



## Archaeology Research Grant Report

Recipient name:	Michael Lynch
Discipline and subject area:	Archaeology Radiocarbon Dates Scheme
Year awarded:	2022
Title of project:	Excavation of the Prehistoric Axe Manufacturing Site at the storm beach at Ballaghaline, near Fisherstreet, Doolin in Co. Clare.

### Introduction:

The excavation in Ballaghaline Townland in Co. Clare on a south/southwest facing storm beach between Doolin Pier and the mouth of the Aille River at Tráleathan has been ongoing since 2015. The site is located at high tide level along a stretch of limestone coastline consisting of storm beach stones/boulders and sand dunes with a natural clay layer beneath. The winter storm of 2013/2014 had a dramatic effect on this coastline. Between ten and twenty metres of the sand dunes were completely washed away and, whilst much of the underlying clay layer had also been removed, large patches were still visible along the storm beach at high tide level. It was clear from inspection that the exposed clay layer was rapidly eroding. Assessment showed large quantities of shale flakes and some axe roughouts and hammerstones eroding from certain areas of the clay. This is a volatile storm beach even during normal weather conditions with the stones and boulders being constantly moved about. A monitoring and survey programme for approximately 250m of the storm beach was initiated and areas within the clay were identified with a high density of shale lithics along with occasional small pieces of charcoal and bone. A licence (15E0145) was granted to excavate the clay layer and excavation has continued since 2015 and will extend into 2023. The shale material recovered is similar to that found by Matilda Knowles and the Limerick Field Club in 1899. This material which is now housed in the National Museum of Ireland and the Limerick Museum led to the designation of the Doolin ‘Stone Axe Factory’ and the site has subsequently been regarded in the Irish Archaeological literature as an important source of Neolithic and Bronze Age shale axes.



Figure 1 Context 27 TR.6W from south

The current excavation has shown that the manufacture of shale axe roughouts definitely took place here along with the production of other shale tools and RC dates have shown that this activity took place during the Mesolithic period. A single RC date provided by the RIA in 2016 (see report 1/12/2016) gave a Later Mesolithic date for Context 7 in Trench 1. Two further RC dates provided by the RIA in 2017 (see report 28/11/2017) gave a Later Mesolithic date for Context 6 in Trench 1 and an Early Mesolithic date for Context 13 in Trench 4. The RIA provided three further RC dates in 2020 (see report 25/11/2020). Two of these gave Later Mesolithic dates for Context 24 in Trench 5E & Context 26 in Trench 5C, whilst the third from Context 25 in Trench 5CE gave a date close to the transition from the Early to the Later Mesolithic. Additional dates provided by the writer have confirmed the Mesolithic activity across the site.

## Archaeology Research Grant Report

### Summary of findings:

In 2022 the RIA provided three further RC dates with the following results:

**Sample 1: Charcoal: 15E0145:27:959A; Maloideae.**

The RC date and calibration are as follows:

UBA-47199: Radiocarbon Age 5731 +/- 31.

Calibrated: 68.3 (1 Sigma) Cal BC 4651 – 4640 (0.073)

Cal BC 4613 – 4534 (0.825)

Cal BC 4519 – 4504 (0.101)

95.4 (2 Sigma) Cal BC 4681 – 4493 (0.993)

Cal BC 4468 – 4464 (0.007)

This sample was found in Context 27 (Trench 6W) which was one of the most archaeologically rich contexts on the site with numerous

concentrations of flakes, axe roughouts and hammerstones. It also had the highest number of axe blanks found in any context on the site. These are unworked axe shaped cobbles which were deposited with the thinning flakes from axe roughouts. This phenomenon had occurred sporadically in previous excavated contexts on the site but the occurrence of ten of these axe blanks amongst sixteen concentrations of flakes in Context 27 was an unusually high number. The charcoal sample was attached to one of these axe blanks and the RC date, with a median probability of 4577 Cal BC securely dates one of these depositions. The date fits comfortably within the chronology being developed across the site and is the eight with a median probability which falls within 4500 - 5000 Cal BC.

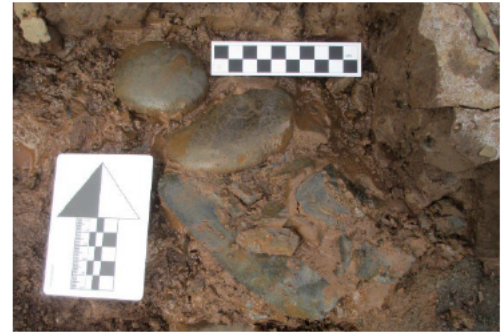


Figure 2 Context 27 TR.6W Hammerstones, Roughouts and Flakes

**Sample 2: Charred Nut: 15E0145:27:964B; Hazelnut Shell**

The RC date and calibration are as follows:

UBA-47200: Radiocarbon Age 5888 +/- 30.

Calibrated: 68.3 (1 Sigma) Cal BC 4787 – 4722 (1.000)

95.4 (2 Sigma) Cal BC 4837 – 4701 (1.000)

This sample was found in Context 27 (Trench 6W) and is the second sample to be dated (see Sample 1) from this archaeologically rich context which included sixteen concentrations of flakes and other artefacts including at least nineteen axe roughouts, twelve hammerstones, ten axe blanks and several other tools. The sample was included in a concentration of flakes with roughouts, axe blanks and a chert blade (a rare find on this site). The RC date, with a median probability of 4759 Cal BC, is the ninth date from the site with a median probability which falls within 4500-5000 Cal BC. The date is earlier than that of Sample 1, giving some indication of the longevity of activity in context 27, and is also a valuable addition to the overall chronology of the site.

**Sample 3: Charred Nut: 15E0145:28:981; Hazelnut Shell**

The RC date and calibration are as follows:

UBA-47202: Radiocarbon Age 6029 +/- 36.

Calibrated: 68.3 (1 Sigma) Cal BC 4988 – 4964 (0.193)

Cal BC 4958 - 4895 (0.629)

Cal BC 4868 – 4849 (0.178)

95.4 (2 Sigma) Cal BC 5026 - 5017 (0.012)

Cal BC 5013 - 4833 (0.971)

Cal BC 4813 – 4801 (0.018)



## Archaeology Research Grant Report

Sample 3 was found in Context 28 in Trench 6E which is the most easterly trench excavated on the site and that nearest to the river Aille. Finds within context 28 included concentrations of flakes along with eight hammerstones, fourteen roughouts, axe blanks and other tools. The hazelnut was amongst a concentration of thinning flakes from axe roughouts. The RC date, with a median probability of 4920 Cal BC becomes the tenth date from the site with a median probability falling between 4500-5000 Cal BC. This RC date, along with establishing a date for a roughout knapping event in context 28, is an important addition to the chronology of the site.

### **Please outline the objectives of the project.**

The objectives of the project are:

- To recover the eroding archaeological material from the site before it is lost to storms, weather, etc.
- To date the activity on the site, mainly the manufacture of axe roughouts and other shale tools.
- To provide a dated context for the Knowles collection of material in the NMI and Limerick Museum from this site.
- To provide information on the techniques used in the manufacture of shale axes and other tools over time in prehistory, particularly in the Mesolithic period.
- To disseminate the results of the project to the local community and wider audience.

### **Please outline the findings of your research and/or milestones achieved.**

Areas of definite shale axe and other tool manufacture have been established. RC dates have confirmed that this activity took place in the Mesolithic period whereas it was previously assumed to be Neolithic or Bronze Age. A dated context for the Knowles material in the NMI and Limerick Museum has been established. It has been established that Ballaghline, Doolin is a viable source for the shale axes and roughouts found at Fanore More sites 1 and 2 (the first known Mesolithic sites in Co. Clare) and further afield. RC dates indicate that the activity on the site extends from the Early Mesolithic to the end of the Later Mesolithic period.

### **Please provide details of the dissemination of the outcomes from this project.**

The excavation of the site is of great local interest, but it is also important nationally. Local volunteers from the Burrenbeo Trust took part in the monitoring, excavation and post-ex work. This heightens the profile of the project among the north Clare communities.

The project can be considered to fall into the category of 'community archaeological projects'. The dating of the site will be an essential part of the final report and publication. Information on the site has already been disseminated to the local and wider communities through presentations under the Field Monument Advisor (FMA) programme. Articles have already been published in publications such as Archaeology Ireland. A presentation, given during heritage week on Fanore and Doolin, in collaboration with Burrenbeo Trust is currently available on their website platform. An overview of the RC dates will be shared on the FMA Facebook page.

No. of Academic Papers/articles published: 2

No. of Lectures given/outreach events involved in: 3



## Archaeology Research Grant Report

### **How will you continue to communicate the results of your project and what are your publication plans?**

As this is an ongoing project, information on the results will continue to be disseminated through presentations, publications, the Burrenbeo website and the FMA Facebook page. When the final report is concluded the results will be published and an academic paper will be submitted to an appropriate publication.

### **How did the award enhance your professional development?**

The RIA's provision of RC dates, which is an important objective of the project, adds greatly to the results and interpretation of the site and therefore will enhance the stature of the final report among the wider archaeological community. It has already initiated communication and collaborations with other researchers in the Mesolithic period.

### **What plans (if any) do you have to further your proposal/project?**

The project is ongoing and while erosion of the archaeological material continues more information will be collected and interpreted, with analysis of the lithics and further RC dates being essential elements of the project.



# Archaeology Research Grant Report

## Radiocarbon Dating Certificates



<sup>14</sup>CHRONO Centre  
Queens University Belfast  
42 Fitzwilliam Street  
Belfast BT9 6AX  
Northern Ireland

### Radiocarbon Date Certificate

Laboratory Identification: UBA-47199  
Date of Measurement: 2022-04-05  
Site: Ballaghline, Co.Clare  
Sample ID: 15E0145:27:959A A  
Material Dated: charcoal  
Pretreatment: AAA  
mg Graphite: 0.974  
Submitted by: Michael Lynch

Conventional <sup>14</sup> C	
Age:	5731±31 BP
Fraction	using AMS
corrected	δ <sup>13</sup> C



Acadamh Ríoga na hÉireann  
Royal Irish Academy

## Archaeology Research Grant Report



<sup>14</sup>CHRONO Centre  
Queens University Belfast  
42 Fitzwilliam Street  
Belfast BT9 6AX  
Northern Ireland

### Radiocarbon Date Certificate

Laboratory Identification: UBA-47200  
Date of Measurement: 2022-04-05  
Site: Ballaghline, Co.Clare  
Sample ID: 15E0145:27:964B  
Material Dated: charred seed or nutshell  
Pretreatment: AAA  
mg Graphite: 0.967  
Submitted by: Michael Lynch

Conventional <sup>14</sup> C	
Age:	5888±30 BP
Fraction corrected	using AMS - $\delta^{13}\text{C}$



## Archaeology Research Grant Report



<sup>14</sup>CHRONO Centre  
Queens University Belfast  
42 Fitzwilliam Street  
Belfast BT9 6AX  
Northern Ireland

### Radiocarbon Date Certificate

Laboratory Identification: UBA-47202  
Date of Measurement: 2022-04-07  
Site: Ballaghaline, Co.Clare  
Sample ID: 15E0145:28:981  
Material Dated: charred seed or nutshell  
Pretreatment: AAA  
mg Graphite: 0.974  
Submitted by: Michael Lynch

Conventional <sup>14</sup> C	
Age:	6029±36 BP
Fraction	using AMS
corrected	δ <sup>13</sup> C