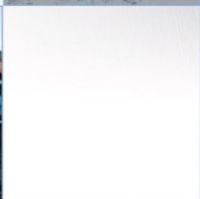
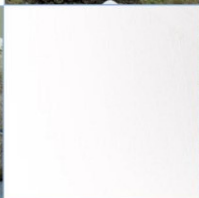
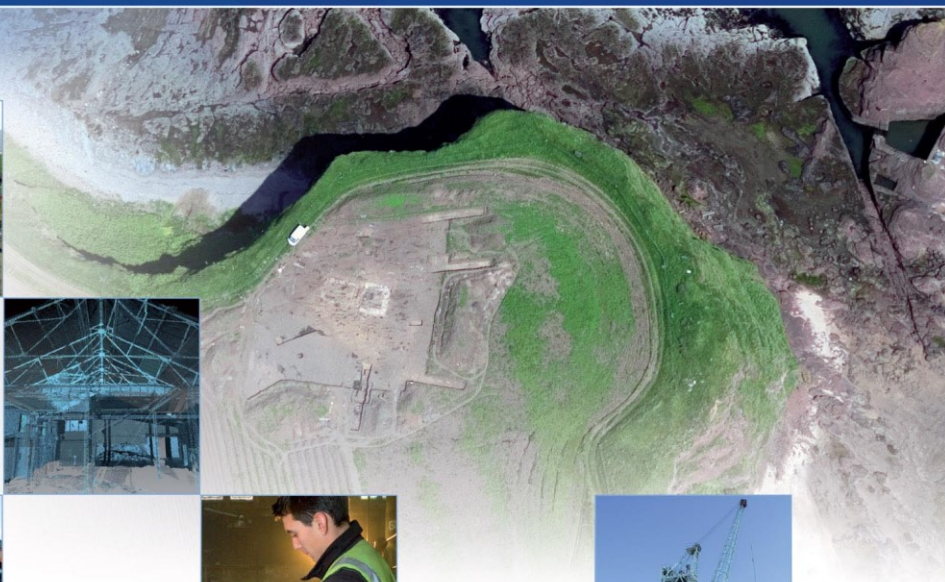
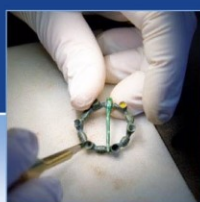


Eadarloch Crannog, Loch Treig, Lochaber

Technical report, publication report & survey

AOC 4244_11

March 2010



ARCHAEOLOGY

HERITAGE

CONSERVATION

Eadarloch Crannog, Loch Treig, Lochaber

Technical report, publication report & survey

On Behalf of:	Historic Scotland Longmore House Salisbury Place Edinburgh EH1 9SH
National Grid Reference (NGR):	NN 3473 7683
AOC Project No:	AOC 4244_11
Prepared by:	Anne Crone
Illustration by:	Graeme Cavers
Date of Fieldwork:	Oct 2007
Date of Report:	March 2010

This document has been prepared in accordance with AOC standard operating procedures.

Author:	Date:
Approved by:	Date:
Draft/Final Report Stage:	Date:

Enquiries to: AOC Archaeology Group
Edgefield Industrial Estate
Edgefield Road
Loanhead
EH20 9SY

Tel. 0131 440 3593
Fax. 0131 440 3422
e-mail. edinburgh@aocarchaeology.com



www.aocarchaeology.com

Contents

	Page
Abstract.....	1
SECTION 1: TECHNICAL REPORT.....	2
DENDROCHRONOLOGICAL ANALYSIS OF TIMBERS FROM EADARLOCH, LOCH TREIG	2
Historical background	2
Results.....	3
Conclusions	4
References	5
SECTION 2; PUBLICATION REPORT	6
LATE BEGINNINGS; AN EARLY MODERN CRANNOG AT EADARLOCH, LOCH TREIG, LOCHABER.....	6
Investigating the crannog.....	6
Dating the crannog	7
Woodlands and woodworking	8
A 'Country Club Crannog'?	8
Summary	8
Acknowledgements.....	9
References	9
SECTION 3; SURVEY	11

Abstract

This document contains a technical report on the dendrochronological analysis of oak and pine timbers from the 16th century crannog in Eadarloch, Loch Treig, a report which is intended for publication in *History Scotland* which focuses on the radiocarbon dates for its construction and use in the 16th century, and the survey carried out in 2007 when the timbers were sampled.

SECTION 1: TECHNICAL REPORT

DENDROCHRONOLOGICAL ANALYSIS OF TIMBERS FROM EADARLOCH, LOCH TREIG

Historical background

Excavations at Eadarloch Crannog, Loch Treig, Lochaber in 1933 revealed a structure which consisted of a rectangular framework of undressed logs secured in position by pegged half-check joints (Ritchie 1942). Occupation deposits over the framework consisted of a series of hearths but there was no clear evidence for a superstructure apart from a large, central posthole.

The crannog features in a poem written *circa* 1600 which refers to the building on the crannog as *Tigh nam Fleadh*, the House of Feasts, indicating one of its functions. Local tradition and placename evidence also suggests that it was used as a meeting-place, the 'Council Island', by local chieftains and possibly as a refuge for travellers. The only datable artefacts found during the excavation, a silver coin of Mary, Queen of Scots and a fragment of an iron backsword, point to the use of the crannog in the latter half of the 16th century. Although the 16th century poet assumed the island had been built long before his time, excavation did not recover any evidence for an earlier foundation for the crannog. The evidence suggests, therefore, that the crannog was probably built during the latter half of the 16th century.

Six of the timbers from the wooden platform had been stored in the West Highland Museum in Fort William since the excavation and these were examined during the development of the Tree-ring Database for Scotland project (Crone & Mills 1994). Four of the timbers (EC1 – 4) were identified as Scots pine (*Pinus sylvestris*) and two (EC5 - 6) as oak (*Quercus* sp.). Ritchie (ibid 72) describes the pine timbers as 'straight and of regular growth, generally about a foot or a little over in diameter and showing practically no taper along their whole length', and certainly the timbers in the museum conformed to this description. EC1 and EC2 also displayed the tapered ends and the pegged half-check joint characteristic of the timbers used in the framework. The other timbers were unmodified sections of timber which had modern saw cuts at one or both ends. With the exception of one young oak log the timbers had long, slow-grown ring-patterns suitable for dendrochronological analysis. The Museum Trustees gave their agreement for sampling and consequently discs, no more than 100 mm thick were sawn by hand from the ends of the five timbers.

Several attempts were made to return to the crannog to sample more of the timbers. This was deemed possible because, although the crannog had been submerged by the damming of the River Treig (the reason for the 1933 excavation) it was periodically exposed when increased drawdown of water by the Alcan plant in Fort William coincided with periods of low rainfall. Several attempts were made to get onto the crannog, in 2002 and 2005, but water levels rose rapidly preventing access. However, in October 2007, after water levels had been low for a prolonged period of time access was possible and the exposed timbers were surveyed in and sampled. The bulk of the surviving timbers were undressed birch (*Betula* sp.) logs; birch had been used for all the surviving piles as well as for horizontal timbers. One oak log (EC23) and two pine logs (EC34 & EC35) were sampled, all horizontal elements of the substructure; EC35 was fast-grown and as it displayed possibly modern sawmarks at one end, it was not analysed further.

Results

Pine

In all, five pine timbers were analysed. Previous work has demonstrated that the measurement of multiple radii on pine samples helps to identify missing or false rings while tree-masters constructed from multiple radii helps to eradicate much of the site-specific signal. Consequently, wherever possible three radii were measured on each of the four pine discs. The radii should be equidistant from each other but this was not always possible because erosion of the outer surface of the timbers meant that the ring-pattern was often incomplete. Furthermore, growth was assymetric to a greater or lesser degree on EC1 - 4 and this had to be taken into account in positioning the radii. A complete ring-pattern could be recorded along only one radius which means that there is no means of verifying that the outermost rings do not contain erroneous measurements. This problem was compounded by the fact that on all the samples growth became very compressed after about 80-100 years and the narrowness of the rings made measurement occasionally difficult. Erosion also meant that it was difficult to be certain whether the outermost ring under the bark edge had survived. EC34 was the very eroded outer arc of the log; the core had rotted away entirely and it was not possible to determine proximity to the bark edge. The sequence lengths of the individual radii and the possible bark edge are recorded in Table 1.

Table 1: sequence length of radii

EC1b	202b?	EC2a	189b?	EC3b	184	EC4a	181	EC34a	197
EC1c	177	EC2b	158	EC3c	180	EC4b	166	EC34b	108
EC1d	140	EC2c	163	EC3e	198b?	EC4c	182b?		
						EC4d	139		

The individual radii sequences from each tree were compared against each other, both visually and statistically. This process enabled any missing or false rings to be identified. With the exception of EC2, the ring-patterns of the samples appeared to be clear and straightforward during measurement and the internal correlations (Table 2) support the absence of erroneous ring-patterns along most of the radii (although, as stated above, we cannot be sure that there are not errors in the outermost decades). Correlation between the two radii from EC34 was poor ($t = 3.98$) and comparison of the graphs suggested that there was probably a missing ring. The sequences were re-examined but no anomaly could be detected on the surviving sections of the trunk and consequently a false ring was inserted into the sequence which improved correlation ($t = 6.27$). EC2 displayed an aberrant ring-pattern in the second decade of its sequence where a band of 4-5 faint rings became compressed into a seemingly single ring. Consequently the inner 20 rings of EC2a were not used.

Table 2; internal correlations

EC1M				EC3M			
	b	c	d		b	c	e
b	/			b	/		
c	8.27	/		c	9.13	/	
d	7.08	6.74	/	e	7.49	9.85	/

EC2M				EC4M				
	b	c	d		a	b	c	d

b	/			a	/		
c	5.65	/		b	8.31	/	
d	5.95	5.55	/	c	13.13	7.03	/
				d	4.5	5.32	4.51 /

The lower t-values for EC2 reflect the degree of asymmetry around the stem. Similarly the low t-values for EC4d reflect the dissimilarity of that particular radius.

Tree-masters were constructed for each of the samples; the length of each master is given in Table 3. The four tree-masters were then compared with each other, visually and statistically. The statistical correlations are presented in Table 3.

Table 3: correlations between the tree-masters

	EC1M	EC2M	EC3M	EC4M	EC34M	sequence length
EC1M	/					203
EC2M	-	/				170
EC3M	15.96	-	/			198
EC4M	4.56	-	5.3	/		182
EC34M	-	-	-	-	/	198

The extremely high correlation between EC1M and EC3M indicate that these two samples probably originated from the same tree. Modern saw cuts were observed on the ends of both these samples so it is possible that they were retrieved from the excavation as a single timber. Alternatively, they may represent two components cut from the same tree by the crannog builders.

The lack of correlation between EC2M and EC34M and any of the other tree-masters probably reflects the difficulties encountered in the measurement of those particular samples and suggests that there may still be errors in the ring-pattern which were not detected during measurement and correlation.

Consequently, a site master, ECMEAN incorporating EC1M, EC3M and EC4M, was constructed, 203 years in length. This was then compared against native Scots pine chronologies from Glen Loyne, Ballochbuie, Glen Affric and Mar Lodge but this did not produce any significant correlations.

Oak

In all, two oak timbers were analysed. Both were complete logs but the sapwood had decayed away as had some of the outer heartwood rings. EC5 had a long, slow-grown ring-pattern of 255 measurable rings while EC23 had 111 rings. They displayed very different growth-patterns, EC5 being regular and sensitive while EC23 was very variable with alternating wide and narrow rings. Consequently the sequences did not correlate with each other. Both sequences were compared against native oak chronologies from Scotland, England and Ireland but no significant and replicated correlations were identified.

Conclusions

The timbers from Eadarloch remain dendrochronologically undated. The outermost rings of EC1 were subsequently radiocarbon-dated to AD 1480 – 1650 (GU18320); this date supports the artefactual evidence for a late 16th century date for the use and construction of the crannog. Many of the native pine chronologies do not extend as far back as the late 16th century and those that do are only very weakly replicated in their

early decades (Mills *et al* forthcoming). For instance, the chronology from Glen Loyne, which is geographically closest to Eadarloch, extends back to AD 1459 but until the late 16th century, is only represented by two trees. Furthermore, the site master, ECMEAN, consists of only two trees and thus, its general climatic signal will be weak.

Similarly, there is very little suitable material against which to match the oak sequences. The Scotland master chronology is particularly weak throughout the 16th century, with only a chronology from the pollarded oaks at Cadzow, Strathclyde representing that century (Crone & Mills forthcoming). These oaks grew in quite different conditions to those around Eadarloch and thus it is unsurprising that there was no correlation with the Scotland master.

References

Crone, A & Mills, C 1994 'A tree-ring database for Scotland', *Glasgow Archaeol Soc Bull* 32, 8-9.

Crone, B A & Mills, C forthcoming 'Timber in Scottish buildings, 1450 - 1800; a dendrochronological perspective'.

Mills, C M, Crone, B A, Edwards, C, Wilson, R & Fish, T forthcoming 'Developments in native pine dendrochronology in Scotland'.

Ritchie, J 1942 'The lake dwelling or crannog in Eadarloch, Loch Treig; its traditions and its construction', *Proc Soc Antiq Scot* 76, 8-78.

SECTION 2; PUBLICATION REPORT

LATE BEGINNINGS; AN EARLY MODERN CRANNOG AT EADARLOCH, LOCH TREIG, LOCHABER

Anne Crone & Graeme Cavers

If thought about at all by historians, crannogs tend to be thought of as features of the later prehistoric landscape, the domain of the archaeologist, and indeed the overwhelming majority of the dated sites do belong to that period (Cavers 2005; Dixon *et al* 2007). There is in fact archaeological evidence for their use in the Romano-British, the Early Historic and the medieval periods, although continuity of the phenomena of crannogs throughout the nearly 2 millennia from the mid-1st millennium BC to the 13th century has yet to be demonstrated. There is also abundant documentary and cartographic evidence for the use of islands in lochs in the late medieval and early modern periods, an area of study which has largely been neglected by crannog archaeologists. This neglect has recently been redressed by the work of Matthew Shelley, whose doctoral thesis has drawn together the various strands of evidence to demonstrate the widespread use of freshwater loch settlements during the 13th to 17th centuries (Shelley 2007). Without archaeological intervention it is difficult to determine from survey alone whether some of these islands are natural, modified or completely artificial, ie a crannog, and Shelley avoids making too much of the distinction, referring to them as loch settlements or insular sites and focusing on their role within the wider socio-political context. However, the deliberate construction of a fully artificial island must surely reflect upon the nature of that context and the intended function of the island.

This article presents the first concrete evidence for the construction from scratch of a crannog in the 16th century and is thus something of a footnote to Shelley's work. It is also a story about the beginning and end of an archaeological site.

Investigating the crannog

The crannog in Eadarloch (NN 3473 7683), the small shallow loch which lies between Loch Treig and the River Treig, and whose name in Gaelic means 'the loch between', has been the subject of antiquarian interest throughout the 20th century. It was first examined by Odo Blundell in 1909 using his 'water telescope' (Blundell 1910), and was comprehensively excavated in 1933 by James Ritchie (Ritchie 1942). Very briefly, his excavations revealed a structure which consisted of a large, rectangular framework of undressed logs secured together by pegged half-check joints and fixed in position by piles. Occupation deposits over the framework consisted of a series of superimposed stone-built hearths but there was no clear evidence for a superstructure apart from a large, central posthole. Artefacts were few and far between but did include a number of datable objects which suggest that the crannog was certainly in use in the late 16th/ 17th century (ibid 60 – 62). These included a silver coin of Mary, Queen of Scots of a type that was in circulation *circa* 1542 – 58, a fragment of an iron backsword, and sherds of an earthenware jar. Local written and oral tradition also supports a 16th/17th century date for activity on the crannog. The crannog features in a poem written by a famous Gaelic poet, Donald Mackinlay, *circa* AD 1600 (ibid 15) which refers to the building on the crannog as *Tigh nam Fleadh*, the House of Feasts, indicating one of its possible functions. The crannog was also known as 'Keppoch's Council Island', a reference to the tradition that the Chief of Keppoch used to meet his clansmen there when in hiding near Loch Treig in the early 17th century (ibid 18).

The crannog became the focus of renewed interest in the late 20th century when one of the authors (BAC) was searching for suitable material to develop tree-ring chronologies of native oak and pine for Scotland (Crone & Mills 1994). Six of the timbers exposed during Ritchie's excavation had been stored in the West Highland Museum in Fort William and these were subsequently identified as a mixture of Scots pine and oak. Given the isolated location of the crannog the timbers were likely to be native (as opposed to imported timber – see Crone & Mills forthcoming for discussion) and thus ideal for our dendrochronological purposes.

However, a larger assemblage of timbers was needed so a return to the crannog to sample more timbers was mooted. Although the crannog had been submerged by the damming of the River Treig to form the Loch Laggan dam (the reason for the 1933 excavation) it was periodically exposed when increased drawdown of water by the Alcan plant in Fort William coincided with periods of low rainfall and visitors had observed timbers projecting from the crannog mound. It should thus be possible to sample the ends of the timbers without disturbing the crannog deposits so when access became possible in the autumn of 2007 (Plate 1) a team visited complete with survey equipment and chainsaw.

It soon became clear that very little of the crannog had survived; the apparent prominence of the mound was due to a combination of factors, the natural mound on which the crannog had been built combined with the scouring of the loch bed around the mound by the force of water released from the dam. All that had survived the inrush of water were the primary foundations of the crannog (Plate 2). In amongst the massive boulders were the remains of the timber infrastructure, a lattice of superimposed layers of logs lying directly on the loch bed, and an arc of piles along the western edge of the crannog (Figure 1). Even more disappointing was the discovery that almost all of the wood used was birch, a species not suitable for dendrochronological analysis (Crone 2000, 186); an oak and a few pine timbers were the only viable samples.

Dating the crannog

While the artefactual evidence from the 1933 excavation and the traditions associated with the crannog suggest that it had been actively used in the late 16th/early 17th century there was no evidence to indicate when it had actually been built. Ritchie argued for construction ‘...at the end of or soon after [Romano-British] times.’ (1942,74). The basis for his argument was that the builders must have been familiar with the timber, brushwood and stone constructions of what he referred to as the ‘Scoto-Irish type of crannog’, ie the classic crannogs of south-west Scotland and Ireland investigated respectively by Munro and Wood-Martin in the 19th century (and now known to be variously later prehistoric, Romano-British and Early Historic), and as there was then no evidence for a continuous tradition of crannog-building from the Romano-British period through to the 16th century, the crannog must have been built while the knowledge was still fresh. Thus, Eadarloch crannog entered the record as Romano-British in origin (ie www.ScotlandsPlaces.gov.uk).

We had hoped that dendrochronological analysis would provide conclusive evidence for the date of construction but the site was too remote and the assemblage too small to enable correlations with other dated site chronologies (Crone unpubl). Instead, samples of two of the birch piles and the outermost rings of one of the pine logs were submitted for radiocarbon dating. The results show that the crannog was built sometime between the late 15th century and the early 17th century (Table 1). It is clear from Donald Mackinlay’s poem that the crannog was in existence *circa* 1600 and that it had existed for some time; his allusions to certain historical personalities imply that he assumed the crannog existed in the 15th century (Ritchie 1942, 16). The combined evidence thus points to a construction date, possibly as early as the late 15th century and certainly by the mid-16th century, while the artefactual evidence suggests that the crannog had probably gone out of use by the early 17th century, a period of use of little more than a century.

Table 1: radiocarbon dates

SUERC No.	Material	Radiocarbon age	Calibrated date (2-sigma)
SUERC-22908	pine log (EC1)	315 ± 30	AD 1480 - AD 1650
SUERC-22909	birch pile (T2)	315 ± 30	AD 1480 - AD 1650
SUERC-22910	birch pile (T6)	310 ± 30	AD 1480 - AD 1650

Woodlands and woodworking

With such a tightly defined chronology other evidence from the crannog comes into focus. For instance, the timbers from the crannog can now provide a glimpse of the quality of woodland cover in Lochaber in the 16th century. All the pines measured for the dendrochronological study were *circa* 200 years of age while one of the oaks was at least 255 years of age (Crone unpubl). Ritchie himself counted 118 rings on one of the birch logs (1942, 72). He commented on the long, straight growth of the pines which displayed very little taper, and the exceptional size of the birches, some of which were up to 500 mm in diameter and as straight-grown as the pines. The beams of the upper framework were between 9 and 9.5 m in length (ibid 32). These dimensions signify a dense virgin forest which was as yet relatively unexploited. Timber was certainly being extracted from parts of Lochaber during the 16th century (Anderson 1967, 205) but the slopes around Loch Treig would probably have been too remote for cost-effective exploitation.

The woodworking techniques used to construct the crannog can now also be viewed as representative of 16th century rustic workmanship. While drawing comparisons with classic crannog construction Ritchie did admit that the Eadarloch crannog displayed very distinctive features, primarily the very rectangularity of the structure (see Morrison 1985, 47 for reconstruction), the absence of a piling perimeter and the crudeness of the joinery (1942, 71-2). The beams of the framework were joined by means of interlocking half-checks cut out of one side of the log and secured by wooden dowels. Squared beams were found in the lowermost layers but otherwise the logs were undressed apart from the half-check joints. This was a structure that was rapidly thrown up, and this suggests that the builders had a very specific purpose in mind.

A 'Country Club Crannog'?

Even today Eadarloch is remote, accessible some 2.5 miles down a single track road off the A86 and then an unmetalled track. Why build a crannog in such a remote location? One of the traditional names applied to the site was *Eilean Ruighe na Slighe*, translated as 'The island of the sheiling of the track', which Ritchie probably quite rightly assumed was the track that led from Rannoch to Glen Spean, running along the eastern shore of Loch Treig (1942, 17). The crannog lies just to the north of the sandspit which divides Eadarloch from Loch Treig and which formed a crossing point for the track on its northwards march to Glen Spean. Ritchie suggested that the crannog had been built as a refuge for travelers on this lonely route, the watery location chosen to provide additional protection from the packs of wolves that inhabited Lochaber (ibid 19).

The island may ultimately have taken on a more social function, as implied by the other names traditionally applied to the site, the 'House of Feasts' and 'Council Island'. The former appellation may refer to the seasonal use of islands as hunting lodges by chiefs and their retinues, with the attendant feasting that this entailed (Shelley 2007, 108) – what Morrison (1985, 67) referred to as 'Country Club Crannogs', while the latter appellation implies the use of the island for administrative purposes, for gatherings where decision-making and negotiating were undertaken (Shelley 2007, 114-7). If the crannog did indeed play an important role in the exercise of Gaelic chieftainship, as these traditional names imply, then its demise in the early 17th century may be seen as part of the wider changes in the organisation of Gaelic society which no longer required the chiefs to exercise their authority through peripatetic activities such as hostings, feasting, feuding and raiding (Dodgson 1998).

Summary

The radiocarbon dates from Eadarloch provide the most recent date for the construction of a crannog in Scotland. There are later radiocarbon dates from several island sites in Perthshire but these most probably relate to 18th/19th century activity on the islands such as building a jetty, rather than their construction (Shelley 2007, 318). Other crannogs were undoubtedly built in the early modern period; one was reportedly built in Loch Lochy in 1580 to house a garrison to subdue the people of Lochaber (Morrison, 1985, 23), but without excavation of the basal deposits this is impossible to demonstrate. Eadarloch is thus the only example that we can currently point to as a truly early modern crannog. Morrison (1985, 48) considered that

Eadarloch crannog deserved re-excavation partly because its rectangular structure was so at odds with the more circular nature of other crannogs. Luckily, the late date may go some way to explaining the singularity of its construction because, after 70-odd years of subjugation to the force of the dam waters, there may be very little more to be gained from further investigation.

Acknowledgements

Thanks are due to the following; AOC Archaeology Group for funding the sampling and survey work; Historic Scotland for funding the dendrochronological analysis, the radiocarbon dates and the reporting; staff at the Alcan plant in Fort William for keeping us informed about loch levels; and finally, Alan Duffy for wielding the chainsaw.

References

Anderson, M L 1967 *A history of Scottish forestry*. Vol 1. London: Nelson.

Blundell, O 1910 'On further examination of artificial islands in the Beaully Firth, Loch Bruiach, Loch Moy, Loch Garry, Loch Lundy, Loch Oich, Loch Lochy, and Loch Treig', *Proc Soc Antiq Scot* 44, 12-33.

Cavers, MG 2005 *Crannogs and later prehistoric settlement in Western Scotland*. Univ Nottingham; unpubl PhD thesis.

Crone, BA 2000 'Appendix II: dendrochronology', in Crone, BA *The history of a Scottish lowland crannog: excavations at Buiston, Ayrshire 1989-90*, 173-93. Edinburgh: STAR Monog Ser 4.

Crone, A & Mills, C 1994 'A tree-ring database for Scotland', *Glasgow Archaeol Soc Bull* 32, 8-9.

Crone, A unpubl *Dendrochronological analysis of timbers from Eadarloch Crannog, Loch Treig; technical report*. Unpubl report for Historic Scotland (2010).

Crone, B A & Mills, C M forthcoming 'Timber in Scottish buildings, 1450 - 1800; a dendrochronological perspective'.

Dixon, N, Cook, G T, Andrian, B, Garety, L S, Russell, N & Menard, T 2007 'Radiocarbon dating of the crannogs of Loch Tay, Perthshire (Scotland)', *Radiocarbon* 49.2, 673-84.

Dodgshon, R A 1998 *From Chiefs to Landlords: Social and Economic Change in the Western Highlands and Islands, c1493-1820*. Edinburgh: EUP.

Morrison, I 1985 *Landscape with lake dwellings. The crannogs of Scotland*. Edinburgh: EUP.

Ritchie, J 1942 'The lake dwelling or crannog in Eadarloch, Loch Treig; its traditions and its construction', *Proc Soc Antiq Scot* 76, 8-78.

Shelley, M 2007 *Freshwater loch settlements of the Scottish mainland 1296-1660: Contemporary roles and perceptions, and how they are understood today*. Edinburgh: unpubl PhD thesis.

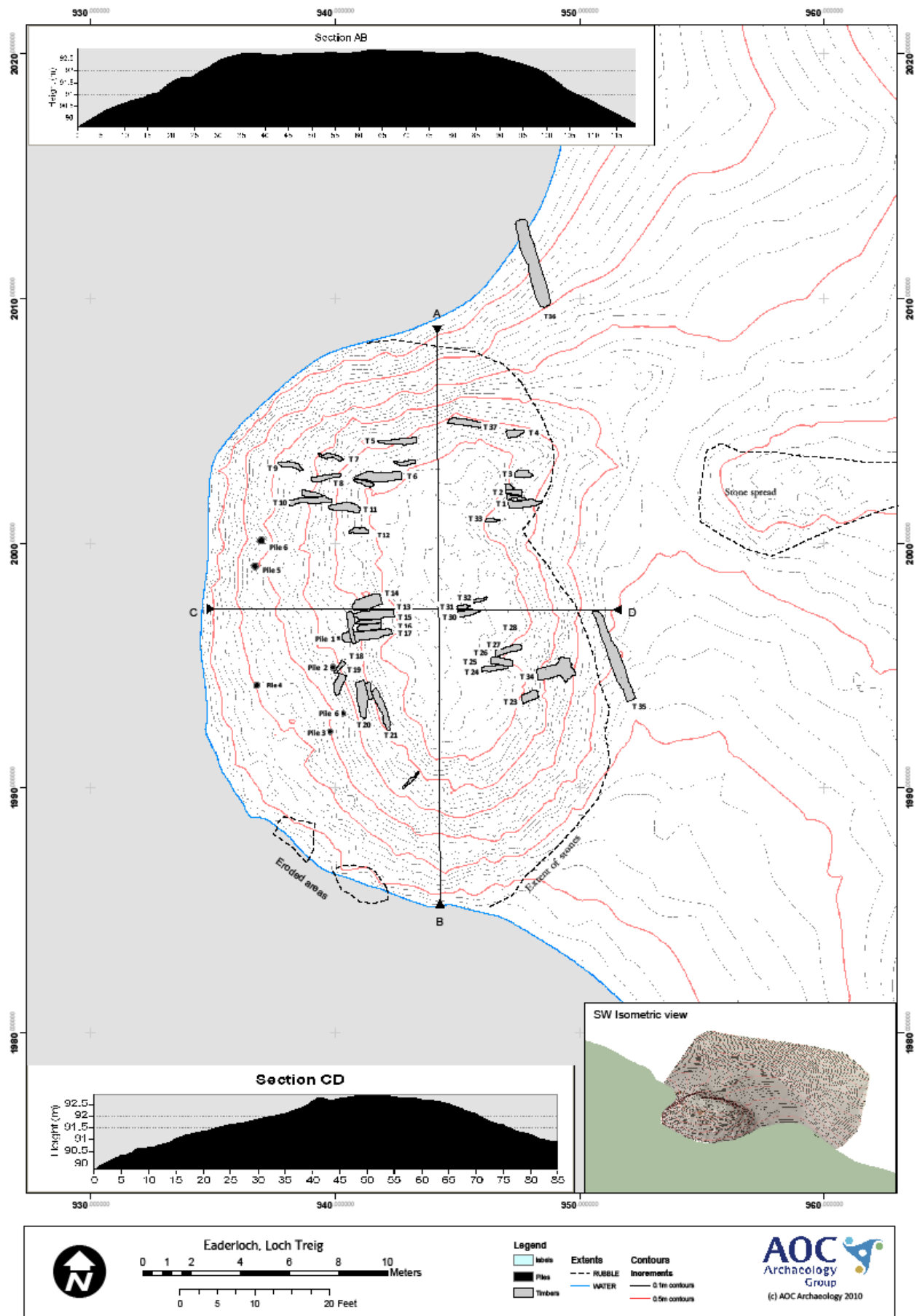


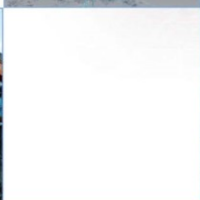
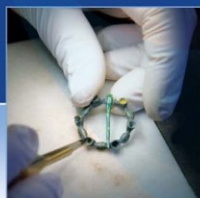
Plate 1: view of the crannog looking north. The contemporary water level is usually just under the trees seen on the left of the photograph



Plate 2: horizontal timbers and a pile visible amongst the boulders

SECTION 3; SURVEY





AOC Archaeology Group, Edgefield Industrial Estate, Edgefield Road, Loanhead EH20 9SY
tel: 0131 440 3593 | fax: 0131 440 3422 | e-mail: edinburgh@aacarchaeology.com

www.aocarchaeology.com