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Iron Age construction and early medieval reuse of crannogs in Loch Awe, Argyll: new radiocarbon dates and analysis

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ABSTRACT

Despite its influence on Scottish crannog studies, absolute dating evidence for activity on the crannogs of Loch Awe has been lacking. This paper presents previously unpublished radiocarbon dates from six crannogs in the loch. Of these, five sites have provided dates within the 1st millennium BC, confirming the existence of Iron Age crannogs in the loch – four of which may have been occupied contemporaneously. The dates fit in to the now widely appreciated pattern of occupation in the 1st millennium BC and later reuse in the 1st millennium AD. Using Bayesian statistical analysis, dating of the early medieval phase at Ederline Boathouse crannog was improved, with modelling suggesting occupation could have been limited to just a few decades of the second half of the 6th century AD. No evidence for activity after AD 900 was recovered, though the current number of samples analysed is small and high medieval activity is well attested on a number of islets on the loch through historical references and surviving structural remains. This broad chronological pattern is discussed and ideas that promise avenues for future research in light of new, high-precision, chronological techniques are highlighted.

INTRODUCTION

The first-ever complete crannog survey of a Scottish loch was carried out in 1972 at Loch Awe, Argyll and Bute (McArdle & McArdle 1973; 2007; McArdle et al 1973), revealing a dense concentration of 20 sites that first established crannogs as a major component of the Scottish settlement record (Illus 1 & 2). As a homogeneous group of partially and fully submerged, steep-sided, flat-topped, oval-shaped boulder mounds averaging around 15 to 20 metres in diameter, the Loch Awe crannogs are often regarded, alongside those later surveyed in Loch Tay (Dixon 1982), as the type-sites of Highland crannogs (Morrison 1980; Henderson 1998).

Despite their influence and importance, and the fact that at least 9 out of 20 of the Loch Awe crannogs displayed evidence for exposed structural timbers, absolute dating was not carried out during the initial survey. Interestingly, around this time, the first evidence for pre-Roman Iron Age construction on a crannog was recovered

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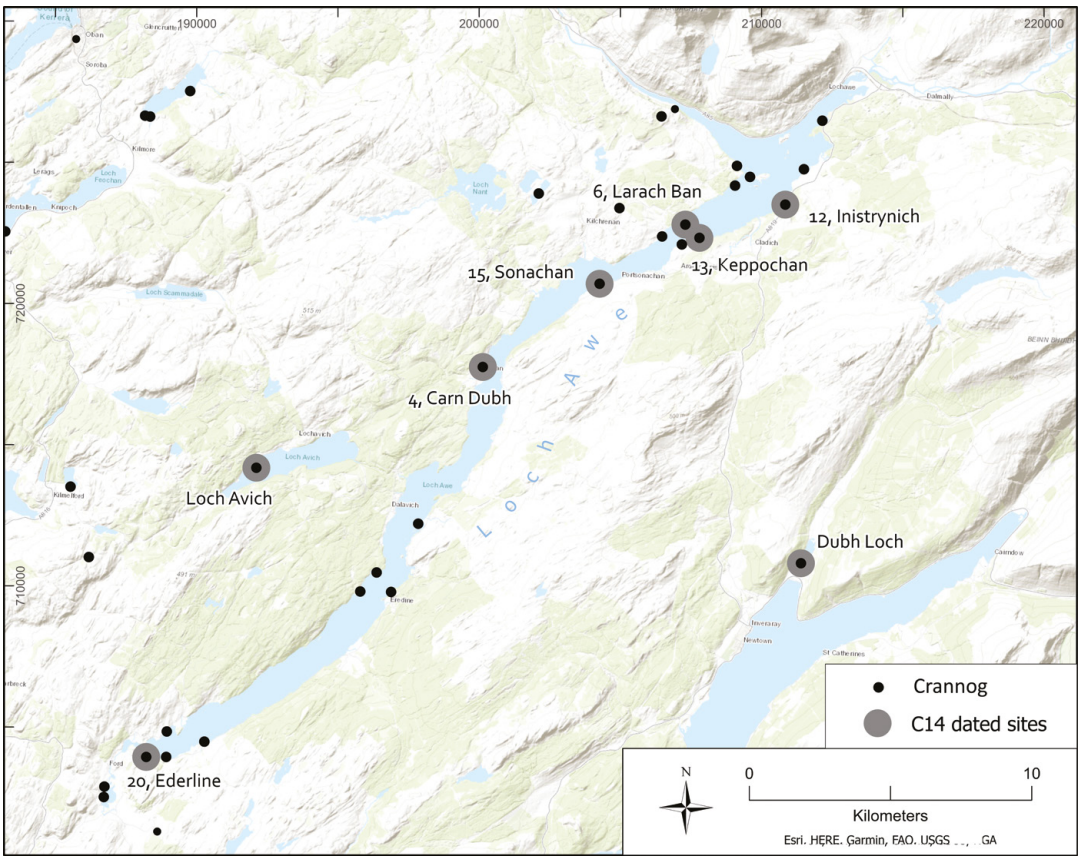
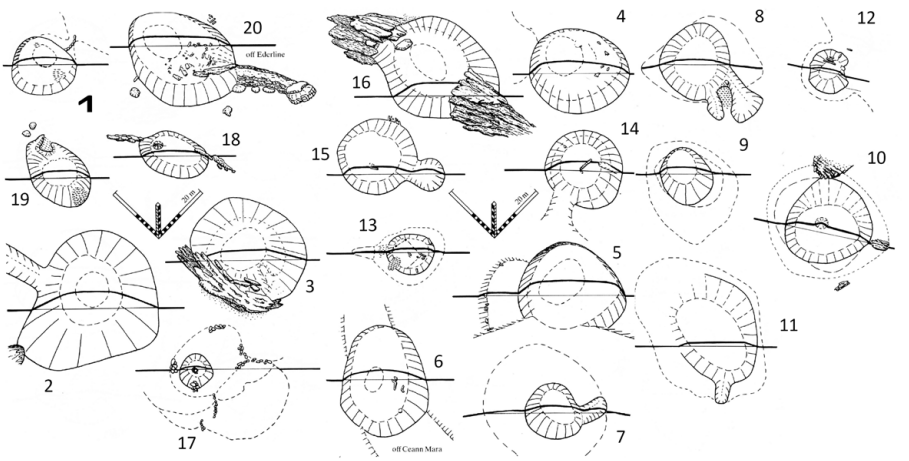


ILLUS 1 Location of crannogs in and around Loch Awe, Argyll. (Courtesy of the authors)



ILLUS 2 The stone and timber crannogs of Loch Awe. (After Morrison 1985; courtesy of the authors)

from Milton Loch (Guido 1974). During the 1972 survey, chronological indications came from Ederline Boathouse, where fragments of two saddle querns and a rotary quern were recognised on the boulder capping of the mound – the saddle querns being potentially indicative of occupation prior to 200 BC (Armit 1991: 190–5). Other than this, only undiagnostic artefacts were recovered, including a whetstone from Carn Dubh, a small chipped stone disc from Sonachan, a large stone with a worked hole (*c* 0.6m in diameter) interpreted as an anchor from Ardchonnel crannog, and a fragment of tinned bronze sheet of probable medieval date from Carn an Roin (McArdle & McArdle 1973: 9–10; 2007).

This remained the case until the early 1980s, when a sample from a structural timber was removed from Ederline Boathouse in the southern end of Loch Awe for radiocarbon dating, returning a determination of 2220 ± 45 BP (UB-2415) (Morrison 1982). With the evidence from this single date and the general structural similarities to crannogs which have produced Iron Age determinations in Loch Tay (Dixon 1984; Dixon et al 2007), it had largely been assumed that the majority of the sites in Loch Awe relate to the Iron Age (Dixon 2004: 9). The crannogs in Loch Awe, and to a lesser extent those in Loch Tay, formed the basis of Ian Morrison's influential theories on the principles of crannog construction, location and function in the landscape (Morrison 1985). These broad chronological ideas continue to influence crannog studies to this day, but the chronological resolution of the Loch Awe crannogs now lags well behind the major advances which have taken place in the intervening years since the early survey of the loch in the 1970s. Advances in south-west Scotland have improved the application of dendrochronology for attaining calendar dates for timber felling (Cavers et al 2011; Crone 2014; Cavers & Crone 2018). More crannogs from more regions around the country have now been dated which have revealed possible patterns in the adoption and use of crannogs around the country (Cavers 2006; Crone 2012; Lenfert 2013; Stratigos & Noble 2014, 2017, in press; Garrow & Sturt 2019). Importantly for Scotland, outside of a restricted zone in south-west Scotland where calendar dates for dendrochronology have been successful, advances in the application of radiocarbon wiggle-match dating have refined the radiocarbon-based site chronologies possible on crannogs (Cook et al 2010; Jacobsson et al 2018, 2019), which are currently being used in conjunction with Bayesian statistical analysis on Early Iron Age crannogs in Loch Tay as part of the *Living on Water* project.

This paper presents previously unpublished radiocarbon dates from six sites across Loch Awe and considers what this data set reveals about the construction and occupation of crannogs in this important loch. These newly published dates can be considered a roadmap for future work, aiming to improve the chronological resolution of the use of crannogs in Loch Awe.

RADIOCARBON DATES FROM LOCH AWE CRANNOGS

THE RANGEFINDERS

In 1999, new survey work took place at Loch Awe, the main aim of which was to improve the existing crannog site plans using modern surveying techniques (Holley 1999; Taylor & Holley 2000). The most significant result of the 1999 work was the sampling of timbers from five sites – Inistrynich, Larach Ban, Carn Dubh, Sonachan and Keppochan – producing the first series of dates from crannogs across the full length of the loch (Table 1; Illus 3).

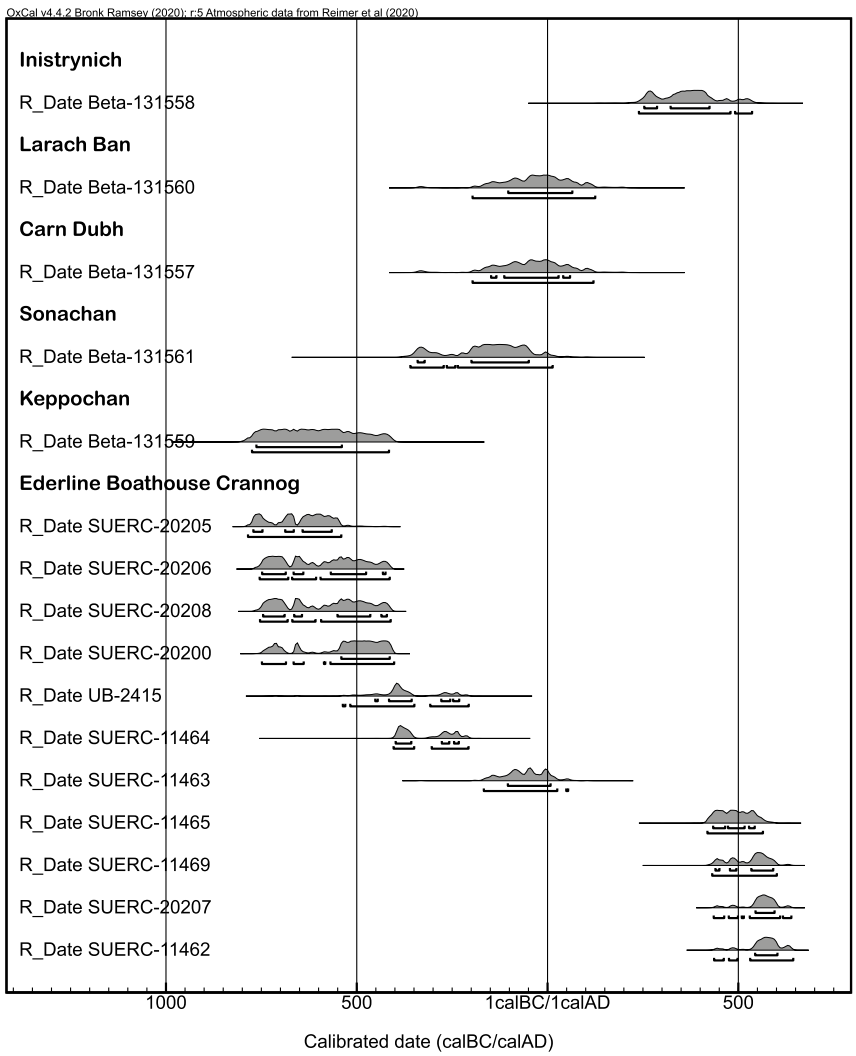
Following this work, 10 radiocarbon samples were obtained during three seasons of evaluatory excavation at Ederline Boathouse crannog in 2004, 2006 and 2007 (Cavers & Henderson 2005; Henderson 2012). The samples came from structural timbers, charcoal and bone within stratified deposits of organic material taken from the side (Trench 1) and the surface (Trench 2) of the crannog mound (Illus 4). Taken together with the date obtained from the surface of the crannog in the early 1980s, this provides 11 radiocarbon determinations in total for Ederline Boathouse crannog (Table 2).

TABLE 1
Rangefinder radiocarbon dates from Loch Awe crannogs collected by Mark Holley (1999) and Nick Dixon (1982)

Site name	*Lab no.*	*Context*	*Material*	*δ13C (‰)*	*Radiocarbon age (bp)*	*Calibrated date (95% confidence)*	*Calibrated date (68% confidence)*
Inistrynich	Beta-131558	Pile	Waterlogged wood	Unknown	1690 ± 60	cal AD 240–540	cal AD 250–425
Larach Ban	Beta-131560	Pile	Waterlogged wood	Unknown	2030 ± 60	200 cal BC–cal AD 130	105 cal BC–cal AD 70
Carn Dubh	Beta-131557	Pile	Waterlogged wood	Unknown	2040 ± 60	200 cal BC–cal AD 125	150 cal BC–cal AD 60
Sonachan	Beta-131561	Pile	Waterlogged wood	Unknown	2120 ± 60	360 cal BC–cal AD 15	345–45 cal BC
Ederline Boathouse	UB-2415	Horizontal timber	Waterlogged *Quercus* sp	Unknown	2480 ± 60	540–205 cal BC	455–230 cal BC
Keppochan	Beta-131559	Pile	Waterlogged wood	Unknown	2480 ± 60	775–415 cal BC	765–535 cal BC

The single samples from Inistrynich, Larach Ban, Carn Dubh, Sonachan and Keppochan were taken from exposed horizontal structural timbers taken from the steep sides of the mounds. The lowest timbers were selected, as these were thought more likely to represent basal levels. This has been the predominant sampling strategy for radiocarbon dating of crannogs (Dixon 2007; Crone 2012), but it comes with some significant caveats for interpretation. With the recovery of only single samples from individual sites, it is impossible to say whether other phases of use occurred at any of the sites, nor can we say with any certainty that the samples indicate primary construction or even a substantial phase of reuse (Henderson 2007a: 240). It remains a possibility that the timbers sampled might relate to very minimal, perhaps opportunistic, reoccupation of existing crannog mounds. It is also possible that the timbers have been reused from earlier periods, although the ^{14}C dates in such an instance would still indicate a period of crannog construction, and in the one study where this has been expressly tested, no timber reuse was found (Jacobsson et al 2019). While we cannot be certain about the degree of activity that is represented by these dates, we can say that the radiocarbon dates represent some form of deliberate construction at the sites in the ranges indicated by ^{14}C measurement and calibration. A further important caveat to the rangefinder dates from Loch Awe is the potential for an old wood effect. Exposed or shallowly buried timbers at the base of crannog mounds may or may not have lost their outermost annual rings, impacting the radiocarbon results and making them appear older. The potential impact in this case is, however, tempered by the fact that crannog builders from all periods rarely used timbers of great age. Also, alder, which was favoured by both crannog builders and crannog archaeologists when sampling timbers, tends to be no older than 100 years when felled, with most less than 50 years old (Crone 2014). This suggests that the calibrated ranges at 95% confidence probably do contain the event we are interested in – the felling and use of the timber in crannog construction.

The calibrated radiocarbon dates reveal crannog activity in the loch across the 1st millennia BC/AD, spanning as much as 1,500 years from some time during the Hallstatt plateau period of the radiocarbon calibration curve (800–400 cal BC approximately) to the 7th century AD. However, the study of crannog chronologies in recent decades, in particular work at Cults Loch crannog (Cavers & Crone 2018), Black Loch of Myrton (Crone et al 2019), both in Dumfries and



Illus 3 Radiocarbon rangefinder determinations from crannogs in Loch Awe

Galloway, and through the *Living on Water* project at Loch Tay, inform us that we should not necessarily view these radiocarbon dates from Loch Awe as representing continuous crannog building across the loch through this period. There appear to be peaks and troughs to the construction of crannogs across Scotland (Crone 2012: 161–4), and the rangefinder dates from Loch Awe (Table 1) fall into the periods identified as peaks in crannog construction around Scotland, in particular, the mid-1st millennium BC and the mid-1st millennium AD. What is not represented in the Loch Awe radiocarbon dates is the recently reaffirmed Neolithic crannog building phenomenon which remains confined to the Western Isles (Holley 2000; Garrow & Sturt 2019; Maričević et al 2020) and a third crannog building peak identified by Crone (2012: 147) from the 11th–13th centuries AD.

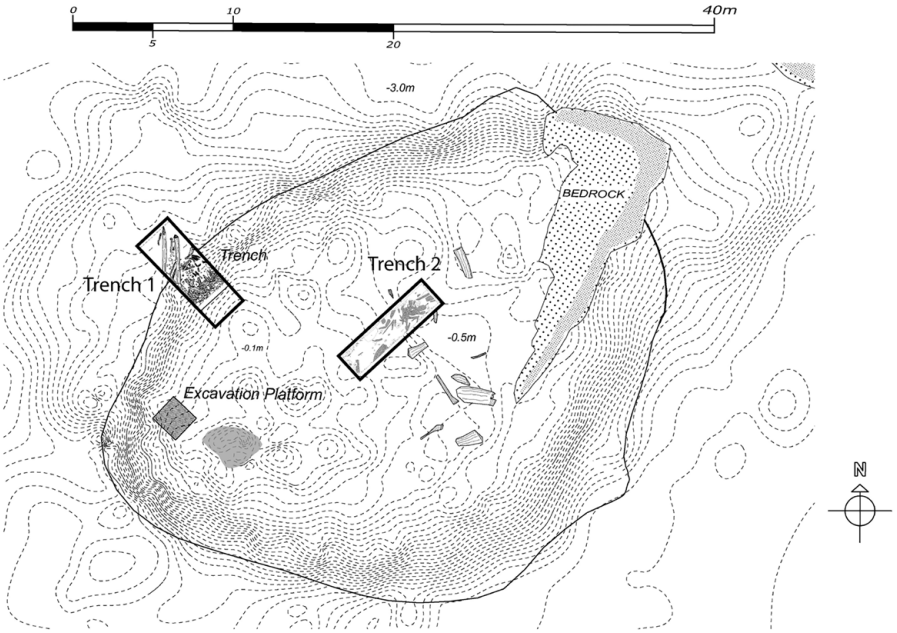
The rangefinder date from Keppochan and the dates from excavated contexts in Trench 2 at Ederline Boathouse further confirm that crannog

TABLE 2
Radiocarbon dates from Ederline Boathouse crannog

Lab no.	*Context*	*Material*	*δ13C (‰)*	*Radiocarbon age (bp)*	*Calibrated date (95% confidence)*	*Calibrated date (68% confidence)*
SUERC-20205	Pile (205)	Waterlogged *Quercus* sp pile	-27.8	2510 ± 30	790–540 cal BC	775–565 cal BC
SUERC-20206	Small diameter (203)	Waterlogged *Corylus avellana*	-26	2455 ± 30	750–425 cal BC	755–410 cal BC
SUERC-20200	Horizontal (205)	Waterlogged *Quercus* sp	-28.2	2425 ± 30	750–400 cal BC	545–410 cal BC
SUERC-20208	Horizontal (204)	Waterlogged *Quercus* sp	-26.1	2450 ± 30	755–410 cal BC	750–420 cal BC
UB-2415	Horizontal (200)	Waterlogged *Quercus* sp	Unknown	2320 ± 45	780–415 cal BC	770–535 cal BC
SUERC-11464	Horizontal (105)	Waterlogged *Fraxinus excelsior*	-28.1	2285 ± 35	405–205 cal BC	400–230 cal BC
SUERC-11463	Horizontal (105)	Waterlogged *Alnus glutinosa*	-29.4	2055 ± 35	170 cal BC–cal AD 55	105 cal BC–cal AD 10
SUERC-11465	Organic layer (103)	Humerus *Sus* sp	-22.1	1575 ± 35	cal AD 415–565	cal AD 430–545
SUERC-11469	Organic layer (103)	Talus *Bos taurus*	-22.7	1535 ± 35	cal AD 430–605	cal AD 440–595
SUERC-11462	Horizontal (103)	Waterlogged *Alnus glutinosa*	-29.4	1505 ± 35	cal AD 540–605	cal AD 435–645
SUERC-20207	Organic layer (107)	Charcoal *Alnus glutinosa*	-28.9	1515 ± 30	cal AD 435–640	cal AD 545–600

building in west-central Scotland was at least broadly coeval with the 'crannog event horizon' sometime within the Hallstatt plateau period (800–400 cal BC) (Cavers 2006). These dates also fit with the earliest dates for crannog building activity in Argyll, with crannogs from Loch Lethen and Loch Avich, all close to Loch Awe, also providing earlier Iron Age dates (Cavers 2010: 165). Due to the nature of single calibrated radiocarbon dates on the Hallstatt plateau between 800 to 400 cal BC, not much can be said beyond this. However, recent work elsewhere has refined the initial construction of crannogs to the latter half of the Hallstatt plateau period of the radiocarbon calibration curve, sometime between 600 and 400 cal BC (Cook et al 2010; Cavers & Crone 2018, 2019; Cook et al in prep). Refining the Hallstatt plateau chronology through dendrochronology and/or radiocarbon wiggle-match dating of the Loch Awe crannogs should be an important priority for future work.

With the rangefinder dates from Larach Ban, Carn Dubh, Sonachan and Ederline Boathouse indicating activity across the last centuries of the 1st millennium BC, the potential exists that these four sites were occupied at the same time. Equally, Larach Ban, Carn Dubh and Sonachan could have been occupied sequentially with as much as two centuries between their construction and use. Activity at Ederline Boathouse could also be contemporary with these three at different points. Whatever the case, the dates suggest that crannogs were a relatively common settlement in the loch from the mid-1st millennium BC through to the first century AD at least. Further potential contemporary crannog building at the end of the 1st millennium BC in this region is also indicated by the date of 2030 ± 50 (GU-11924),



ILLUS 4 Plan of Ederline crannog, Loch Awe. (Courtesy of the authors)

calibrating to 170 cal BC – cal AD 80, from a crannog in Loch Dubh, directly adjacent to Loch Awe (Cavers 2010: 209; Illus 1). This group of radiocarbon dates demonstrates the value of looking at crannogs not solely as isolated settlements. The apparent mid-1st millennium BC peak in the radiocarbon dates of structural timbers appears here to have a very long tail-off (if any tail-off at all) – this would not be evident if only examining a single crannog. Again, further dating, ideally through dendrochronology and/or wiggle-match dating, would be required to resolve the question of contemporaneity between the different Loch Awe crannogs in this period and the presence and nature of the tail-off in crannog construction through the latter part of the 1st millennium BC and into the 1st millennium AD.

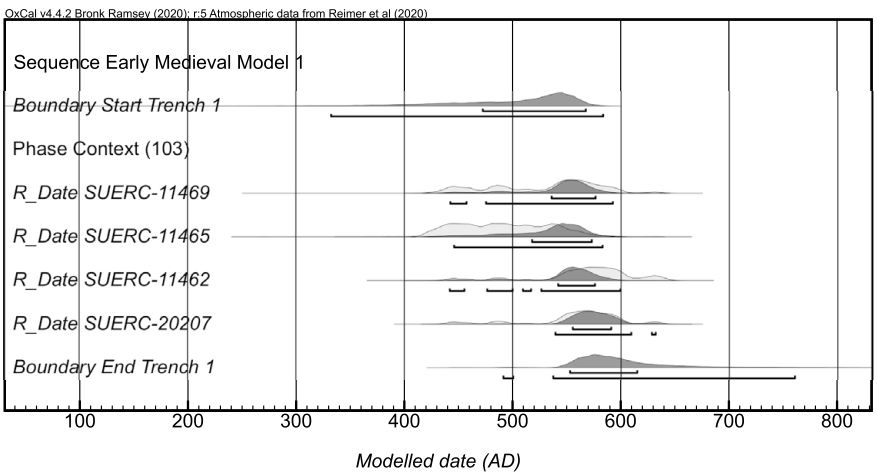
EDERLINE BOATHOUSE CRANNOG – DATES FROM EXCAVATED CONTEXTS

The corpus of 11 radiocarbon dates from stratified deposits at Ederline Boathouse allows further resolution at the site level (Table 2). The radiocarbon dates indicate that there were at least two distinct phases of activity on the site: in the Iron Age, beginning in the Hallstatt plateau somewhere between 800 and 400 cal BC, with some likely continued activity in the latter part of the 1st millennium BC, and a second period of use in the early medieval period, between cal AD 400 and 650. The nature of the Early Iron Age origin and chronology at Ederline Boathouse is impossible to resolve fully on the dating evidence available. It could relate to an initial construction and use followed by only minimal reuse in the second half of the 1st millennium BC or it may reflect initial construction and use, followed by continuous or near continuous use through this period. Further samples from across the site would be required to resolve this question, but what is clear is that, following this Iron Age activity, there is a very likely hiatus in the early centuries of the 1st millennium AD, before occupation in the middle of the 1st millennium AD. Again, this is a pattern that is repeated around Scotland with examples from Loch Tay (Dixon et al 2007) and elsewhere (Crone 2012: 150; Stratigos & Noble 2017).

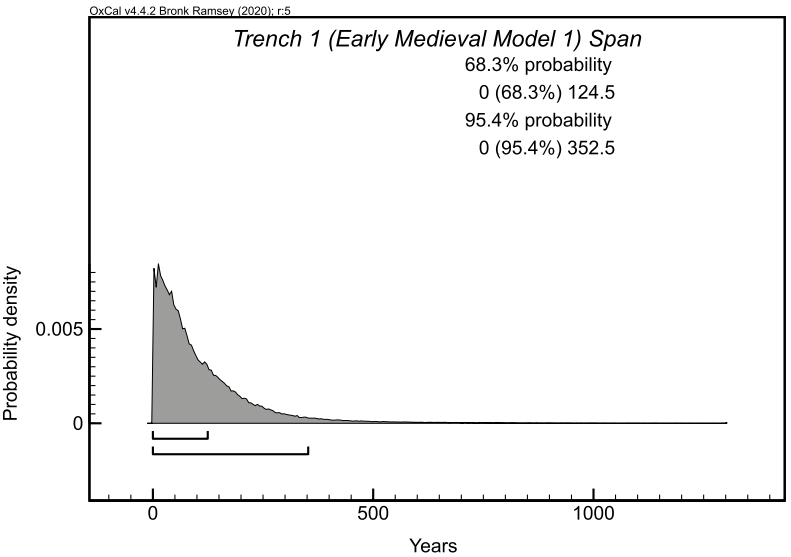
The reoccupation, reuse and reworking of sites is a characteristic trait of settlement in western Scotland throughout the 1st millennia BC and AD (Henderson 2007b: 150–72). The reuse of crannogs may be a further reflection of this, as well as indicating the continuing social and cultural relevance of living over water in Scotland (Cavers 2006: 407–8; 2010: 165–7; Henderson 2009: 44–6). How crannogs articulate with terrestrial settlement throughout the 1st millennia BC and AD remains unclear, but a range of different cultural and environmental factors have been suggested (Cavers 2010). With a few extant likely Iron Age terrestrial settlements known around Loch Awe, resolution to this question is possible through future targeted programmes of excavation.

The greater share of evidence for mid-1st millennium AD crannog building at Loch Awe comes from Ederline Boathouse. Notably, this mid-1st millennium AD activity was only identified following excavation which had taken place to identify Iron Age activity, indicated by the existing Iron Age radiocarbon date and the presence of saddle and rotary querns on the site (Morrison 1982; Cavers & Henderson 2005). The range of mid-1st millennium AD radiocarbon dates produced from Trench 1 at Ederline forms a coherent single group, indistinguishable from each other, despite being from samples throughout the stratigraphic sequence identified in the trench. One date (SUERC-11465) may indicate slightly earlier activity than the rest from Trench 1, but could reasonably be coeval with the rest at its 95% confidence interval. Indeed, this was suggested, based solely on the excavated stratigraphy which appeared to relate to short-lived accumulation or single event.

The dating of the early medieval activity at Ederline can be significantly improved through Bayesian modelling of the dates using OxCal v4.4 (Bronk Ramsey 2009) and the internationally agreed calibration curve for the northern hemisphere, IntCal20 (Reimer et al 2020). Two models can be presented. The first model (Early Medieval Model 1) considers the 1st millennium AD dates from Trench 1, all of which come from short-lived samples or structural timbers in clearly defined contexts, as a single continuous phase (Illus 5 & 6). This sees activity beginning at Ederline Boathouse no earlier than the 4th century AD and ending no later than the 8th century AD. The second model (Early Medieval Model 2) offers more resolution by building in the stratigraphic sequence that sees the sample from the highest context (107) (SUERC-20207) as later activity and also contains a hard *terminus post quem* of AD 550 for the E Ware pottery recovered from Context 103. Thus, Early Medieval Model 2



Illus 5 Early Medieval Model 1 for Ederline Boathouse crannog. Note this model is unconstrained by a TPQ indicated by the presence of E Ware pottery in these contexts



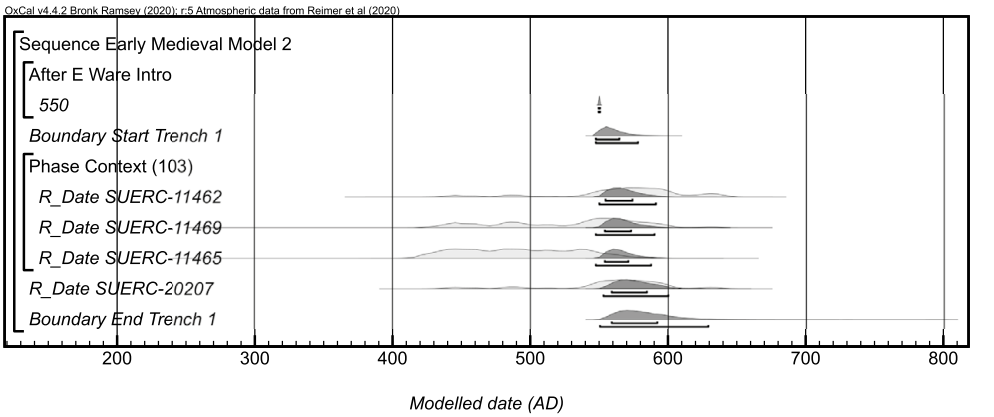
Illus 6 Duration of activity indicated by radiocarbon dates from Trench 1 at Ederline Boathouse crannog unconstrained by a TPQ indicated by the presence of E Ware pottery

only considers that the radiocarbon dates relate to activity after AD 550 (Illus 7 & 8). As such, a very tight chronological window can be proposed for use of the crannog during the second half of the 6th century AD, possibly extending to the first decades of the 7th century AD.

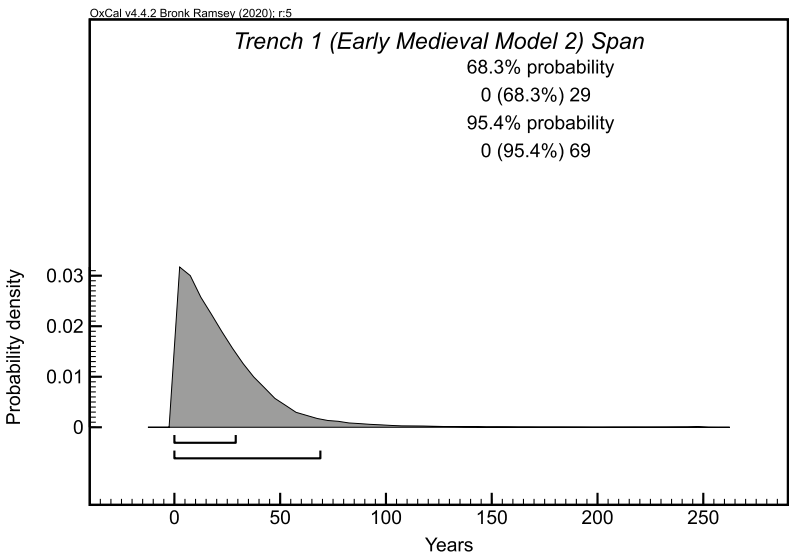
The only other radiocarbon date indicating crannog building activity at Loch Awe in the mid-1st millennium AD comes from the rangefinder date from Inistrynich (Beta-131558). It returns a calibrated range of cal AD 240–540 (95% probability). With the modelled activity at Ederline potentially being constrained to the second half of the 6th century AD (Illus 7 & 8), the rangefinder from Inistrynich may suggest it pre-dates the activity indicated at Ederline Boathouse by a few decades at least. With just a single date from Inistrynich, the view that construction and use of Inistrynich pre-dates that at Ederline Boathouse should be considered tenuous at best. However, the rangefinder provides a useful hypothesis that can be tested with further work on the now established mid-1st millennium AD activity here. The lesser quantity of mid-1st millennium AD rangefinder radiocarbon dates versus Early Iron Age rangefinder radiocarbon dates across Loch Awe is a pattern repeated at Loch Tay (Dixon et al 2007) and requires further exploration in its own right. This may reflect different construction methods in the Early Iron Age versus the early medieval period, perhaps informed by resource availability or different crannog building traditions being implemented (Cook et al in prep).

DATING CRANNOG CONSTRUCTION AND USE ON LOCH AWE

The radiocarbon dates presented above demonstrate unequivocal evidence for the construction and use of crannogs from sometime in the mid-1st millennium BC continuing through to the second half of the 1st millennium AD across Loch Awe. This new dating allows for a number of important new avenues for research. For the mid-1st millennium BC, the dates presented are a small, but important, step forward in absolute dating examples of the numerous broadly Iron Age site-types in Argyll. These include, in addition to crannogs, enclosed and unenclosed settlements, forts, brochs, duns and possibly hut circles (though see Cavers 2010: 122). As the



Illus 7 Early Medieval Model 2 which shows estimated start and end boundaries for activity in Trench 1 based on the same dates as those in Early Medieval Model 1 but with a TPQ of AD 550 indicated by the presence of E Ware ceramic sherds



Illus 8 Estimated duration of activity indicated in the upper contexts of Trench 1 with TPQ of AD 550 indicated by presence of E Ware ceramics

Regional Archaeology Research Framework for Argyll has recently highlighted, establishing the chronological relationships between different site-types and examples of the same site-type is a research priority for this region (ScARF 2017). This lack of absolute dating from settlement, and its consequent effects on our ability to detect aspects of Iron Age social structure and change, was thoroughly explored with reference to crannogs in this region by Cavers (2010). While we remain faced at Loch Awe with many of the same chronological challenges of precision in the mid-1st millennium BC, we now have the foundation for targeted work that can provide those higher resolution chronologies following from similar recent advances on building chronologies from

crannog structural remains (eg Cavers & Crone 2018; Crone et al 2019; Jacobsson et al 2019; Cook et al in prep).

Perhaps more so than for the 1st millennium BC, where the terrestrial settlement record around Loch Awe remains mostly unsorted chronologically, there are more reliably dated traces of 1st millennium AD settlement in this basin. The Loch Awe catchment contains evidence for possible contemporary monastic and other ecclesiastic sites indicated by a series of 1st millennium AD carved stones. One of these, found on the Rubha na Fidhle among other incised crosses, depicts a cross flanked by two robed figures with bird-like heads, not dissimilar to the Papil stone from Shetland (Campbell & Sandeman 1962: 71; Kilpatrick 2011). The settlement remains, contemporary with these carved stones, are not well known or identified. Given the poor preservation of material within the thin and acid soils of this part of Scotland, there is significant scope to elucidate 1st millennium AD settlement practices through the preservation that can be expected on the Loch Awe crannogs. There is a chance here to explore a network of secular and ecclesiastic settlements which is not well understood in this period, especially away from the coast, and its handful of better documented and studied sites such as Iona and Dunadd. The value of this is seen in even the relatively small window into 1st millennium AD practices recovered from Ederline Boathouse. The chronological precision possible that was demonstrated in modelling radiocarbon dates from Trench 1 at Ederline Boathouse will be transformative for understanding the major changes in settlement and society that took place in the 1st millennium AD.

A factor that stands out when considering the Loch Awe crannog radiocarbon dates as a group is the lack of evidence for medieval activity beyond the mid-1st millennium AD. This supports the idea of a lacuna in crannog construction during the 9th–11th centuries AD as suggested by Crone (2012: 149). There has been a series of 9th–11th century AD dates from crannog investigations in recent years (see Stratigos & Noble in press), but these have mainly come from eastern and northern Scotland, and may therefore suggest that there is a regional character to the use of crannogs in this period. This may be something of a break from previous periods where crannog building patterns from the mid-1st millennium BC to mid-1st millennium AD seem nearly broadly comparable across regions. Further programmes of dating targeted sites with high medieval occupation would be the best possible way to test if the lack of radiocarbon dates calibrating to the 9th–11th centuries AD is a genuine lacuna in crannog construction in particular regions of Scotland.

Whether or not the lacuna in the 9th–11th century AD is real or just apparent, there are several likely explanations for the lack of radiocarbon evidence for crannog occupation in Loch Awe after the 9th century AD and through the high medieval period. The first is simply that not enough samples have been taken and so by chance these periods have been missed. Certainly, with only six out of 20 crannog sites sampled and five of those providing only one determination, this seems likely. The pattern might also reflect sample selection bias. Underwater survey work in Loch Awe has prioritised the investigation of partially and wholly submerged artificial mounds and largely ignored the investigation of the foundations of presumed ‘natural’ islands with later medieval structures and/or references. The emphasis on the study of artificial islands rather than natural islands with attested medieval occupation has been common ever since the emergence of the ‘crannog’ concept in Scottish archaeology in the 19th century (Shelley 2009: 7). Finally, the lack of high medieval radiocarbon dates may also be related to the construction methods (and subsequent taphonomy) of later medieval crannog sites which tend to have had substantial quantities of stone brought to site, which may overlie and bury earlier structural timbers and construction. This was demonstrated at Loch Arthur crannog, Dumfries and Galloway, where an earlier Iron Age timber mound is capped by a medieval boulder construction (Henderson & Cavers 2012) and similarly at Castle Island, Loch Kinord, Aberdeenshire, where a motte-type castle was built over a likely Iron Age and early medieval crannog (Stratigos & Noble 2017: 158–62).

Despite the lack of radiocarbon evidence from structural timbers in Loch Awe, there is a very clear medieval island dwelling tradition at Loch Awe on the larger natural islands at Innis Chonnel, Kilchurn, Eilean Fraoch and Innis Errich (Shelley 2009: 139). In addition, there are churches on Inishail and Innis Errich on the loch, which underwent change and renewal in the late medieval period (Douglas 1912). It seems possible that loch-based settlement moved to the natural islands in the 2nd millennium AD, and this would support Shelley's (2009) view that in the medieval period the artificiality of the island became less important to those seeking to occupy and inhabit islands. Certainly, by the 15th century, the roots of the Campbells of Argyll and the Campbells of Glenorchy were firmly anchored in castles on natural islands at Innis Chonnel and Kilchurn respectively (Shelley 2009: 183–6). It is also worth noting that a medieval date of 780 ± 50 BP (GU-11923), calibrating to 1150–1300 cal AD (95% probability), has been recovered from a horizontal oak timber at the base of an ovoid boulder mound crannog in Loch Eck, just 25km to the south of Loch Awe (Cavers 2010: 210). The importance of the artificiality of the foundations of island dwellings remains a future research question that could be tested through further dating of underwater structural elements on crannogs at Loch Awe and, in particular, the targeting and investigation of islands with documented medieval associations. Finding timber structural remains on such sites will greatly improve detection of how islet settlement patterns changed in the medieval period. Additionally, work targeting medieval sites has significant potential to unlock important advances for Scottish dendrochronology and dendroclimatology, which has been hampered by the lack of suitable material for traditional ring-width studies on oak and alder (see Crone & Mills 2002; Crone 2014), but might be overcome with newer techniques such as blue intensity for pine species (eg Mills et al 2017) or oxygen isotope analysis allowing broader regional master chronologies for oak (Loader et al 2019).

CONCLUSION

Though these dates represent the first radiocarbon dating of a group of Loch Awe crannogs, it is perhaps unsurprising, particularly given they provided the site-type characteristics for Highland crannogs in the first place, that the dates recovered fit the general pattern seen elsewhere in Scotland – namely, when submerged timbers from boulder mound crannogs are sampled, they tend to provide evidence of later prehistoric activity (Henderson 1998: 230). Also as seen more widely, the Loch Awe crannogs suggest reuse in the early medieval period was a common though by no means uniform occurrence (Crone 2012). Indeed, the rangefinder dates and those from the excavated deposits at Ederline Boathouse match well to the now established pattern of later prehistoric crannog building chronology for most of Scotland (Crone 2012; Stratigos & Noble 2017). This chronology sees a 'crannog-event horizon' in the Early Iron Age (800–400 cal BC) with reuse and new construction of these artificial island dwellings throughout the rest of the Iron Age and into the second half of the 1st millennium AD (Cavers 2006; Crone 2012; Stratigos & Noble 2017; Cavers & Crone 2018). From these Loch Awe dates, there is, as we have seen, a notable lack of 2nd millennium AD dates. This most likely reflects survey bias towards sites without obvious medieval remains as well as potential issues in the visibility of structural timber remains on medieval sites. Certainly, there is a tradition of medieval settlement on the larger natural islands within the loch. This paper has more firmly established the dating of activity on the crannogs of Loch Awe, setting the dates recovered within the currently known Scottish paradigm, and has set out potential avenues for research to the further resolution of dating crannogs in the future.

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