

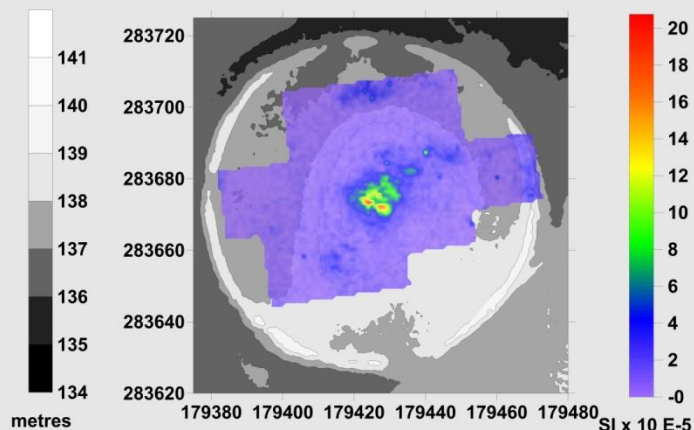
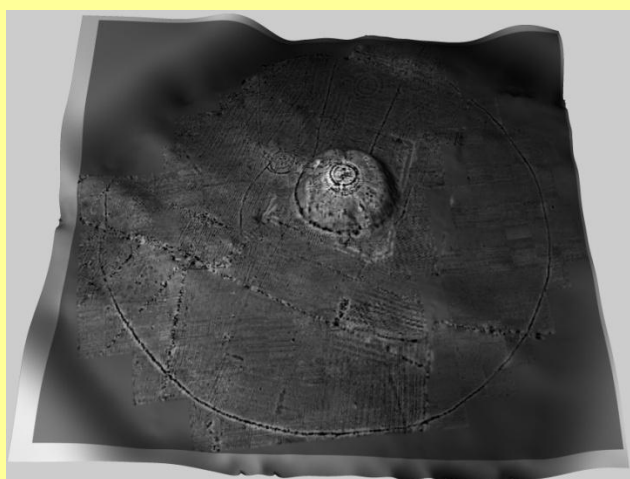
Abstracts of the Rathcroghan Conference 2016

Archaeology Above & Below 16th-17th April

Rathcroghan Visitor Centre, Tulsk, Castlerea, Co. Roscommon



Pole Aerial Photograph of Geophysics Demonstration on Ard Caoin (Courtesy of Christy Lawless, 2015)



Left: Magnetic gradiometry survey image draped over LiDAR visualisation of Rathcroghan Mound; Right: Magnetic susceptibility survey image, Rathnadarve. (Images courtesy of Kevin Barton, Landscape & Geophysical Services, LiDAR data courtesy of Ordnance Survey Ireland)

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Rathcroghan Conference 2016

Archaeology Above & Below – Abstracts

Contents

1 – Resurrecting Monuments, Community Owned Archaeology

Paul Duffy, Grassroots Archaeology, Dublin

2 – Resurrecting Monuments, Case Studies

Ken McAllister, Treasa Kerrigan, Aidan Giblin and Mick Mongey, Grassroots Archaeology, Dublin

3 – Development of Waterford County Museum

Christina O'Connor, Eddie Cantwell & Willie Whelan, Dungarvan, Co. Waterford

4 – Geophysical Survey of the Kilmokea Enclosure, Great Island, Co. Wexford

John Flynn, Sliabh Coillte Heritage Group, Campile, Co. Wexford

5 – Balsaw Hill and Standing Stone – What lies beneath?

Ciara Reynolds and Justin Kenny, Kilberry Amenity and Heritage Group, Kilberry, Co. Meath

6 – The Community Response to England's Largest Archaeological Site

Alex Bellisario (CITiZAN), United Kingdom

7 – Revisiting 'Onagh': Some Observations from the Geophysical Investigations at Dundonnell Castle, Co. Roscommon

Daniel Curley, Taughmaconnell Historical and Heritage Group, Co. Roscommon

8 – Beltany – Footprints on a Landscape

Mary Harte, Raphoe Community in Action/National University Ireland, Galway, Raphoe, Co. Donegal

9 – Radio Archaeology in Ireland - The History and Archaeology of the Marconi Telegraph Station, Clifden, Connemara, 1905 – 1923

Michael Gibbons – Field Archaeologist and Shane Joyce – Engineer & Historian, Clifden, Co. Galway

10 – Schools Archaeological Remote Sensing (SARS) Project; Results and Future Plans

Kevin Barton – Landscape & Geophysical Services and Christy Lawless – Community Archaeologist

11 – The Use of Surveying Technologies for Archaeological Purposes

Ruth Nugent – Dublin Institute Technology

12 – The Scottish National Aerial Photography Scheme (SNAPS)

Dr John Wells – West Lothian Archaeological Trust, Scotland

13 – Rathcroghan Conference 2016, Aerial Images 1

Hamish Fenton, Frank Scott, Tony Cunningham, various locations, Co. Roscommon

14 – Rathcroghan Conference 2016, Aerial Images 2

Noel Meehan, Copter View Ireland and Simon Dowling, various locations, Co. Roscommon

Rathcroghan Conference 2016

Archaeology Above & Below

Location of Sites referred to in the Abstracts

In April 2016 Rathcroghan Visitor Centre organised its fourth annual community archaeological conference in the surrounds of the ancient royal complex of Cruachan Aí. The conference created a forum for interested communities and individuals to access, discuss, and engage with their own unique environments, which nature and our predecessors have left us with.

Since 2013, we have sought to inspire a community interest in and love for the disciplines of history and archaeology, a curiosity in the unknown, and a willingness to uncover the gaps that appear in our knowledge of our past.

The following abstracts give a synopsis and flavour of the broad range of topics covered by the 2016 conference.

Fig 1. – Location of the sites referred to in the abstracts.

The green icons represent sites in the larger Rathcroghan area, with the yellow icons representing all other locations covered in the abstracts.



1. Resurrecting Monuments – Community Owned Archaeology

Paul Duffy, Grassroots Archaeology



Fig. 1 – Location of Baldoy, Co. Dublin

The Register of Monuments and Places, a record of all known archaeological sites in Ireland, contains hundreds of entries which have been swallowed up by housing developments built at a time before strong heritage legislation was in place in this State. In many instances, these registered monuments have been identified post-development through the analysis of cartographic sources and aerial photography. What information, if any, can be resurrected from this considerable portion of the nation's archaeological resource? That is the central question driving the Grassroots Archaeology Project which is targeting one such monument in a suburban estate in Baldoy, North Dublin. The registered monument in question, DU015-018, consists of a rectangular cropmark identified from the Cambridge series aerial photo 1970-CUCAP AIG 95-c which was taken just prior to the construction of the housing estate in 1973.

DU015-018 exhibits several features consistent with those of a medieval moated site, namely the size and shape of the enclosure in addition to its situation on low lying, marshy ground. The presence of a well-defined leat like feature leading into the north east corner of the enclosure would seem to substantiate this appraisal. By correcting the oblique angle of the original aerial photograph and geo-referencing fixed points in the photo and in the current landscape, it was possible to transpose the crop mark over a 1:1000 map of the area. This was as far as I could go without trial excavations.

Suffice to say that selling the idea of resurrecting a monument from beneath a modern housing estate was a problematic task. It took many years before I had the experience and faculty to draft a project proposal. The obvious research question was whether or not anything of archaeological integrity could survive the extensive development of the site and, if indeed archaeology existed, could it characterise the enclosure identified in the photo? In a watershed moment for the project, the Archaeology Committee of the Royal Irish Academy, exhibiting no small degree of imagination and forward thinking, took the risk of approving funding for Grassroots in 2013. Fingal County Council came on board at this stage and facilitated the planning of works on council lands.

Given that the excavations were to occur in a very public space, Grassroots, from the outset, strove to be a true Community Archaeology project. Internationally, this sub-discipline is very advanced in both practical and theoretical terms but Ireland lags far behind in terms of active community involvement in archaeology

(Horning and Brannon 2013). Taking a cue from several international projects that I have had the privilege and good fortune to encounter first hand (Duffy 2014a), I sought to institute a Community Based Participatory Research (CBPR) model which requires as a core principal, devolution of a significant part of project ownership to the community whilst also including non-academic community members in the project design and framing of research questions.

While the model applied to the Baldoy excavations had its limitations in terms of community engagement and a fully CBPR model was not attained (see Duffy 2014b for discussion), the Grassroots project in Baldoy provided the perfect platform to progress community archaeology in the area resulting in the sustainable, fully community owned Resurrecting Monuments group, based in Baldoy (see Duffy 2016b for discussion).

In addition to the community element to the Baldoy project, we also managed to answer our primary research question - can archaeology survive beneath a housing estate - with a resounding Yes! In addition to a body of evidence which has allowed us to present an argument for a moated site at Baldoy (including artefacts, C14 dates and environmental evidence from the 13th century), we also found unequivocal evidence for 9th-10th century activity on the site, precisely the period when the Viking *Dubh Gall* (Baldoy = *Baile Dubh Gall*) are suspected to have been active in the area. For full results see Duffy 2016a.

Bibliography

Duffy, P. 2016a 'The Church of Bearach, the Grange of Baldoy and the Town of the Dark Stranger' in Seán Duffy (ed) *Medieval Dublin XV* (Dublin: Four Courts Press).

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Duffy, P. 2014a Grassroots Archaeology – An experiment in monument resurrection and suburban identity in North Dublin. *The Journal of Community Archaeology and Heritage* 1 (3), 193–209.

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<http://grassrootsarchaeology.ie/>

2. Resurrecting Monuments – Case Studies

Ken McAllister, Treasa Kerrigan, Aidan Giblin and Mick Mongey, Grassroots Archaeology

Over the course of the last year, an innovative and ambitious project was rolled out in southeast Fingal across an area comprising the peninsula of Howth, the coastal communities of Baldoyle and Sutton and the bordering areas of Donaghmede and Kinsealy. This project – Resurrecting Monuments, grew out of the RIA funded Grassroots Archaeology project which saw community excavations take place in the gardens and green spaces of Baldoyle in 2013-2014. The success of these excavations led to a lot of interest being generated locally in the project and over the course of 2014, sustained interest from local individuals and groups made it apparent that there was a real appetite for this kind of community engagement with the archaeology of the area. To this end, Grassroots Archaeology and Gabriel Cooney of UCD in partnership with the Baldoyle Forum formulated a 12 month programme intended to consolidate local interest into an ongoing, self-sustaining and self-driven project. We proposed investigation of four archaeological monuments in the area. These were i) the suspected site of a motte castle at Tower Hill, Howth (DU016-002001), ii) the promontory fort at Dungriffen, Howth (DU016-003001), iii) the site of a levelled mound at Baldoyle (DU015-019) and iv) the outer enclosure surrounding the early ecclesiastical foundation of St. Doulagh's, Kinsealy (DU015-009009).

The project succeeded in winning grant funding from the Irish Research Council's New Foundations grant award scheme 2014. The project was also supported by Gerry Clabby and Christine Baker of Fingal County Council.

Initially, desktop research was carried out at each of the sites followed by survey and non-invasive fieldwork. Once the group had formulated strong research questions, it was decided to pursue the possibility of targeted excavations at two of the sites – St. Doulagh's and Tower Hill. The production of method statements and the filling out of licence application forms were carried out communally by the group. Since March 2015, the group have been meeting every fortnight and have carried out a wide range of archaeological fieldwork, research and site inspections in addition to hosting archaeologists and historians as guest speakers on a monthly basis. To date, the group has conducted two test excavations which have added to the information available for two monuments in the area. These are as follows:

St. Doulagh's Excavations

Following on from several months work compiling historical and archaeological research into a method statement, the group carried out archaeological test excavation under licence 15E0329 at church land to the north of St Doulagh's church and burial ground in North County Dublin. This work was conducted in July 2015. The site is located in the townland of St Doulagh's (Irish Grid 321120.413,242092.488) situated approximately 4.8km south of Malahide and 9.6km north of Dublin City. Whilst the current St Doulagh's Church dates from the 19th century, the attached buildings (DU015-009001) and Graveyard (DU015-009006) are of medieval date.

Prior to the excavation, a magnetic gradiometry and electrical resistivity survey of the lands surrounding the church was commissioned by the Friends of St. Doulagh's grouping 2009. The survey recorded a substantial area of archaeological activity interpreted as comprising of a network of enclosure remains, pits, gullies, and associated features (Nicholls 2009). The core area of activity is for the most part defined by a broad curving ditch interpreted as representing an early medieval ecclesiastical enclosure.

The Resurrecting Monuments excavation was intended to test the geophysical anomaly thought to represent the outer enclosing element of the suspected ecclesiastical enclosure. A 1.5m by 8m test trench was opened over the anomaly to the north of the church. The trench was hand excavated and all arising soil was passed through 30mm sieves. The week-long excavation revealed evidence of three main phases of activity on the site. The excavation uncovered a V shaped ditch approximately 1.2m deep and 2.7m wide. This is believed to be the outer enclosing element of the suspected Early Medieval ecclesiastical

site identified by the geophysical survey. No artefactual material was recovered from the primary fill of the ditch suggesting the infill material may have originated from an internal bank associated with the ditch. Some small fragments of animal bone were recovered from this context through flotation sieving. The ditch infill was sealed by a layer containing fragments of ceramic which have been provisionally dated to the 12th-13th century indicating that the ditch itself was of an earlier date. A range of Medieval and Post Medieval material was recovered from the topsoil. Organic material retrieved from the ditch fills was sent to Queens University for C14 dating. This returned a late 9th century date, pushing the known date of the foundation back by several centuries.

Bibliography - Nicholls, J (2009) *Geophysical Survey: St. Doulagh's Church*. (Unpublished report produced by Target Geophysics for the Friends of St. Doulagh's)

Tower Hill Excavations

A geophysical survey of a grid 40m x 40m was conducted at the Tower Hill site in May 2015 by Kevin Barton of Landscape and Geophysical Services and the Resurrecting Monuments group to investigate potential subsurface features that may be associated with (DU016-002001) - the site of the suspected motte castle at Tower Hill in Howth Co. Dublin. This survey identified a curvilinear anomaly which had the potential to represent a cut feature. It was thought that this feature could possibly have represented the ditch which would have surrounded the motte castle.

Following on from several months work compiling historical and archaeological research into a method statement, the group carried out archaeological test excavation at (DU016-002001). The works were carried out under ministerial consent E004620 over a 10 day period from the 19th to the 29th of August 2015.

The excavation was carried out by the Resurrecting Monuments group in order to test this curvilinear anomaly. A trench 8m x 1.5m was opened over where the anomaly was shown to be present by the geophysical survey. The trench was excavated by hand and all arising soil was passed through 30mm sieves. While this week long excavation failed to reveal a ditch, it did reveal a deep layer of material beneath the 19th century cultivation horizons which is thought to predate the construction of the adjacent Martello Tower (DU016-002002) and which could represent the levelled motte. This layer lay over the undulating natural soil and was sealed on the east end of the trench by a layer interpreted as a working surface associated with the construction of the Martello tower. The deposit produced both medieval ceramics and post medieval ceramics and glass. Given that the motte feature is depicted by Gabriel Beranger in the 1770s and that none of the ceramic recovered from the lower deposit dated to post 1800, we have proposed that the layer identified during excavation represents the remains of the mound which was levelled by workmen in advance of the construction of the Martello Tower in 1803.

The Resurrecting Monuments group is currently continuing fieldwork and hope to return to Tower Hill for further assessment in the future.



<http://homepage.eircom.net/~mickmongey/ResMon.html>

3. Development of Waterford County Museum

Christina O'Connor, Eddie Cantwell & Willie Whelan, Waterford County Museum



Fig. 1 – Location of Waterford County Museum

Willie Whelan, member of the volunteer run Waterford County Museum, presented a talk on the Development of Waterford County Museum.

The presentation showed how the museum's initial aims and approach have evolved over their 40 year history. An imaginative combination of technology, PR, outreach and partnerships allow the museum to be involved in very sophisticated projects.

The talk outlined the solid academic foundation on which the museum developed the identification of organisational weaknesses (low visitor numbers, very limited budget, poor location, limited public awareness, organisational continuity) and the steps that the museum has taken to offset these weaknesses.

The talk concluded with an outline of past and future projects including apps, websites, E-publishing, heritage signs, publishing, outreach exhibitions in the community and supporting other heritage groups.



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Dungarvan,
Co. Waterford
Ireland

Phone Number: 058 45960

Email: website@waterfordmuseum.ie

Website: <http://www.waterfordmuseum.ie/>

<https://www.facebook.com/waterfordcountymuseum/>

<https://m.facebook.com/communityarchaeologywaterford/>



Fig. 2 – Gallows Hill, Dungarvan, Co. Waterford. One of the monuments chosen for the Heritage Council's 2016 'Adopt A Monument Scheme', and focus of a series of remote sensing investigations conducted by the community group.

4. Geophysical Survey of the Kilmokea Enclosure, Great Island, Co Wexford

John Flynn, Sliabh Coillte Heritage Group

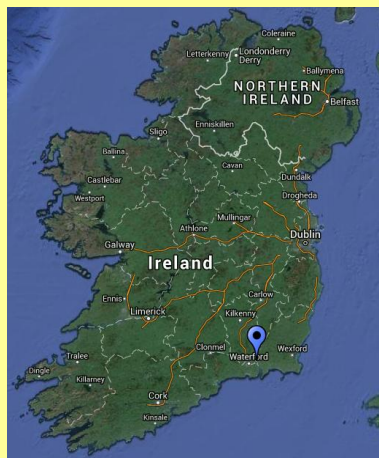


Fig.1 Location of Great Island/Kilmokea, Co. Wexford

The Sliabh Coillte Heritage Group, founded in 2011, is a local community group based in Campile in South West Co. Wexford. With the confluence of the three rivers, Barrow, Nore and Suir beside us the area is rich with sites of historical importance dating from pre-history through to the Viking and Norman periods.

In 2013 we purchased the LiDAR data of the area from Ordnance Survey Ireland and from this we identified an anomaly of particular interest in the Early Christian 'Kilmokea Enclosure' located in nearby Great Island. In 1918 the enclosure was described by the antiquarian Thomas Westropp - 'One of the largest and most remarkable 'Forts' in Ireland lies at the North end of Great Island, it is spiral in plan. This is so rare and remarkable that I know of no other large spiral in our islands only rather small forts. One, Downings Fort near Prosperous Co. Kildare, one at Ashpark Co. Tipperary and another little small fort, The Dun of Loch Feochain in Scotland.'(Westropp 1918,9)

We decided that we would concentrate on this area, but before we could conduct any survey a few procedures had to be discussed before we could conduct any investigations. First we sought permission from the Kilmokea land owners Mark and Emma Hewlett who were very helpful and supportive. We then needed funding and we got an assurance from the Campile/Horeswood Historical Society that they would cover any costs. Kevin then applied for a licence from the National Monuments Service to conduct a geophysical survey, as even though our survey was non-invasive a licence must still be applied for to conduct a geophysical survey on a recorded archaeological monument.

Over the course of several weekend workshops we used various Remote Sensing techniques, Earth Resistance, Magnetic Susceptibility, Magnetic Gradiometry and Electrical Resistivity Tomography. By using these remote sensing techniques we have discovered previously unrecorded archaeology. Together with discoveries from nearby recent excavations we may have evidence that the enclosure is earlier than previously thought.

The Sliabh Coillte Heritage Group has benefited greatly from the Kilmokea Survey Project. The group has shown how community groups can investigate their local heritage at a relatively modest cost and the satisfaction of knowing that the results of our original research will contribute to the overall interpretation of the human occupation of the wider area.

We have gained practical experience in the use of Remote Sensing Techniques and learned how to interpret the landscape by working with a professional like Kevin Barton. We have presented our project at various conferences and by doing so are now networking other community groups by social media. We hope that by looking at the results of our survey we can encourage other community groups and historical societies to get out in the field and investigate their own local landscape.

Fig. 2 Hill-shaded LiDAR image of Great Island with location of Kilmokea Enclosure. (LiDAR data, OSi)

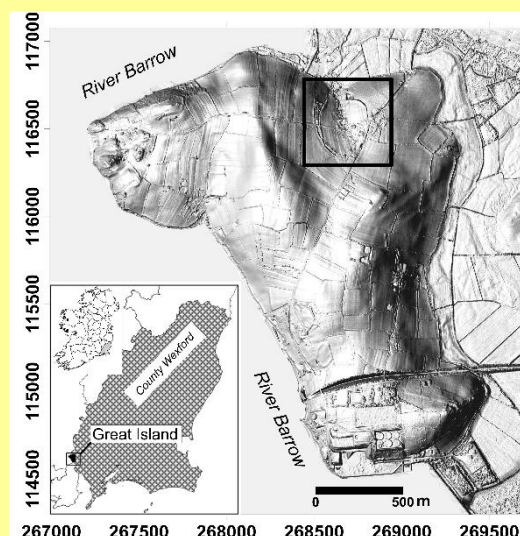
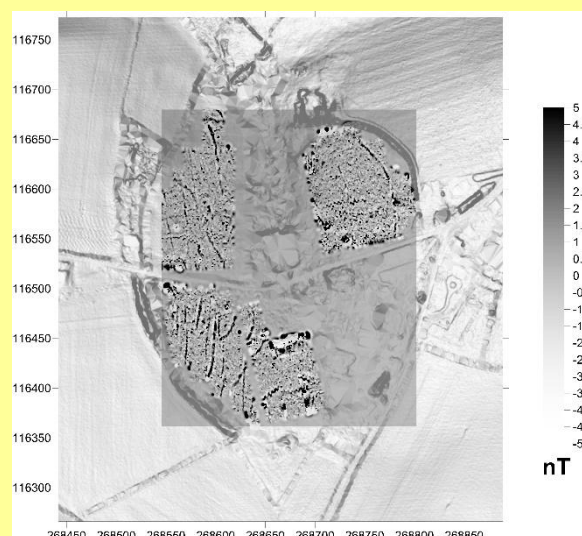


Fig. 3 Magnetic Gradiometry Survey Results of Kilmokea Enclosure superimposed on LiDAR Image (LiDAR data, OSi)



5. Balsaw Hill and Standing Stone – What lies beneath?

Ciara Reynolds and Justin Kenny, Kilberry Amenity and Heritage Group

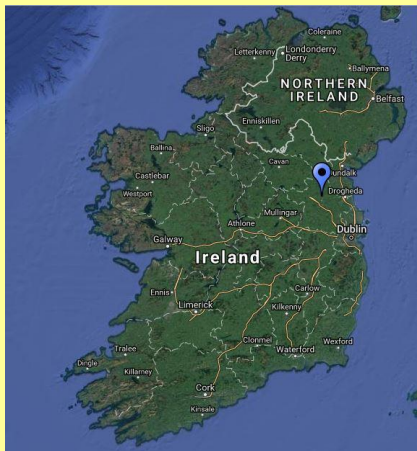


Fig. 1 – Location of Hill of Balsaw, Co. Meath

Kilberry village in Co. Meath is centrally located between Navan, Kells and Slane. To the north can be seen Loughcrew Hills with the Hill of Tara to the south. Previous surveys carried out by Kilberry Amenity and Heritage Group and Kevin Barton of Landscape and Geophysics Services included a souterrain, barrow and ringfort. In August 2015 (with Heritage Council and Meath County Council funding) the group undertook a geophysical surveying programme to verify LiDAR data taken of the Hill of Balsaw standing stone.

The LiDAR images showed the standing stone at the centre of an enclosure which wasn't visible on the ground; there was also no cartographic evidence for its existence. The surveying programme of magnetic susceptibility, earth resistance and electrical resistivity tomography uncovered several anomalies which have been tentatively interpreted as an enclosing ditch (as seen on the LiDAR), possibly sitting inside a bank, a row of pits outside the bank on the eastern side, a possible entrance in the south-east with associated pits and a cluster of postholes within the enclosure which may form a circle around the standing stone.

Work is ongoing to research comparative sites. There are few excavated examples of standing stones in Ireland but most have produced Bronze Age or Iron Age dates. Sites at Cartronbore in Granard and Moneyreague in Cork have interpreted isolated postholes near the standing stone socket as part of the construction phase. At Moneyreague, several nearby pits were filled with bone and charcoal. The enclosure at Balsaw may be the remains of a ring-ditch or ring barrow as seen at Longstone standing stone in Cullen, Tipperary or Kiltullagh Hill, Sligo. Kilmurry in Co. Kilkenny, excavated as part of the N25 Waterford road scheme in 2005, had 3 standing stones with a possible cist burial at the foot of one but there were no surviving bones or artefacts. Stone A was 1.45m high and surrounded by 12 post-holes. This echoes the arrangement at the Hill of Balsaw.

Standing stones mostly occur in isolation and there are only 51 recorded examples in Meath, mainly clustered around the Loughcrew prehistoric site. As a site type they are extremely difficult to date or to identify their function, particularly when in isolation. Although individual standing stones are commonly dated to the Bronze Age, they are known from the Neolithic to the early medieval periods. They appear to have served a variety of uses, such as burial markers, boundary markers and memorials and when they do appear with other sites these are usually of a funerary nature – ring ditches, barrows, cremation pits.

The Hill of Balsaw standing stone is described in the Archaeological Survey of Meath as "oval in cross-section (H 1.6m, 1.15m by 0.7m) and tapering to a blunt point at top." It is a greywacke stone and orientated north-east to south-west. Greywacke was also used for the kerbstones and some of the orthostats in Newgrange and Knowth and research has shown that those stones came from a vein in Clogherhead near Drogheda; also the nearest source of greywacke to the Hill of Balsaw. On the south-west face of the stone are 3 ridges running parallel, the longest is 1m long and a small hole 80cm from the base of the stone on the same face. Locally this was called the Giant's stone and the ridges and hole were said to be the imprint of Fionn MacCumhaill's 3 fingers and thumb when he threw this stone from the Hill of Tara, 10 miles away, to its landing place in Balsaw. The Irish translation is Baile Shadhbha; the name Sadhbha means sweet or good. Sadhbha is also the consort of Fionn MacCumhaill and the mother of Oisín. Further research is needed on the significance of Balsaw's proximity to the Hill of Tara and to the site of Tailteann which is c.2 miles away.

Fig. 2
Standing Stone, Hill of Balsaw, Co. Meath



www.facebook.com/Kilberry-amenity-group

6. The Community Response to England's Largest Archaeological Site

Alex Bellisario (CITiZAN)



As coastal archaeologists we face processes which are destructive to archaeology but cannot be protected against. The coastal zone does not, and cannot be afforded the protection that terrestrial archaeology, or even maritime archaeology to a certain degree, enjoys. When looking at Historic Environment Records the coastal plain often looks sparse, inland, we have thousands of records which have been identified through development archaeology but coastal development is very limited, for obvious reasons. So how do we work to identify and record an archaeological resource which is unquantified, fragile, constantly eroding and spans thousands of miles? The CITiZAN project (Coastal and Intertidal Zone Archaeology Network) is the first national response to this coastal threat. With grants from the Heritage Lottery Fund, The Crown Estate and the National Trust, the Museum of London Archaeology is leading this project with the support of the Council for British Archaeology, the Nautical Archaeology Society and Historic England.

The CITiZAN project will bring together a national network of volunteers of different ages and backgrounds who will be provided with the training and support needed to identify, record and monitor sites in this ever changing environment. Due to the dynamic and, sometimes dangerous nature of the coastline we will be using digital technology to enable the rapid recording of archaeological sites. Our interactive map (www.citizan.org.uk) builds on the work of the Rapid Coastal Zone Assessment Surveys commissioned by Historic England (*nee* English Heritage). This will allow all CITiZANs to discover what is along their local coastline and understand the extent to which it is recorded. The interactive map is used in conjunction with our mobile app, available on Apple and Android, to

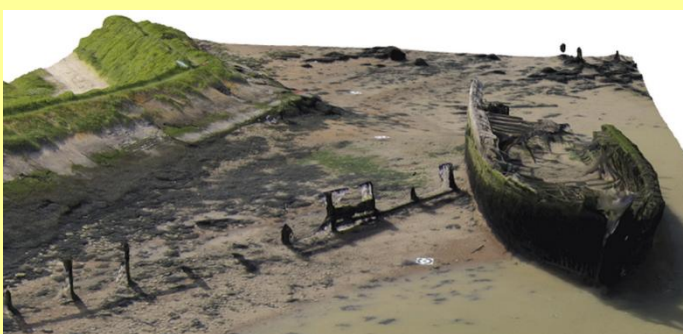
allow any smart phone users to easily record the condition and location of archaeological sites. To supplement the basic feature recording through our app more detailed survey work undertaken by the CITiZAN archaeologists and project volunteers.

A further aspect of the digital side of the CITiZAN project embraces 3D photogrammetry, a technique which allows the rapid recording of archaeological features by using computer software to stitch together 10s or 100s of images. This can be used in conjunction with Small Unmanned Aerial Vehicles (SUAVs), which are increasing in popularity in archaeology. For coastal archaeology the benefits of using them come into their own. Large amounts of the coastline are inaccessible, whether that is due to intertidal mud, rip tides or cliffs. SUAVs can allow us to reach the unreachable and also allows us to get the images required to create a 3D image of the feature as seen below.

The implications of this project will allow us, for the first time, to truly understand the wealth of the English coastal archaeological resource and the rate in which it is being lost.

Fig. 1

The site of the Hans Egede, inaccessible due to the tide and mud. Using SUAV survey and 3D photogrammetry © MOLA



MOLA (Museum of London Archaeology) | Mortimer Wheeler House | 46 Eagle Wharf Road | London N1 7ED
www.mola.org.uk

7. Revisiting 'Onagh': Some observations from the Geophysical Investigations at Dundonnell Castle, Co. Roscommon

Daniel Curley, Taughmaconnell Historical and Heritage Group



Fig. 1 – Location of Dundonnell Castle, Co. Roscommon

Dundonnell Castle is a collection of monuments located in the south of Roscommon. An MA dissertation in Medieval Studies, completed in 2011, attempted to cast new light on this extensive complex of monuments. It was argued that Dundonnell Castle was the site of at least three phases of interaction, beginning at some point in the early medieval period, and continuing until the late 16th or 17th-century. It also had a central role to play in the turbulent politics of 13th-century Roscommon.

After presentation of the results of the dissertation to a number of audiences, in 2014 a 1km² area of LiDAR data was acquired from Ordnance Survey Ireland, in order to obtain a detailed topographical plan of the extant earthworks. A further use of the processed LiDAR data was to investigate whether there are any low topographic profile anomalies in the environs of Dundonnell Castle which might be hidden beneath or obscured on the ground surface by dense vegetation.

After reviewing the LiDAR data an application was submitted to the Heritage Council for a community grant in 2015 to further investigate the earthworks of the site. The application was seen as having a range of benefits for the local area. The grant would facilitate the up-skilling of the Taughmaconnell Heritage & Historical Group in the use of the survey equipment required for the collection of geophysical data. The group carried out two training weekends over consecutive weeks, supervised by Landscape & Geophysical Services, and during this period, the group were up-skilled in the equipment used for the collection of data from three different techniques: Earth Resistance, Magnetic Gradiometry, and Electrical Resistivity Tomography Surveys (ERT).

The results of the geophysical investigations produced a series of anomalies that may add to our understanding of the uses and periods of use at Dundonnell Castle. The ERT surveys uncovered high resistivity values of possible stone or compacted gravel to a depth of c. 3m at the centre of the earthworks interior, which may be the physical remnants of the historically-attested 13th-century phase at Dundonnell. Anomalies from the Earth Resistance Survey indicate the possible re-digging of an inner ditch on the summit interior, which could represent second-phase activity on the earthworks also. The Magnetic Gradiometry survey results uncovered a feature that seems to run beneath, and thus, predate

the extant late 16th-17th century masonry building located on the site. Combined, the survey results have added to our understanding of Dundonnell Castle, as well as providing us with further questions and targets for investigation.

Fig. 2

Dundonnell Castle: Topographical visualisation. (Image courtesy of Ordnance Survey Ireland) and oblique aerial photograph (Image courtesy of CUCAP, 1970)

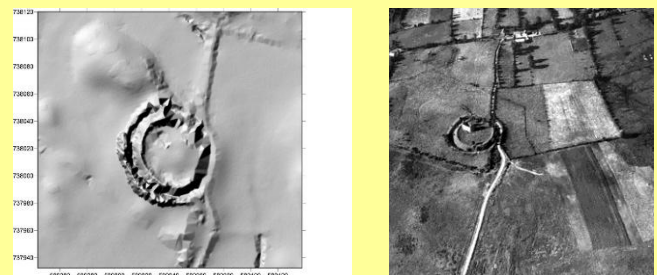
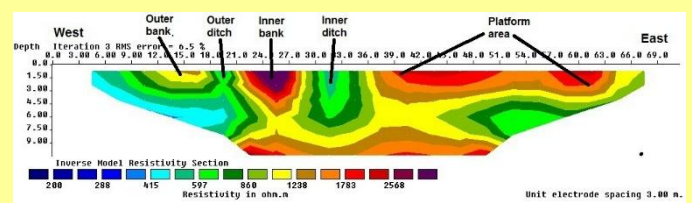


Fig.3

Electrical Resistivity Tomography Survey (ERT) Line 4 - Modelled section (Image courtesy of Landscape & Geophysical Services)



<https://www.facebook.com/TaughmaconnellHeritage/>

8. Beltany – Footprints on a Landscape

Mary Harte, Raphoe Community in Action/National University of Ireland, Galway



Fig. 1 – Location of Beltany Stone Circle, Raphoe, Co. Donegal

Beltany Stone Circle lies some 3.5 km south of Raphoe in east Donegal and sits on a plateau on the summit of Tops hill at a height of over 92 meters. It is one of the largest stone circles in Ireland and consists of 64 surviving orthostats enclosing a raised artificial platform 45m in diameter. The enclosed area bears all the evidence of modern disturbance by digging probably in the early 1800s, boulders and orthostats are strewn throughout the centre, now covered over by grass.

The chronology of Beltany may be much earlier than its Bronze Age classification. There is historical evidence from the earliest OS survey (1836) that there was a cairn or large heap of stones in the centre and there is reference to the existence of sepulchral graves and decayed bones having been unearthed. O'Nuallain suggested that there may have been a megalithic chamber within the circle, perhaps a passage tomb. Several of the orthostats are cup marked albeit heavily eroded. There is no doubt that Beltany was a place of ritual practise and the Beltany Stone Head, now in the National Museum, is said to have been found in lands here but excavation would be required to determine if there was a passage tomb and burials also. There is an outlying orthostat some 21m from the perimeter to the southeast and in the southwest there is the remains of an enclosure marked "old graveyard" in early editions of OS.

There have been many written suggestions as to the astronomical alignment of Beltany but none have been conclusive. Observations by this writer over many years suggest strong evidence to the sunrise at specific times – Equinox and the Solstice both Winter and Summer. The inclusion of May (Bealtaine) as an orientation is likely to be linked to its lexicon which is a modern addition.

Within a landscape context Beltany commands extensive views in all directions over a fertile valley and network of rivers and streams, the most significant of which is the Foyle Estuary. Folklore has it that these were the ancient territories of the Magh Ithaca. The most significant physical feature within this landscape is Cruachan Hill on the summit of which sits a mound and enclosure at a height of 221m. This hill is visible from Beltany and would appear to be connected within a landscape setting. The valley between Beltany and Cruachan is a noted passage grave complex where at least 12 megaliths were identified by O'Nuallain. Therefore it is plausible to deduce that Beltany was also part of this Neolithic landscape.

In 2005 the Heritage Council of Ireland funded a geophysical research project on behalf of Raphoe Community In Action which was carried out by Kevin Barton and team from LGS. The topographical survey investigated magnetic susceptibility, magnetic gradiometry, and electrical resistance. The survey revealed a number of areal and linear features which may be natural and/or a result of modern and/or ancient anthropogenic activity. The disturbance in the centre made it difficult to discern sub terrain susceptibility but it did reveal a number of isolated highs within the circle indicating modern burning but did not rule out prehistoric activity. The electrical resistance revealed a possible linear feature such as a ditch that correlates to an astronomical alignment previously proposed by the antiquarian Boyle Somerville.

It is hoped, given the increasing awareness of and interest in the Beltany Stone Circle through promotion by the local community, and the availability of advance geophysical technology, that a further study can be conducted to investigate the morphology of this enigmatic of ancient monuments.

Fig. 2
Sunset Beltany



NUI Galway
OÉ Gaillimh

9. Radio Archaeology in Ireland - The History and Archaeology of the Marconi Telegraph Station, Clifden, Connemara, 1905 - 1923

Michael Gibbons – Field Archaeologist & Shane Joyce – Engineer & Historian



Fig. 1 – Location of Clifden, Co. Galway

“Radio Archaeology” is a term coined by Bart Lee, the eminent American historian of early radio. He advocates the investigation of historic Radio/Wireless sites, many of which are disappearing, in a measured and non invasive way by persons interested on such sites. He emphasises that anything other than superficial investigations, should not be undertaken unless licensed Archaeologists are engaged.

The history of radio is frequently associated with Marconi although there were a number of others working on the new science at the time. Radio in the sense we understand it today developed rapidly between 1895 and 1922 when broadcasting of voice and music began as a new craze. The early use of radio was confined to telegraphy, sent from point to point, predominantly using the dots and dashes of Morse code.

The first commercial working stations were built by Marconi in the south of England in and around 1900. The initial commercial usage was for communications with shipping. Marconi, however, had the notion of transmitting across the Atlantic, something that seemed impossible. Yet he managed to do this in December 1901.

Between 1901 and 1912 a large number of stations, commercial and military were built in the UK, America and Europe. During WW1 the building of stations intensified, for military use, and trans-oceanic communications. In a recent publication by Oxford scholars regarding the military stations approximately 50% of the locations of the stations is no longer known.

Clifden Marconi Station, the subject of our presentation, has happily survived. The vast majority of the station

infrastructure has survived, albeit at ground level. It has thus been possible to record and map its infrastructure.

On the other hand, a large station in County Kerry was being built at the same time as Clifden (1906-07) by a competitor of Marconi's. The existence and location of this station built with Danish and German technology is almost completely unknown.

Our presentation was in two parts; a description of the site as it was in during its working life 1907- 1922, and a description of the licensed archaeological work carried out on site by Archaeologists Michael Gibbons and Richard Crumlish.

We hope that this work may continue at Clifden or perhaps elsewhere as an ongoing summer school for Archaeological Students.

We would also encourage others to engage in the pursuit of “Radio Archaeology”.

Fig.2 - WW1 Station Map, Jane Phimester et al.



Fig. 3 – Marconi Company in Ireland

Marconi Company in Ireland		
1	Ballycastle	1898
2	Dun Laoghaire	1898
3	Crookhaven	1901
4	Rosslare	1902
5	Clifden	1905
6	Letterfrack	1913
7	Valentia	1914
8	Ballybunion	1912
9	Malin Head	1914
10	Moydrum (Athlone)	1932

10. Schools Archaeological Remote Sensing (SARS) Project; Results and Future Plans

Kevin Barton – Landscape & Geophysical Services and Christy Lawless – Community Archaeologist



Fig. 1 – Location of Mayo Abbey NS/Parke NS, Co. Mayo

Mayo Abbey and Parke National Schools in County Mayo were involved in the SARS Project which was funded in 2015 by a Heritage Council Community Grant.

The core element of the SARS Project was to raise awareness of and create interest in local heritage within the catchment of each school. This was achieved by introducing the children to local heritage by photographing and presenting their heritage locally to their parents and neighbouring communities and nationally by an exhibition and articles in the press. Additionally the children and teachers were introduced to new methods in investigating, visualising and presenting their local heritage. For the teachers and schools involved, the SARS project offered a new, cross-curriculum way to incorporate local heritage coupled with technology into school studies.

The SARS project successfully delivered and explored seven main components to and with the two schools involved. The work was largely with 5th and 6th class. The components were :

- 1 A kite and camera system and training in their use was provided to each school from SARS Project funds
- 2 A library of kite, pole and ground images relating to their local heritage for use in each school and local community
- 3 Installation on school laptops of open source software and data to initially make 3-D images of simple alphabet shapes. Advanced work used LiDAR data to make 2-D and 3-D models of a ringfort.
- 4 A project in each school to create and present the work in an exhibition to the parents and community members
- 5 A Heritage Week schools exhibition and field demonstration event at the National Museum of Ireland - Country Life
- 6 A Loans Box was created by each school and swapped with the other. The children were asked to put material in their box which represented the unique cultural heritage of their locality.
- 7 A prototype version 1 of a resource DVD with data and applications to use the data was created in collaboration with the schools

Project outcomes were close to the expected ones within the timescale of the Project. The content created by the kite, pole and aerial photography and the 3-D digital models has been used for school projects and exhibitions. The library of images and digital data has been created and will provide content for future school and local community projects. The children have been introduced to history and archaeology using a new approach. Time is needed to see what benefits will accrue to the children and the local community.

An updated version 2 of the DVD needs to be produced before it can be distributed to local schools.

There is interest from other national schools in Mayo, Meath, Waterford and Wexford in taking part in a future SARS project. The work has been selected by The Teaching Council to be showcased by the teachers at FEILTE in the RDS in October 2016. FÉILTE is a "Festival of Education in Learning and Teaching Excellence."

Fig. 2 - Presentation of a kite and camera to Parke National School at the SARS 2015 Heritage Week event held at the National Museum of Ireland – Country Life, Turlough, Co Mayo. (photo : Mary Lawless)



Fig 3. - Children at Mayo Abbey National School using open source software to create a 3D model of a ringfort from LiDAR data (photo: Christy Lawless)



11. The Use of Surveying Technologies for Archaeological Purposes

Ruth Nugent, Dublin Institute of Technology



Fig. 1 – Location of Dundonnell Castle, Co. Roscommon

Kite Aerial Photography is a surveying technology that has quickly developed in recent years. The first kite aerial imagery was taken in the late 1880's however, kite aerial photography did not become probable until advancements in technology and the development of cameras occurred. Soon after, it began to be used in the early 1900's. With major advancements in affordable digital cameras, location technology and the Internet, kite aerial photography has become progressively more popular for a variety of uses. Kite imagery has been used for a number of purposes but in recent years it has become a significant and affordable source of data collection in archaeology.

During the presentation carried out at the Rathcroghan Archaeological Conference 2016, a research project containing the uses of surveying technologies for archaeological purposes was discussed.

The aim of the research project was to test the use of kite aerial photography as a source of generating spatial data for archaeological purposes. This hypothesis was tested focusing particularly an archaeological site and structure and was carried out by performing Structure from Motion and Dense Image Matching methods which were used to create three-dimensional point clouds. Point clouds were generated from kite aerial photography and remotely piloted aircraft system photography taken of Dundonnell Castle, Co. Roscommon. These point clouds and imagery were critically compared to spatial data achieved using other surveying technologies such as Remotely Piloted Aircraft System technology, Terrestrial Laser Scanning and LiDAR for analysis purposes.

During the data acquisition stage of the research project discussed during the presentation, the Trimble R10 GNSS receiver was used to obtain approximate coordinates for control purposes. These stations were then traversed using the Leica TCRP1201+ total station.

This instrument was also used to collect points of hard detail around the research site. The Leica Nova MS60 was used to capture terrestrial laser scans of the inside and façade of Dundonnell Castle. All kite photography used was capture by Kevin Barton of LGS Landscape and Geophysical Services and all RPAS imagery was recorded by Mark Prendnergast of Skyoptic. An example of the research site can be seen in Figure 2.

Fig. 2 - Dundonnell Research Site



The findings suggest that kite aerial photography can be used as a source of generating spatial data. However, it was found that the higher quality the camera used during data acquisition, the better the quality of the resulting imagery will be which produces denser spatial point clouds. The results also suggest that other surveying technologies such as GNSS and topographic surveying, terrestrial laser scanning and RPAS imagery each provide hugely beneficial assets that can aid archaeologists in archaeological site selection and site analysis purposes. The relevant surveying technologies were discussed in detail to indicate the achievable accuracies. An example of a point cloud generated through Structure from Motion and Dense Image Matching methods can be seen in Figure 3.

Fig 3. RPAS point cloud of Dundonnell



12. The Scottish National Aerial Photography Scheme (SNAPS)

Dr. John Wells, West Lothian Archaeological Trust

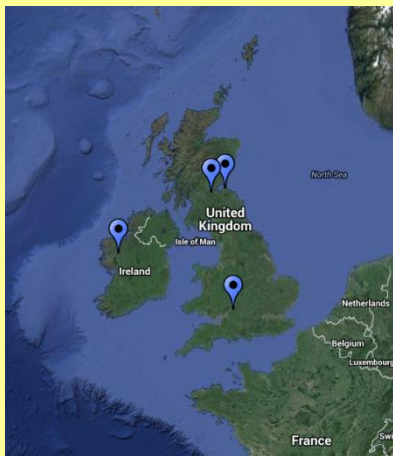


Fig. 1 – Location of Balla, Co. Mayo; Stroud, Gloucestershire; West Lothian & North Berwick, Scotland

My wife, Rosie Wells, Co-founder and Trustee of the West Lothian Archaeological Trust, asked for some money to be set aside for donating kite aerial photography kits to pupils, students, their mentors and others, for distribution after her death. She died on the 3rd March 2013.

The first secondary school to show an interest, through Kevin Barton, was Balla Secondary School in County Mayo. As I was invited to speak at the Dublin based Arcland Conference in May 2013, "From Known Knowns to Unknown Unknowns: Remotely detecting the past." organised by the Discovery Programme, in conjunction with UCD Archaeology, it seemed fitting to officially launch the Scheme at that venue.

Starter kits were provided mainly for primary schools and were designed to be light and safe to use. Standard kits, using the same quality cameras that we used in the Trust, were issued to everyone else. Over 100 kits in each category were donated. Later, some near infra-red converted cameras were issued too.

The Scheme also ran an annual competition for recipients with three different categories. Winners were awarded either postcards or 1st Class stamps featuring their winning entry:
www.armadale.org.uk/snaps.htm#pixel

Most kits were not issued to schools, with only several going out to secondary schools in particular. By far the most successful recipients were those in Ireland associated with local archaeology and school projects and this series of conferences at Rathcroghan. So, here was the ideal place for this closure talk.

The Scheme has introduced kite aerial photography to many more than the number of kits donated, especially through primary schools. Jackie Sangster of SCRAN (www.scran.ac.uk) in Scotland has used their kits to prepare the way for primary schools to use the national collection of aerial photographs, and other material, for local studies projects. Others, including those who use UAVs, have adopted the use of kites as an aerial platform for situations where the legislation relating to UAVs is restrictive or conditions inappropriate.

Kites also appear to have potential with some children who are autistic and this is an area we intend to explore further.

Technology has moved on considerably since the Scheme started. Now it is possible to take good photographs with, for example, Sony sensor based action cameras (12-16MP) suspended from a kite line on a selfie stick. Thus reducing the cost of a useful, basic kit to less than £100, less than half the outlay for our standard kit. Some mobile phones are now producing acceptable images.

The cost of thermal imagers has fallen considerably too, with units like the Flir One costing only ~£200. If the donated near infra-red cameras prove successful, we may consider issuing some thermal cameras to the same recipients.

Despite its formal closure at the end of April 2016, the Scheme will continue to issue kits to schools in West Lothian and Stroud in Gloucestershire (where Rosie was a teacher for over 30 years).

Fig. 2

Photo: SCRAN Outreach - Primary 5 class, Law School, North Berwick (Jackie Sangster)



www.snapscheme.info

13. Rathcroghan Conference 2016, Aerial Images 1

Hamish Fenton, Frank Scott & Tony Cunningham



Fig 1. – Location of Rathra and Dundonnell Castle Co. Roscommon



Fig 3. – Rathra, Co. Roscommon (Tony Cunningham)



Fig 4. – Rathra Co. Roscommon (Hamish Fenton)



Fig 2. – Dundonnell Castle, Co. Roscommon (Frank Scott)

14. Rathcroghan Conference 2016, Aerial Images 2

Noel Meehan, Copter View Ireland and Simon Dowling

Fig. 1
Rathcroghan Mound (Noel Meehan, Copter View Ireland)



Fig. 2
Relignaree (Noel Meehan, Copter View Ireland)



Fig. 3
Rathnadarve (Noel Meehan, Copter View Ireland)



Copter View
Aerial Productions



www.copterview.ie

Fig.4
Rathra, Co. Roscommon (Simon Dowling)

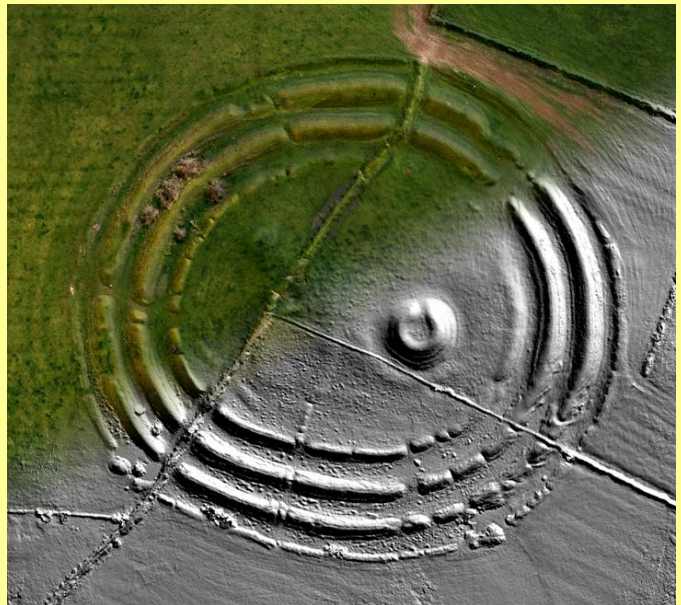
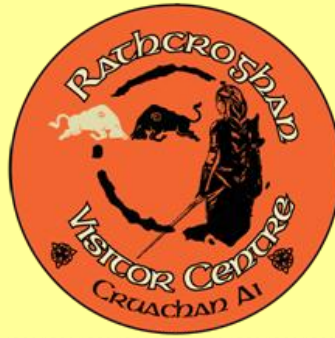


Fig.5
Rathra, Co. Roscommon (Simon Dowling)



<http://aerialarchaeology.blogspot.ie/>



We would like to take the opportunity to thank all of our excellent contributors for the effort that went in to their presentations. Thanks are also due to the audience of interested attendees who visited us on both days, without whom we would not have a conference.

We would like finally to thank all of our sponsors, both of the conference event and our continued operations.

We look forward to seeing you all again at the Rathcroghan Conference in 2017!