult to discern one site from another. These observations are in contrast with a common perception of human activity on bogs being both infrequent and limited. Instead we can recognise a pattern of recurring activity representing a continuity of both presence and exploitation on parts of the bog surface.

As referred to above, the types of sites recorded from surveys in Co. Offaly have caused considerable difficulty in terms of classification and function. Linear trackways are surprisingly uncommon with the majority of sites being recorded at a single location. In Curraghalassa Bog, of the 150 archaeological sightings, 93 per cent were designated as individual sites or complexes.

Of the 960 sites recorded to date in Co. Offaly, none has been of transverse roundwoods or planks, except in two cases where these have been incorporated into multi-period roads such as in Bloomhill

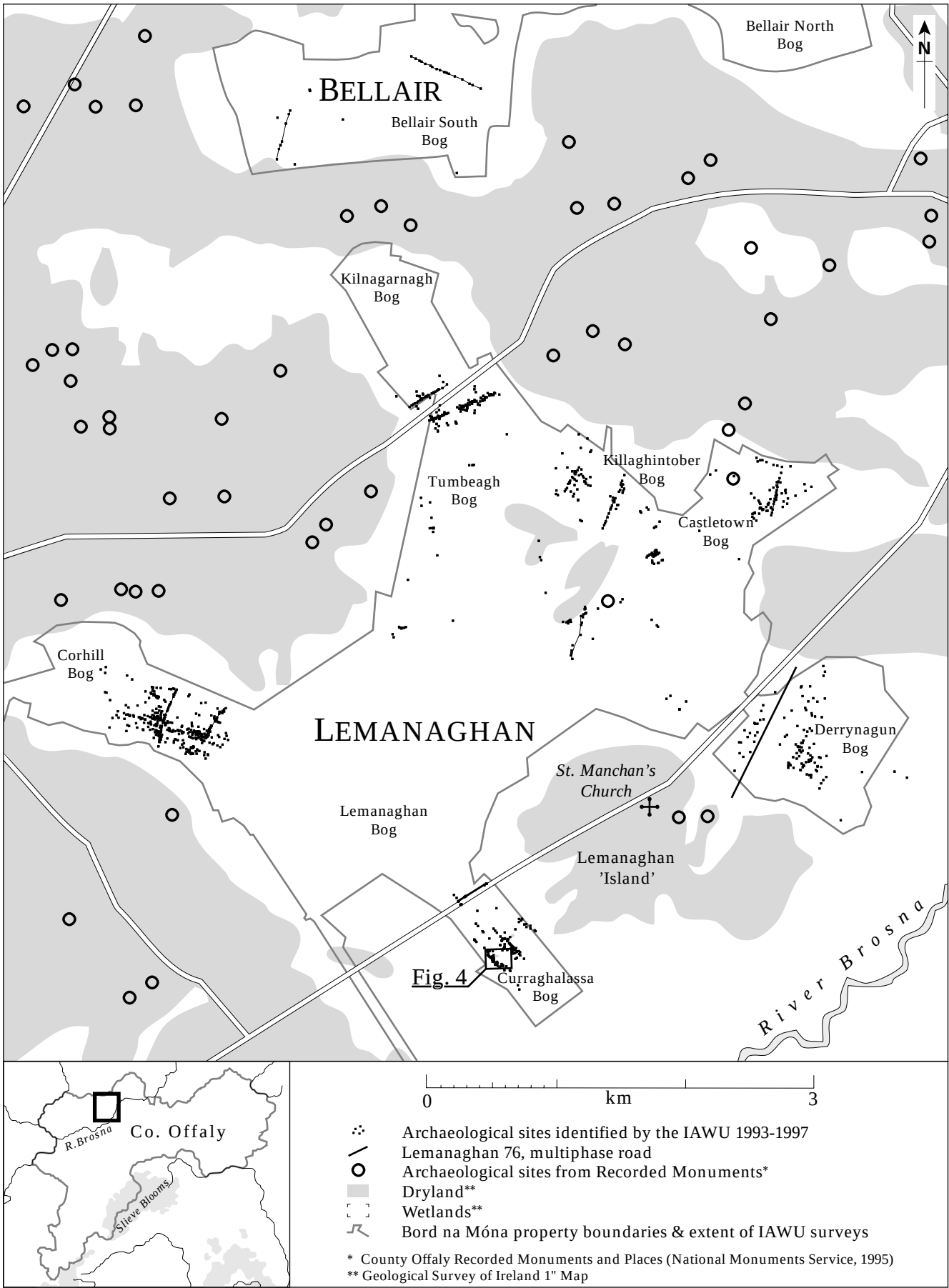


Figure 3. Lemanaghan Bog complex, Co. Offaly. The map shows known archaeological sites on dryland and the results of peatland surveys 1993-1997

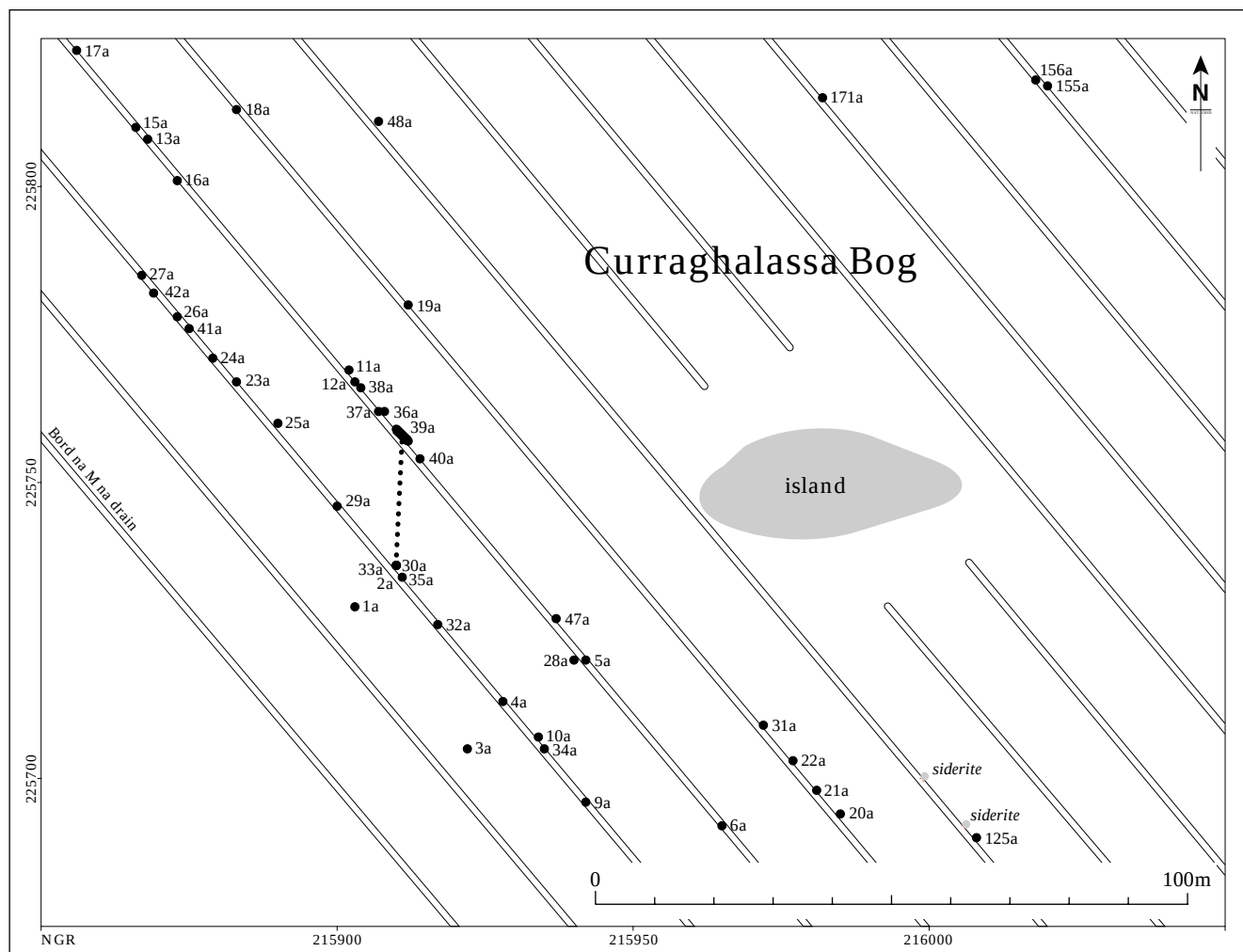


Figure 4. Detail of plot of Curraghaglassa Bog, Lemanaghan Works, Co. Offaly showing a high density of archaeological sites including areas of deep stratigraphy arranged around the western side of a small island

and Derrynagun Bogs (McDermott 1995; O'Carroll 1997)¹. Where linear sites occur, they are often single plank walkways that are being identified in increasing numbers. In the Blackwater Survey, which included bogs in the northwest of Co. Offaly (IAWU 1995), 44 per cent of sites were classified either as worked wood *in situ* or as puddle toghers. The first of these terms is a very general descriptive classification and the second is a hypothesis based on the assumption that many of the small sites cross small wetter areas on the bog surface.

'Worked wood *in situ*' sites have made up 30 per cent of all sites identified by recent surveys. These sites typically consist of less than 10 pieces of wood which show evidence of having been worked or placed in the bog but which have no apparent function (Fig. 7). The example illustrated is from Lemanaghan and shows a large worked wood *in situ*

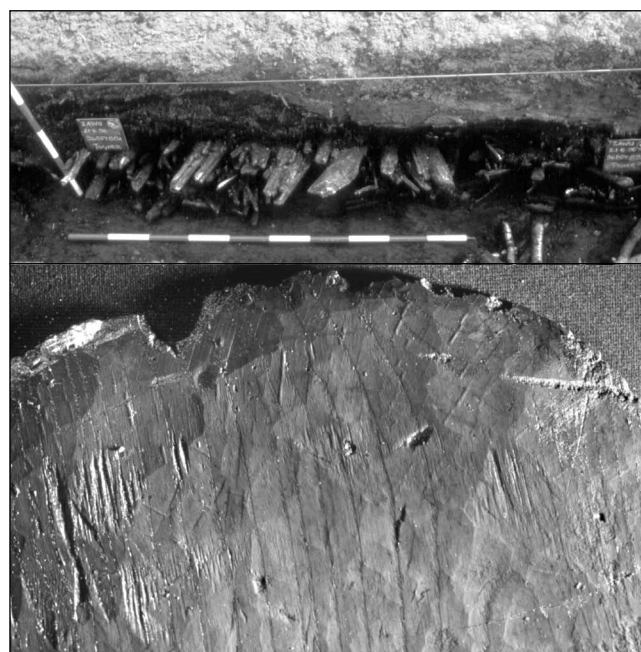


Figure 5. Platform structure from Curraghaglassa Bog (above) and detail of the lid of Iron Age wooden vessel from an adjacent site (below)

¹ Since this article was written, a substantial transverse plank roadway was discovered in Clonad Bog, Derrygreenagh Works, Co. Offaly



Figure 6. Stratified sites in Roscore Bog with a trackway of longitudinal roundwoods exposed

site. Future research will have to address these sites as their numbers seem to far exceed what might be expected from occasional random deposits or dumps of material.

A number of strategies are being employed by the survey in recent years to address this and other questions. The field methodologies and recording systems employed have been refined to allow for greater discrimination between individual sites and clusters of sites. In conjunction with the archaeological record the palaeoenvironmental context of each site is recorded by peat type, peat stratigraphy and humification levels. In selected cases these field records have been augmented with laboratory-based Coleopteran studies. These studies are being combined in an attempt to examine, among other things, the relative chronology of individual sites, rates of site construction and the continuity of exploitation of a bog surface.

Models developed in other parts of the country, and particularly in Co. Longford (Raftery 1996), do not transfer well to Co. Offaly. In the absence of excavation, the interpretation of these sites is very difficult and they can only be broadly categorised by structural type.

Wooden platforms have already been mentioned and small numbers of these are also being identified in the surveys. This is a difficult classification to apply in areas where most sites are non-linear and it has been used with caution. In general these are substantial structures, with no apparent orientation, which have the appearance of a prepared surface and with one or more recorded dimensions not typical of trackway dimensions. The precise function or functions of these sites

have not been established although uses such as resource exploitation bases, temporary habitations and ritual foci have been considered.

New and uncommon forms of trackway construction have also been recognised. One of these was recorded at the upper level of the complex at Roscore referred to above (Fig. 6). Light, evenly sized longitudinal roundwoods are supported by similarly sized transverses and secured by pegs. Although only a 1m length of the site was exposed, its form was sufficiently uniform to suggest that it was a deliberate design. In Curraghmore Bog in Blackwater Works the IAWU excavated a short length of plank walkway (OF-CHM 0016) supported by transverse timbers in which the ends of the planks were mortices and secured together with pegs (Fig. 8; IAWU 1995, 34-7). Three similar trackways have been recorded at Dromalught, Co. Kerry (NMI, IA/113/64), Corleck, Co. Cavan (NMI, L1937:2) and Creggane, Co. Roscommon (Golden 1992), but none of these sites was supported by transverse timbers. A date of 1750-1530 cal. BC (GrN-14724) for the Dromalught track is very similar to the Curraghmore date at 1685-1435 cal. BC (GrN-21262). Thus far the best structural parallel for this site is Trackway XVII (Bou) in southeast Drenthe, The Netherlands (Casparie 1984, 70-1), which dates to the same period.

In general, it is clear that there was a lot of activity in the Offaly bogs in the prehistoric and early historic periods. Regrettably, we often do not know the nature of that activity as many of the sites do not conform to the predetermined functions such as routeways or defined ritual areas.

It is difficult to say whether many of the trackways provided access to the bog or formed part of a route to the other side. It appears that they were often built only on those parts of the bog that were the most difficult or dangerous to cross by foot. Even where people crossed or exploited the bogs as part of their everyday activities it is possible that this landscape held special significance at other times. Some of the few platform structures that have been identified in bogs may prove to be places where special activities outside the everyday



Figure 7. Worked wood *in situ* from Curraghalassa Bog, site number OF-LEM-0151

realm occurred. However, this is as yet difficult to prove in the absence of excavation of these site types or the presence of associated artefacts in a non-functional context.

Of those artefacts and artefact types that have been considered to represent ritual activity or deposits, none has been recorded in association

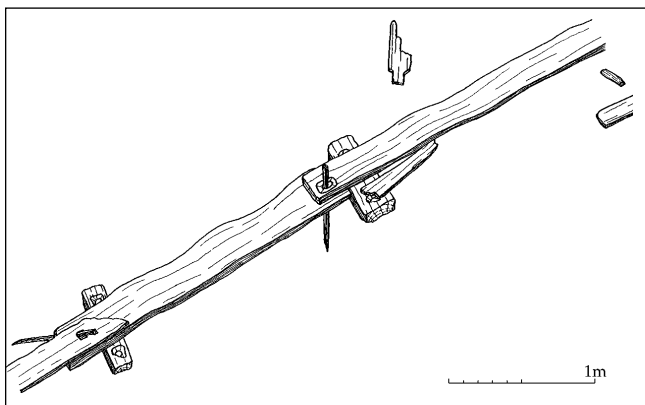


Figure 8. Reconstruction drawing of Curraghmore 16, Co. Offaly based on excavation of the plank walkway dated to 1685-1485 BC (GrN-21262)

with a site during the survey. A review of the Offaly peatlands in prehistory has shown that while there are local differences within the county when compared with the national pattern, a large number of probably ritually deposited artefacts have previously been recovered (McDermott 1998). This would seem to indicate that either the survey strategies employed to date have been biased against artefact recovery or that there may have been a segregation of activities on the bog surface. The survey strategy has been successful in identifying discrete archaeological features and objects and it is not likely that all visible artefacts of this type have been overlooked. The most probable explanation for this disparity is that such activity took place in areas of the bog not covered by the survey and in the marginal zones in particular. In these areas the peatlands tend to have been reclaimed in recent centuries or the peat is too shallow to be exploited commercially.

Chronology

As has already been implied, the dates of most of the sites identified by the survey cannot be inferred and in an attempt to overcome this problem a dating programme has been incorporated into the survey strategy. Currently there are 62 dates available for peatland sites in Offaly, of which most have been commissioned by the IAWU. Within this set there are patterns emerging that warrant comment. However, it must be borne in mind that less than 7 per cent of identified sites have been dated and the dates cover a wide range of periods.

The strategy adopted is very simple. It involves the dendrochronological dating of almost all sites that produce suitable samples and the selection of sites for radiocarbon dating using a weighted grading scheme (Fig. 9). This is intended to minimise biases in the dated sites so that both types of dates can be compared.

Baillie has shown that the pattern of dendrochronological dates from archaeological sites is non-random, despite the near random nature of the sample set (Baillie 1993, 10). He has also sug-

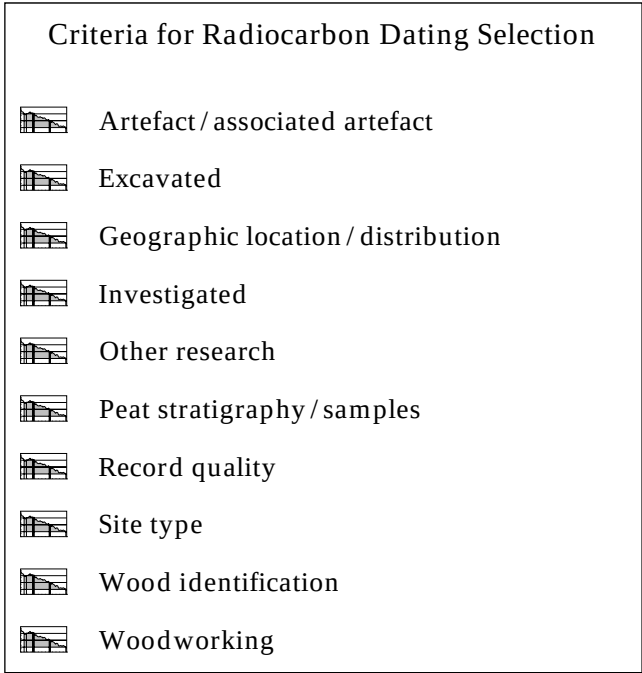


Figure 9. Criteria used in the selection of sites for radiocarbon dating. Sites are scored against each criterion to avoid biases in the radiocarbon data set

gested that this pattern has a relationship to the narrowest-ring events recorded in the Irish oak chronology (Baillie 1995, 90).

Prehistoric period

In Fig. 10 the dates are plotted by frequency at a 25-year interval with the centre date of a 2 sigma calibration used for radiocarbon dates which are shown in grey. The Offaly dendrochronological dates also show a very good correlation with the

narrowest-ring events although there are gaps in the correlation at 207 and 44 BC. Of the five Iron Age radiocarbon dates, three fall within this general period and these are matched by dendrochronological dates from Co. Longford. This suggests that phases of construction indicated by radiocarbon dates may be useful in the interpretation of tree-ring events even if it is a less precise tool than dendrochronology.

In terms of the overall development of the wetland sites in Co. Offaly, the earliest example recorded is from Boora where a sub-peat Mesolithic encampment dating to between 7500 and 7000 BC was excavated by Ryan (1984). Although not a wetland site at the time of its occupation it is the earliest site from areas that are wetlands today. This site shows an early presence in the landscape which, surprisingly, is not reflected in wetland structures until the 16th century BC. This contrasts with the Longford examples where a slow but consistent rate of trackway construction through the Neolithic and Early Bronze Age periods was recorded with nearly all sites occurring in Corlea townland (Fig. 11). Three of the earliest Offaly sites are single-plank walkways, two of which were built using very large timbers. Some of these sites have been traced across much of the width of the bog and one already mentioned at Curraghmore in Blackwater Bog (OF-CHM-0016) is estimated to have been almost 1km long. A recently excavated example from Derryville Bog in

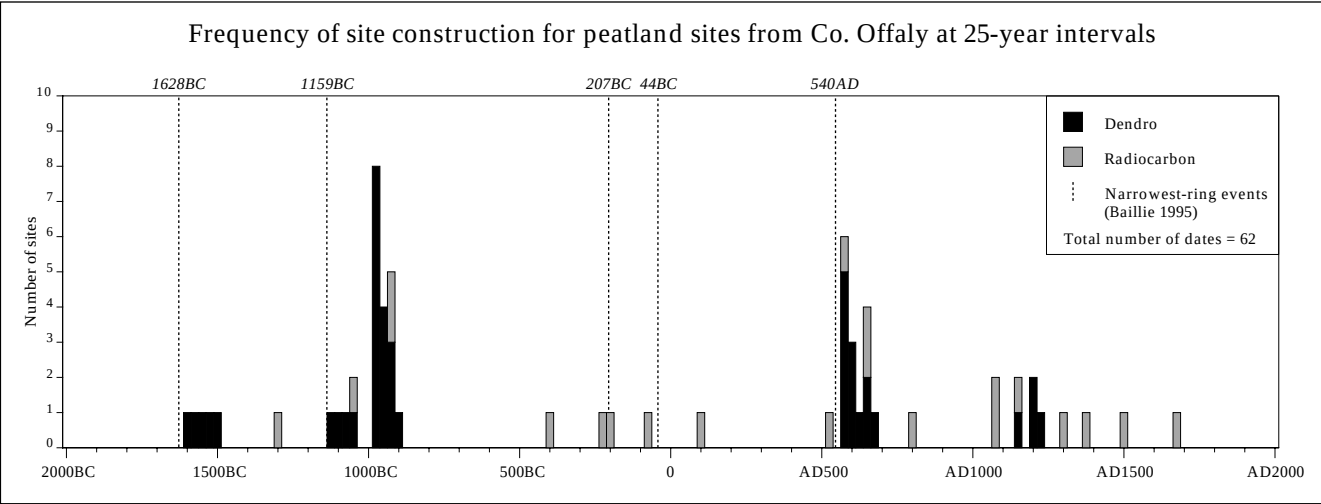
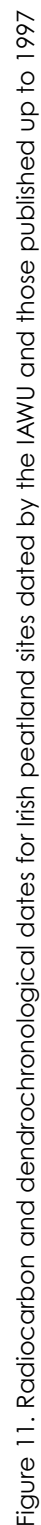


Figure 10. Frequency of site construction dates for peatland sites from Co. Offaly plotted at 25-year intervals. Radiocarbon dates are plotted according to the centre point of the 2 sigma calibrated range



Co. Tipperary shows similar characteristics (Casparie and Gowen 1998, 31). These sites contrast with many of the later examples in that they are coherent linear features.

Two of these earlier sites have been dated by dendrochronology and form part of a cluster of Irish dates for sites from wet contexts clustering around 1500 BC. Baillie and Brown have suggested that this building phase occurred because conditions were drier than usual, allowing sites to be constructed (Baillie and Brown 1996, 400); a similar pattern during the later Bronze Age is discussed below. In Longford, the rate of site construction accelerates after 1600 BC where the greatest concentration of dates of all site types is between 1600 BC and 900 BC. In Offaly there is a marked hiatus with a single site recorded from Tumbeagh Bog at c.1300 BC. It is still unclear whether this decrease in site numbers is a product of the high proportion of dendrochronological dates or reflects a real decline in site construction. During this period certain artefact types, in particular bronze dirks and rapiers, were almost exclusively deposited in wet contexts indicating the increased importance of such areas for votive offerings (Cooney and Grogan 1994, 139). In this regard also, the Co. Offaly bogs are strikingly underrepresented as neither of these two artefact types has yet been found (McDermott 1998, 16).

Following the narrowest-ring event at 1159 BC (Baillie 1995, 77), there is a dramatic increase in the number of sites and in particular in dendrochronological dates between c.1100 and 900 BC. The national pattern of construction is similar to that seen around 1500 BC and similar reasons have been advanced to explain the increase (Baillie and Brown 1996, 400). In Offaly this increase is coupled with the appearance of a number of wetland settlement sites and two dates from the Clonfinlough settlement site are included in the set of dates. Baillie and Brown have pointed out that the building of Clonfinlough and other structures around the country suggest that climatic conditions, and as a consequence the bogs, were drier than they had been. The high quality of preservation on these settlement sites indicates

that the areas became wetter again, perhaps after 900 BC, which protected the sites. An inundation is also evident from the lake deposits covering the Ballinderry 2 settlement in Co. Offaly, although it is not as closely dated as the others are. The end date for the occupation of the Clonfinlough site is the latest in this cluster and the site seems to have been occupied for perhaps 30 years. The short life of the site may be due to its construction at the end of a period where the conditions were favourable. If the period was indeed drier, then the increased construction of trackways may indicate that there were other times when many bogs were too wet to cross.

A low number of Iron Age sites show a significant decrease in site construction in the Offaly peatlands after the Late Bronze Age period of concentrated activity. This is followed by a marked increase in site numbers early in the historic period from the late 6th century AD. This hiatus in construction is closely matched in a set of over 100 radiocarbon and dendrochronological dates compiled by Raftery (1996, 423). Most of the dates are from sites in Co. Longford but dates from other areas support the pattern. These dates trail off markedly after 900 BC and there is a gap between the end of the 2nd century BC and the 6th century AD. This interval is also present in dating from other types of archaeological sites. Baillie's work has shown that 'no archaeological timbers, dateable by dendrochronology, belong to the more than six centuries between the dates 95 BC and 550AD' (Baillie and Brown 1996, 395). The number of sites that have been dated by radiocarbon far exceeds the number of those dated by dendrochronology and yet the pattern is still substantially maintained. The degree to which this set of dates is geographically biased by the inclusion of large numbers of dates from Co. Longford and west Offaly remains to be determined. However, the current evidence suggests that whatever caused this hiatus also led to the construction of all types of sites in bogs as well as sites in other wet contexts which use large timbers in their construction. In this respect, the Offaly dates are clearly reflecting trends on a much wider scale.

Historic period

In a recent study of Irish ringforts, Stout has suggested that apart from the avoidance of peatlands in the construction of these sites, there was further zoning within the landscape (1997, 107). In a study that included the Lemanaghan area he noted that the ecclesiastical sites were in a band along routeways on the lower land close to the river Brosna. The ringforts, and particularly the high-status sites, were at a remove from the communication routes along the river and were situated on higher ground. The recent surveys of the bogs help to reinforce the model of low-lying routeways in a zone on both sides of the Brosna. However, many of the areas of higher ground outside this zone are separated by bogs that have also produced large numbers of sites including those discussed above (Fig. 3). This suggests that while the secular sites were not always located on main arteries, they were fully connected with the communication routes in the region.

The site of the monastery at Lemanaghan is located on a large dryland island surrounded by bog. To approach the site from any direction would have required crossing more than 1km of bogs and other wetlands. St Manchan's church on the island, and the monastery which developed around it, were founded by the saint some time before the death of the first abbot in AD665 (Gwynn and Hadcock 1970, 40). A large number of sites have been recorded from the bogs surrounding the island and a group of dendrochronological dates ranges from AD578 to AD684. Although most of the dates are suffixed by 'or later', 11 of the 14 dates are around AD626 or earlier. This clearly indicates that the bogs around the island, and presumably the island itself, formed part of an extensive communications network prior to the recorded foundation of the monastery. Such early ecclesiastical sites are often portrayed as isolated in location and the Lemanaghan church would appear to contradict this idea. Alternatively, since there are no recorded Early Medieval secular sites on the island with which the trackways might have communicated, the possibility of an even earlier church foundation must be considered.

The dating evidence suggests a decline in the construction of sites after the 7th century AD. However, a degree of continued human activity in the peatlands is indicated by the artefactual and stratigraphic evidence. One reason for the decline in the number of sites appears to be the adoption and maintenance of primary routes through some of the bogs. Two sites in particular show this pattern. The first is in Derrynagun Bog to the east of Lemanaghan island. A narrow plank walkway was built between the island and the dryland to the east in 653±9AD (Q9281). A series of four substantial roads were later built directly on top of the earlier one using gravel, flagstones and planks to create a wide surface (McDermott and O'Carroll 1997, 46-7). The final phase of construction was some time in the 13th century. On the western side of the island there is a similar site which appears to be a connecting part of the route. The decline in the use of the road may correspond with the decline of the church site after a period of prosperity when the 11th century crozier and 12th century Shrine of St Manchan were associated with the site (Ó Flóinn 1994, 16). Portions of the crozier were found in the Bord na Móna bog to the north of the island, further demonstrating the relationship between the church and the bog. This pattern was also seen in a similar structure at Bloomhill Bog in Co. Offaly. That road is reputedly related to the monastic site at Clonmacnoise and it also went out of use in the 13th century, although it has been argued that its primary function was as a regional communications route (McDermott 1995, 66).

Conclusions

This summary account of recent work undertaken in the Irish midlands is intended to show the value and potential of archaeological surveys beyond the accumulation of site descriptions. The first principle for the peatland surveys currently being undertaken is to document the nature of the archaeological record and the threats facing it. Peatlands, although at considerable risk, are among the least documented and least understood archaeological landscapes in Ireland. As a result, it

is important to promote the potential of Irish peatland archaeology and to highlight areas of research that cannot be realised within the limitations of the survey. To this end, the IAWU surveys are designed for use in the development of a

broader understanding of the sites and bogs studied with the final objective being their integration into our understanding of the landscape as a whole.

References

- Baillie, M.G.L. 1993. Dark ages and dendrochronology. *Emania* **11**, 5-12.
- Baillie, M.G.L. 1995. *A Slice Through Time*. London: Batsford.
- Baillie, M.G.L. and Brown, D.M. 1996. Dendrochronology of Irish bog trackways. In B. Raftery *Trackway Excavations in the Mountdillon Bogs, Co. Longford, 1985-1991*, 395-402. Trans. Irish Archaeol. Wetland Unit **3**. Dublin: Crannóg Publications.
- Breen, T.C. 1988. Excavation of a roadway at Bloomhill bog, County Offaly. *Proc. Roy. Irish Acad.* **88C**, 321-339.
- Casparie, W.A. 1984. The three Bronze Age footpaths XVI(Bou), XVII(Bou) and XVIII(Bou) in the raised bog of southeast Drenthe (the Netherlands). *Palaeohistoria* **26**, 41-99.
- Casparie, W.A. and Gowen, M. 1998. Lisheen Archaeological Project, Co. Tipperary, Ireland, *NewsWarp* **23**, 29-38.
- Coles, B. and Coles, J. 1986. *Sweet Track to Glastonbury: the Somerset Levels in Prehistory*. New York: Thames and Hudson.
- Cooney, G. and Grogan, E. 1994. *Irish Prehistory: a social perspective*. Bray: Wordwell.
- Dúchas The Heritage Service. 1995. *County Offaly Record of Monuments and Places*.
- Golden, R. 1992. Down the old bog road. *J. Roscommon Hist. Archaeol. Soc.* **4**, 41-2.
- Gwynn, A. and Hadcock, R.N. 1970. *Medieval Religious Houses: Ireland, with an appendix to early sites*. Dublin: Irish Academic Press.
- IAWU 1995. *Blackwater Survey and Excavations, Artefact Deterioration in Peatlands, Lough More, Co. Mayo*. Trans. Irish Archaeol. Wetland Unit **4**. Dublin: Crannóg Publications.
- IAWU 1998. Irish Archaeological Wetland Unit fieldwork 1997- Counties Offaly, Westmeath and Mayo. In I. Bennett (ed.) *Excavations 1997: summary accounts of archaeological excavations in Ireland*, 207-208. Bray: Wordwell.

- McDermott, C. 1995. A paved way in Bloomhill Bog, Counties Westmeath and Offaly. In *Blackwater Survey and Excavations, Artefact Deterioration in Peatlands, Lough More, Co. Mayo*. Trans. Irish Archaeol. Wetland Unit **4**, 59-66. Dublin: Crannóg Publications.
- McDermott, C., Bermingham, N., O'Carroll, E. and Whitaker, J. 1998. The prehistory of the Offaly peatlands. In W. Nolan and T.P. O'Neill (eds) *Offaly History and Society*, 1-28. Dublin: Geography Publications.
- McDermott, C. and O'Carroll, E. 1997. Recently identified archaeological sites in Lemanaghan Works, Co. Offaly. In F.J.G. Mitchell and C. Delaney (eds) *The Quaternary of the Irish Midlands*. Field Guide **21**, 40-48. Dublin: Irish Association for Quaternary Studies.
- O'Carroll, E. 1997. Lemanaghan. In I. Bennett (ed.) *Excavations 1996: summary accounts of archaeological excavations in Ireland*, 93-4. Bray: Wordwell.
- Ó Flóinn, R. 1994. *Irish Shrines and Reliquaries of the Middle Ages*. Dublin: Country House/National Museum of Ireland.
- Raftery, B. 1996. *Trackway Excavations in the Mountdillon Bogs, Co. Longford, 1985-1991*. Trans. Irish Archaeol. Wetland Unit **3**. Dublin: Crannóg Publications.
- Ryan, M. 1984. Archaeological excavations at Lough Boora, Boughal townland, Co. Offaly, 1977. *Proceedings of the 7th International Peat Congress Dublin, June 18-23 1984 1*, 407-13.
- Stout, M. 1997. *The Irish Ringfort*. Irish Settlement Studies **5**. Dublin and Portland: The Group for the Study of Irish Historic Settlement/Four Courts Press, Dublin.
- Warner, R.B., Mallory, J.P. and Baillie, M.G.L. 1990. Irish Early Iron Age sites: a provisional map of absolute dated sites. *Emania* **7**, 46-50.