RIA Radiocarbon Dates Scheme Report

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Three radiocarbon dates were obtained by the Achill Archaeological Field School for the excavation 14E109 at the 'Cromlech Tumulus' and 'Danish Ditch', Slievemore, Keel East, Achill Island, Co. Mayo (MA042-021002-; MA042-021003-).

The 'Cromlech Tumulus' is a multi-period complex comprising a Neolithic activity area, a MBA roundhouse, a *fulacht fia*, a burnt mound, and three medieval to post-medieval huts. It is classified as a 'megalithic structure' on the RMP. Two RIA dates were obtained for the site by Stuart Rathbone on behalf of the Achill Archaeological Field School for the 2014 season of work. A sample from a pit contemporary with the principal phase of occupation of the roundhouse yielded a date of 1409–1229 cal. BC (2 sigma). A second date from one of the later historic era huts dated to AD 1435–1618 (2 sigma). The 2016–17 seasons at the 'Cromlech Tumulus' site uncovered a number of significant elements including a new *fulacht fia*, a burnt mound, and a Neolithic occupation horizon. The 'Danish Ditch' is classed as an earthwork on the RMP. It is a *c.*140m long pre-bog linear stone monument connecting the MBA roundhouse ('Cromlech Tumulus') and court tomb MA042-021001. Between 2014 and 2017 four trenches were excavated over the monument revealing a linear pre-bog wall. Excavation in 2016 by Stuart Rathbone uncovered a pair of parallel stone walls with an oval stone setting located equidistant between them at the same stratigraphic level. Three radiocarbon dates were granted to the author by the RIA to date the suspected Neolithic activity, the burnt mound, and the oval stone setting at the 'Danish Ditch'.

Sample Number	**Species**	**UBA**	**Date (2-sigma)**	**Feature**
14E109:397:19	*Corylus*	UBA-38738	Cal. BC 2619–2604	Neolithic activity layer
14E109:536:7	*Betula*	UBA-38737	Cal. BC 1868–1847	'Danish Ditch' stone setting
14E109:381:18	*Betula*	UBA-38736	Cal. BC 405– 356	Burnt mound

Neolithic activity layer

Sample: 14E109:397:19

Context 397 was a suspected Neolithic layer found under the roundhouse, *fulacht fia* and burnt mound. It consisted of a spread of charcoal-rich material flanking a subterranean stream, and had an associated arc of stakeholes. A leaf-shaped arrowhead, hollow scrapers, prehistoric pottery and lithic *debitage* was found in the layer, suggestive of Neolithic activity. This suspicion was corroborated by the date. A sample of *Corylus* from the layer identified by Lorna O'Donnell yielded a Later Neolithic date of cal. BC 2619–2604 (2-sigma). This is the first dated Neolithic material from Achill Island. Only a relatively small area of Neolithic activity was exposed during the excavation; much of it has been disturbed by the late Bronze Age settlement. The density of the lithic scatter and the presence of raw material and *debitage*

indicates a lithic working area, and the ceramics fragments and arc of stake-holes hints at a settlement function for the site. This is particularly interesting given the proximity of several Neolithic megalithic tombs, which while significantly earlier than this Later Neolithic activity were no doubt important loci in the contemporary landscape.

'Danish Ditch' stone setting

Sample: 14E109:536:7

The sample is from the 'Danish Ditch' a *c.*140m long pre-bog linear stone monument connecting a MBA roundhouse ('Cromlech Tumulus') and court tomb MA042-021001. Between 2014 and 2017 four trenches were excavated over the monument revealing a linear pre-bog wall. Excavation in 2016 by Stuart Rathbone uncovered a pair of parallel stone walls with an oval stone setting located equidistant between them at the same stratigraphic level. A sample of *Betula* was dated from context 536, the charcoal-rich fill of this oval feature. The sample yielded a date of 1868–1847 cal. BC (2 sigma). Given that the Danish Ditch feature runs between the site of the MBA roundhouse and the court tomb, the date is earlier than anticipated, and over 400 years older than the date obtained from the occupation of the roundhouse. It may be that the roundhouse was built in the Early Bronze Age and continued to be used over a prolonged period of time. At a minimum the date indicates the long span of Bronze Age activity at Slievemore.

Burnt mound

Sample: 14E109:381:18

The final sample came from the burnt mound associated with the stone-lined *fulacht fia* found abutting the roundhouse in 2017. The excavation determined that the *fulacht fia* was built after the abandonment of the roundhouse. At the end of its life the *fulacht fia* trough was deliberately backfilled and paved over with large flat stones. The radiocarbon date was sought to clarify the chronology of the site, elucidating the relationship between the roundhouse and the later *fulacht fia* and burnt mound. A sample of *Betula* from the main layer in the burnt mound (context 381) was dated. The sample yielded a date of cal. BC 405–356 (2 sigma). This Iron Age date was later than anticipated and indicates that the MBA house had been abandoned for *c.*800 years before the site was used for a *fulacht fia*. This long hiatus begs several questions over the choice of site for the latter monument. The roundhouse is still legible today and its slumped walls must have been visible in the Iron Age. Was it remembered as the dwelling place of a real or fictive ancestor perhaps? The material in the burnt mound was composed of sandstone beach cobbles retrieved a minimum of 2.5km away. Its site was not chosen for practical or logistical reasons. It seems likely that the relict roundhouse had particular connotations that made it useful or desirable as a site.

UBANo	Sample ID	Material Type	^{14}C Age	±	F14C	±
UBA-38736	CT17:18	Betula	2295	29	0.7515	0.0027
UBA-38737	CT17:16	Betula	3391	38	0.6556	0.0031
UBA-38738	CT16:7	Corylus	3991	36	0.6084	0.0027

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-38736
Date of Measurement:	2018-09-03
Site:	14E109 Keel East
Sample ID:	CT17:18
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Eve Campbell

Conventional ^{14}C Age:	2295±29 BP
	using AMS
Fraction corrected $\delta^{13}C$	

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-38737
Date of Measurement:	2018-09-03
Site:	14E109 Keel East
Sample ID:	CT17:16
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Eve Campbell

Conventional ^{14}C Age:	3391±38 BP
	using AMS
Fraction corrected δ^{13}C	

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-38738
Date of Measurement:	2018-09-03
Site:	14E109 Keel East
Sample ID:	CT16:7
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Eve Campbell

Conventional ^{14}C Age:	3991±36 BP
	using AMS
Fraction corrected $\delta^{13}C$	

Information about radiocarbon calibration

RADIOCARBON CALIBRATION PROGRAM*
CALIB REV7.0.0

*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
Annotated results (text) - -
Export file - c14res.csv

38736
UBA-38736
Radiocarbon Age BP 2295 +/- 29
Calibration data set: intcal13.14c # Reimer et al. 2013

% area enclosed	cal AD age ranges	relative area under probability distribution
68.3 (1 sigma)	cal BC 399- 366	1.000
95.4 (2 sigma)	cal BC 405- 356	0.808
	287- 234	0.192

38737
UBA-38737
Radiocarbon Age BP 3391 +/- 38
Calibration data set: intcal13.14c # Reimer et al. 2013

% area enclosed	cal AD age ranges	relative area under probability distribution
68.3 (1 sigma)	cal BC 1740- 1712	0.303
	1698- 1638	0.697
95.4 (2 sigma)	cal BC 1868- 1847	0.020
	1774- 1610	0.972
	1577- 1564	0.008

38738
UBA-38738
Radiocarbon Age BP 3991 +/- 36
Calibration data set: intcal13.14c # Reimer et al. 2013

% area enclosed	cal AD age ranges	relative area under probability distribution
68.3 (1 sigma)	cal BC 2566- 2522	0.638
	2497- 2472	0.362
95.4 (2 sigma)	cal BC 2619- 2604	0.013
	2600- 2592	0.005
	2588- 2455	0.977
	2417- 2409	0.005

References for calibration datasets:
Reimer PJ, Bard E, Bayliss A, Beck JW, Blackwell PG, Bronk Ramsey C, Buck CE Cheng H, Edwards RL, Friedrich M, Grootes PM, Guilderson TP, Haflidason H, Hajdas I, HattÃ© C, Heaton TJ, Hogg AG, Hughen KA, Kaiser KF, Kromer B, Manning SW, Niu M, Reimer RW, Richards DA, Scott EM, Southon JR, Turney CSM, van der Plicht J.
IntCal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP
Radiocarbon 55(4). DOI: 10.2458/azu_js_rc.55.16947

Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set

0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14

NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.

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