

Refresh of the Welsh Research Agenda for Palaeolithic & Mesolithic Archaeology 2021

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1. List of relevant recent research undertaken since 2016.

a) Field survey, and assessment of lithic collections

- *Discovering the Ancestors*: a community fieldwalking project at six study areas in Pembrokeshire during 2019-20. (DAT Project 152, Cadw-funded).
- Field reconnaissance on Skokholm Island, Pembrokeshire: casual and on-going monitoring of exposed soil by the resident wardens (Wildlife Trust of South & West Wales).
- Reconstruction of Holocene geographies under Cardigan Bay, by Martin Bates.
- CHERISH Project. The team made exploratory visits to The Nab Head, and have prepared aerial photography coverage, with a view to possible future recording and monitoring (RCAHMW).

b) Excavation/evaluation

- Ffynnon Beuno Cave, Denbighshire, Dr Rob Dinnis: Continuing fieldwork, with a short field season in 2019. Post-excavation work included new radiocarbon dates (on ultrafiltered collagen) for fauna from intact Late Pleistocene sediments in the eastern fissure passage. These show that the material accumulated $\geq 50,000$ years ago (Dinnis 2017).
- Wogan Cavern, Pembrokeshire, Dr Rob Dinnis: Study of archive material from undocumented historical excavations, as well as field trips to examine

exposed deposits in the cave. Extant collections attest to probable Early Mesolithic occupation, while field observations suggest the possible presence of intact Pleistocene deposits. A first phase of test excavation was undertaken in 2021.

- Goldcliff, Newport, Professor Martin Bell: ongoing regular monitoring of intertidal sites, drone survey to map intertidal sediments, further footprint recording of human, animals and birds included in the PhD thesis of Kirsten Barr (details below). Discovery of wood structures in palaeochannel base, interpreted as fish traps dated 5210-4912 cal. BC (unpublished). Recording of four additional Mesolithic activity areas. Total of four early Upper Palaeolithic flint artefacts unstratified (one of these previously published 2007), Pleistocene bone assemblage from intertidal head (unpublished).
- Severn Estuary Levels, Newport and Monmouthshire. Professor Martin Bell: Evidence for organic material culture is very poorly represented in Britain by comparison with most areas of continental Europe. In addition to the worked Mesolithic wood from Goldcliff reported in 2007 more than 30 very well-preserved pointed stakes have now been lifted from the recently found wood structure interpreted as a fish trap. This is the largest assemblage of worked Mesolithic wood from Britain and further demonstrates the potential of intertidal sites. The evidence for Mesolithic woodworking is included in a Reading University PhD thesis being written by Adam Turner.
- Haverfordwest Welsh Medium School, Withybush, Haverfordwest: Evaluation, Watching Brief with excavation, by Archaeology Wales in 2017. Developer-funded. Features include undated pits, stake-holes and gulleys, some of which included struck lithic material which, although undiagnostic, may well be Mesolithic and presumably part of the concentration of such activity in the locality (David and Painter 2014).
- Plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire, excavated by Aeon Archaeology. 314 artefacts recovered from a site which is effectively extension of Site E of Quinnell *et al.* (1994). A mixed assemblage with both early and late components.
- Llanfaethlu, Anglesey. Excavated by CR Archaeology. Although predominantly of Neolithic date, Llanfaethlu is a multiperiod site with Mesolithic - Post Medieval remains. The Mesolithic component at the site is comprised of two elements - residual lithics within later contexts, and a tree throw containing human remains with around 1800 lithic artefacts ranging from struck pebbles to microliths. Six charcoal samples from the feature have been radiocarbon dated. With the exception of one later date, believed to be intrusive, the dates returned were between 7728 - 7070 cal BC. Collagen yield from the human remains was insufficient for radiocarbon dating, but works are currently on-going to date the tooth enamel which it is hoped will provide an indicative date when interpreted in conjunction with

the existing dates. Post-excavation works are continuing but the working hypothesis is that this tree throw site functioned as a marker within the landscape and was utilised as a shelter and as a cache site for raw materials.

- Upper Blackhole Cave, Gower. Excavation by Rick Schulting and small crew. This is a small burial cave/crevice with the scattered remains of an estimated 4-5 individuals, though this may increase when excavations are completed. The single radiocarbon date available places the human remains in the mid-fourth millennium BC (late Early Neolithic), and it is expected that all the remains will of similar age. The small number of faunal remains are assumed to be modern. The only artefacts recovered were found in a 2015 trial excavation, which recovered six flint microliths with no other lithics, below the level containing the human remains. No datable material was found with the microliths, but they are of Late Mesolithic form.
- Mochdre, Powys, Possible Mesolithic Structures (PRN 166806, PRN 166807 & PRN 166808) discovered during work undertaken by Archaeology Wales in advance of the A483/A489 Newtown bypass. It includes a line of stakeholes interpreted as a Mesolithic windbreak, a linear ditch containing Mesolithic flintwork and a second ditch with a microlith in its fill.
- Domgay Lane, Four Crosses, Powys. (PRN 152646, 152641, 152642 and 152643) Possible Mesolithic lithics from test pitting in 2007.
- Llandegai, Gwynedd. Mesolithic pit (PRN 70047) from evaluation ahead of construction of a residential development.
- Y Bryn lithic scatter, Porthmadog (PRN 33604) A microlith and 2 blades were found on the western part of Y Bryn during work related to the Porthmadog Bypass. These seemed to be separate from the larger lithic scatter on the hill (PRN 33595) and could indicate transitory Mesolithic activity. (Parry 2013).
- Porth Forllwyd, Anglesey. Surface Collections, test pitting and archaeological evaluation of land in the vicinity of Lligwy Bay (add, Anglesey. Part of the University of Bangor and Area of Outstanding Natural Beauty (Sustainable Development Funded) Mesolithic of Anglesey project.

c) Analysis

- Long Hole, Gower, Swansea, Dr Rob Dinnis: Publication of 2012 excavation and new study of previous collections (Dinnis *et al.* 2019). This work tied together all the collections from the cave and highlighted the importance of platform deposits partially excavated in 1969 by J. Campbell.
- Llanarmon Cave, Denbighshire, Dr Rob Dinnis: Publication of material from 2012-16 excavations (Dinnis *et al.* 2018). This work highlighted the cave's faunal assemblage as important for understanding the Pleistocene-Holocene transition.

- Review and reinterpretation of Late Pleistocene fauna from Welsh and other British sites, Dr Rob Dinnis (Dinnis *et al.* 2016).
- Statistical analysis of radiocarbon dates for Wales as a proxy for investigating variations in settlement activity over time (MA dissertation by M. Efstathiou, UCL, 2020).
- *Stones of Stonehenge Project*: has accumulated numerous Mesolithic radiocarbon dates from the Preseli area, mostly un-associated with relevant archaeology.
- South Wales Gas Pipeline (Milford Haven to Tirley): limited evidence for Mesolithic activity (much less certainly of the LUP) at occasional locations along the route, now published (Cotswold Archaeology Monograph 13).
- Excavations at Porth-y-Rhaw, Pembs, 2019: these have recovered a small collection of probable Mesolithic flints from below the IA rampart. Further excavation of the Iron Age site took place in July 2021, without significant Mesolithic finds.
- Series of radiocarbon dates and stable carbon/nitrogen isotope measurements on human remains from caves in north and south Wales, dating from the Mesolithic to Roman Iron Age (Schulting 2020). The Mesolithic dates relate to Worm’s Head Cave and Mewslade, with a discussion of the latter site in particular, as the remains here are of uncertain attribution.
- Publication of large ancient DNA project including small number of Mesolithic human remains from Wales (Brace *et al.* 2019). The results provide further support for large-scale population replacement by continental farmers at the start of the Neolithic.
- St Govan’s Head, Pembrokeshire (PRN 113206) New Mesolithic lithic scatter.
- Crugiau Cemaes, Pembrokeshire (PRN 112696) Mesolithic microlith found during excavation of two enclosures at Crugiau Cemaes.
- Porth Rhyffydd, Anglesey (PRN 38271) Flint scatter at head of Porth Ruffydd. 121 flints, including a core, blades and microburin indicating a Late Mesolithic date. The flints come from the mineral soil, which has not been severely eroded here.
- Trwyn Du, Anglesey (PRN 38245) Early and later Mesolithic lithic scatter comprising 102 pieces, including 4 microliths, a scraper and a microburin.

d) What has changed since 2016: new scientific techniques

- Development of techniques for rapid intertidal survey using in combination: drones, 3D photogrammetry and differential GPS.

- Development of methodological advances in aDNA should be applicable to some human and animal bones finds from Welsh sites (cf. Brace *et al.* 2019). Work on sedimentary DNA is fast developing but surely requires very well stratified and sealed contexts.
- Compound-specific radiocarbon dating (although not yet applied to pre-Neolithic residues in Wales)
- Stable sulphur isotopes ($d^{34}S$) are becoming far easier to measure in bone/tooth collagen due to improvements in mass spectrometry. Their widespread application to faunal and human remains could provide another means of assessing mobility.
- Development of methods to identify lipids and organic binders in potential cave/rock shelter pigments.

2) The relevance of the work to research frameworks. Have questions been answered/partially answered? Did the research set out to answer that question?

a) Colonisation and recolonization

- Review and reinterpretation of Late Pleistocene fauna from Welsh and other British sites, Dr Rob Dinnis. Consolidating knowledge of the timing of human and animal presence in Wales during the Palaeolithic.
- *Discovering the Ancestors* (DAT Project 152, Cadw-funded): a community fieldwalking project at six study areas in Pembrokeshire during 2019-20. Further fieldwork has been curtailed following the adjustment of priorities in the wake of the Covid-19 epidemic.
- Statistical analysis of radiocarbon dates for Wales as a proxy for investigating variations in settlement activity over time (MA dissertation by M. Efstathiou, UCL, 2020).
- Reconstruction of Holocene geographies under Cardigan Bay, by Martin Bates et al. (in prep).
- Stable sulphur isotopes ($d^{34}S$) are becoming far easier to measure in bone/tooth collagen due to improvements in mass spectrometry. Their widespread application to faunal and human remains could provide another means of assessing mobility.

b) Chronology

Consolidating knowledge of the timing of human and animal presence in Wales during the Palaeolithic

- Ffynnon Beuno Cave, Denbighshire, Dr Rob Dinnis
- Llanarmon Cave, Denbighshire, Dr Rob Dinnis

- Statistical analysis of radiocarbon dates for Wales as a proxy for investigating variations in settlement activity over time (MA dissertation by M. Efstathiou, UCL, 2020).
- *Stones of Stonehenge Project*: has accumulated numerous Mesolithic radiocarbon dates from the Preseli area, mostly un-associated with relevant archaeology.

c) Prospection

- Ffynnon Beuno Cave, Denbighshire, Dr Rob Dinnis
- Llanarmon Cave, Denbighshire, Dr Rob Dinnis
- Wogan Cavern, Pembrokeshire, Dr Rob Dinnis
- *Discovering the Ancestors* (DAT Project 152, Cadw-funded): a community fieldwalking project at six study areas in Pembrokeshire during 2019-20.
- Field reconnaissance on Skokholm Island, Pembrokeshire: casual and on-going monitoring of exposed soil by the resident wardens (Wildlife Trust of South & West Wales).
- Reconstruction of Holocene geographies under Cardigan Bay, by Martin Bates et al. (in prep).

d) Ground-truthing

- Wogan Cavern, Pembrokeshire, Dr Rob Dinnis

e) Artefact analysis

- Long Hole, Gower, Swansea, Dr Rob Dinnis: re-evaluation of artefacts and the document archive from various libraries and museum collections, including artefacts and documentation that are held in the British Museum and at National Museum Wales.
- Gwernvale, Powys, Dr Elizabeth Walker. To re-evaluate the Mesolithic artefacts from the pre-cairn construction phase of the monument held in National Museum Wales.
- Hoyle's Mouth Cave, Tenby, Pembrokeshire, Dr Elizabeth Walker. Preparation of a report on the late Glacial artefacts recovered from excavations in the cave.
- Goldcliff and Gwernvale, Dr Tom Elliot, University of Worcester. PhD thesis on laser ablation of artefacts in the Wye area for sourcing raw materials.

f) Continue to locate the Research Agenda for Wales within wider British and European contexts.

- Has continued.

g) Continue to promote the need to consider a potential Palaeolithic and Mesolithic resource.

- Has continued.

3) Amendments to the research questions adopted by the 2021 review.

a) New Questions

(i) Mobility and Seasonality in Prehistory

Issues of mobility have come into focus in the last five years including the effects of mobility and seasonal settlement on vegetation, lithic sourcing to identify patterns of movement and isotopic evidence for patterns of human and animal movement. Footprints are also relevant to local scale patterns of mobility, exchange and connectivity. The seasonal use of places can be determined through detailed analysis; the exploitation of the natural resource by people needs to be understood better.

- Can sourcing of the raw materials used for lithic artefacts offer an insight into the movement of people during the early Holocene period?
- Can exotic items such as cowrie shells found on certain sites determine status?
- New data are required about the use of river valleys, as well as coastal locations, and their use as routeways across the landscape in the early Holocene.
- Further study and dating of human and animal footprints can offer an indication of mobility and connectivity during the early Holocene period.
- Analysis of peat deposits at coastal, riverine and lacustrine sites has potential to offer new information about seasonality and the mobility of people around the landscape.
- More investigation of matters of subsistence, plant and animal resources and the role of fishing and seasonality is required. This requires a more systematic study of our coastline and the associated off-shore deposits.
- Shell middens are a key resource and their potential is demonstrated by Prestatyn and the publication by Robinson (2019) which indicates they are likely to be more widely distributed.
- Expansion of baseline strontium isotope ($^{87}\text{Sr}/^{86}\text{Sr}$) data for the investigation of human and animal movements in the Palaeolithic and Mesolithic. The addition of d^{34}S to investigate mobility has become more accessible by improvements in instrumentation. Continued improvements in sampling resolution should enable finer-scale temporal analyses of human and animal mobility (e.g., sub-annual for humans and even higher for fauna).

(ii) Natural Landscapes

A key emerging question is the role of fauna, people and other agents of disturbance in the early to mid-Holocene landscape. This is especially important in the context of current debates about rewilding and whether the early Holocene was dense closed woodland or the open park-like landscape envisaged by the Vera hypothesis developed in the Netherlands and increasingly quoted as a basis for nature conservation strategies. The coastal submerged forests which in Wales are mostly later Mesolithic to early Neolithic are key sources of information on the character of coastal woodland, the fauna present (and its diet as determined by isotopic analysis) and the Mesolithic Neolithic transition, since several span this transition.

- Recording and investigation of shell midden sites is important as these offer potential for the survival of material and the continuity of the use of sites beyond the later Mesolithic and into the Neolithic period.
- Shell middens also contain items that are sometimes not associated with the economics of such sites.
- Analysis of peat deposits, coastal, in river valleys and at inland lakes has potential to offer new information about seasonality and the mobility of people around the landscape.
- More research into palaeoenvironmental sequences is required to determine local natural landscapes at specific times in the past.
- An update of Astrid Caseldine's Environment of Wales book would be timely.
- There is a need to identify more artefacts made of organic materials to understand resource exploitation during the early Holocene.
- The importance of Welsh cave sites for reconstructing the palaeoenvironmental of the Late Pleistocene and Pleistocene-Holocene periods.
- To prospect cave and rock shelter sites for potential rock art. Note, prospection of the Wye Valley (Herefordshire) has yielded potential results.

(iii) Artistic endeavour

- Within Wales and along the borderlands there is a significant portable art assemblage which is accompanied by a limited number of cave sites that contain potential early prehistoric rock art. Both forms of artistic endeavour extend the Mesolithic and Upper Palaeolithic. Ideally, a full database of this material would benefit researchers engaged in the concepts of ritual and symbolic behaviour.

(iv) Public Engagement and Awareness Building

The model adopted by the Living Levels Partnership Project is one that needs scrutinising for adaptation and application towards other research projects based in the Palaeolithic and Mesolithic archaeology around Wales. The success of such projects lie in their ability to engage and mobilise members of the public. This can be achieved by increasing experimental work and a greater involvement for members of the public both in determining some of the research questions to be asked and in utilising them to deliver the research.

b) Revision of existing questions

(i) Colonisation and recolonisation

- The pattern of human presence and absence across Wales at specific times is a theme that requires further elucidation.
- Palaeolithic evidence is largely reliant upon historical collections and the associated chronologies linked to the human presences are poor.
- Work is needed to explore the perception that there is a pattern of concentration of Mesolithic activity in some areas and not in others. This has been highlighted by the Milford Haven – Tirley gas pipeline transect and also is apparent along the present-day coastline.
- Targeted survey of inland locations to counterbalance coastal bias, e.g. investigation of river valleys, lakesides, uplands and rock shelters.
- Systematic mapping of submerged topographies and identification of possible focal points or areas for Mesolithic exploitation.

(ii) Chronology

- The topmost priority must surely be the establishment of a chronological framework for human activity in Wales and for its environmental context. It is integral to all the other themes, for both the Palaeolithic and the Mesolithic, and needs to be singled out. Within such a theme sub-themes might include:
 - Consolidating knowledge of the timing of human and animal presence in Wales during the Palaeolithic
 - Establishing the timing of initial Holocene colonisation
 - Tracking change in lithic technologies throughout the Mesolithic, focusing on transitions between Early>Late Mesolithic and Late Mesolithic>Neolithic
 - Refining the chronological framework for environmental change (sea level, vegetation, sediments, geomorphology)

- Application of scientific techniques to extend the range of dating (e.g. OSL, ¹⁴C ultrafiltration) as well as its refinements (e.g. Bayesian analysis and single amino-acid methods).
- Whilst there may still be some potential for the dating of archived material, the dependent priority must be the scientific dating of newly identified stratigraphic sequences where artefacts, structures, and evidence for environmental change can be securely linked. Options for this in the Palaeolithic are clearly extremely limited, but the exposure of new sequences in caves and the readiness to exploit chance indicators of open-air sites present opportunities, as do exposures of Pleistocene alluvial sequences in valleys. Particular attention should be given to Pleistocene sediment exposures in coastal situations especially in the Severn Estuary where several finds of Palaeolithic artefacts have been made in intertidal contexts. Ideally these would be supported by enhanced education/training of professional and local communities to help in the recognition and exploitation of such rare occurrences.
- In the Mesolithic the potential for establishing a chronology may be rather greater. Despite the acknowledged potential of inter-tidal sites, there needs to be focus also on the exposure and dating of terrestrial sequences, in river valleys and likely upland topographies, with precedence given to the dating of sequences rather than sites of mixed lithic signatures where stratigraphy is absent or unclear. Wetland edge contexts offer particular potential for the establishment of datable sequences. Geoarchaeological investigations are needed to identify the key topographic and sedimentary contexts in which Mesolithic activity is likely to occur. To achieve this, there are two preliminary requirements: *prospection* and *ground-truthing*. [which also contribute to at least '*Settlement patterns and settlement histories*' and '*applying new technologies and new techniques*'].

(iii) Prospection and Ground Truthing

- Applicable to the Palaeolithic, e.g. for locating undiscovered sediment traps.
- Extend field reconnaissance into under-researched areas as this can be extremely rewarding, capable of quite radically extending settlement distributions.
- To achieve more than occasional and very local results, field reconnaissance needs to be activated as widely as possible. For this to be effective, suitable expertise and enthusiasm must be disseminated more widely amongst professionals (including commercial archaeologists) as well as in local communities [e.g. through PAS etc].

- Target such explorations using predictive modelling/GIS, supplemented with input from aerial and satellite remote sensing (and with seismic techniques in the offshore zone).
- As there is a rich potential resource along the Welsh coastline studies akin to those undertaken by Historic England and the Rapid Coastal Zone Assessment programme and CITIZAN, the Coastal and Intertidal Zone Archaeological Network in England, would merit being undertaken around Wales.
- Projects could entail the field checking, planning, and dating of submerged forest exposures when they occur.
- To look at landscapes and the geology and geomorphology as a means to determine site location by building models of preferred site location in order to predict potential areas for investigation. Such work predicting coastal exploitation and fishing sites has proved successful in Denmark and would plausibly be applicable to Wales. The research questions need to engage the new generation of scientists working on palaeolandscape studies across Wales.
- To supplement this with ground-based remote sensing where appropriate, to identify settlement sites where stratigraphy may survive (e.g. palaeochannels). If present, organic preservation would be at a very high premium, potentially opening a huge window on knowledge of the period.
- Undertake a survey of caves along the limestone cliffs of the south Gower Coast in search of LUP rock art and historic graffiti.
- Undertake prospection for pigments within caves, as is currently taking place in caves in the Wye Valley and at Creswell Crags. There is an increased potential for the use of geochemistry for identifying pigment.
- Human and animal footprints of Mesolithic date have now been found on several sites in the Severn Estuary and west and north Wales they represent a key resource for identifying past human activity and ecology. Submerged forests of Mesolithic date are widespread in Wales and represent areas of preserved Mesolithic land-surface with great palaeoenvironmental potential, and are often associated with artefacts. In the case of both footprints and submerged forests techniques for their rapid recording need to be refined and potential sites monitored following storms.
- To apply new prospection methods to old sites to determine future potential.
- To use older museum collections as a basis for identifying new sites with potential.
- Follow up the discovery of surface collections of lithic artefacts with coring, test pitting, and trial trenching to confirm, characterise and sample stratigraphic sequences. Area excavation to follow, if appropriate, to

contribute to other themes (e.g. *social organisation, action and belief systems*, etc).

(iv) Artefact analysis

- *Discrete lithic assemblages*: these are badly needed, from stratified and dated sites (see above), to help overcome the very limited conclusions that can be drawn from the lithic analysis of surface collections of mixed ages. This should lead to a more refined characterisation of Mesolithic toolkits as they evolved through time, allowing (for example) more confident interpretations of settlement patterns based on lithic signatures alone (for example, allowing better-informed evaluation in advance of commercial development).
- A more highly resolved typology would also identify chronological/functional markers of significance, and allow the recognition of material influences from outside Wales (e.g. Irish Sea region, France).
- To re-evaluate artefacts and the document archive from various libraries and museum collections, including artefacts and documentation that are held in the British Museum and the National Museum of Wales.
- *Functional analysis*: the functions of stone tools characteristic of the Mesolithic in Wales remain very poorly understood – if at all. If suitably preserved assemblages can be recovered, functional analysis supported by programmes of experimental archaeology should be attempted. Such work should aim to understand the functions of, for example, denticulate scrapers, truncations, burins, awls, notched pieces and utilised flakes/blades; the functions of pebble tools such as ground-stone axeheads and bevelled pebbles also need to be elucidated. Knowledge of the use of these tools would allow more informed interpretation of wider subsistence and perhaps social issues.
- To make the application of use-wear analysis, residue analysis and experimentation a more integral and routine aspect of lithic artefact assemblage research.
- *Raw materials analysis*: there remains scope for projects which can comprehensively map and characterize primary and (some) secondary geological sources of lithic artefacts, and attempt to match the two using their respective petrographic/chemical signatures. As flint is not the only raw material used for knapped tools, such studies should also be applied to chert, quartz, tuff and other materials. Such research might help understand:
 - Direction of movement of social groups
 - Definition of spheres of influence and/or social territories

- Identification of pre-Neolithic quarrying
- Identification of non-Welsh sources
- Identification of offshore sources
- To create a full database of where raw materials occur in the landscape and to apply the data to identify and seek to understand raw material procurement strategies.

(v) Continue to locate the Research Agenda for Wales within wider British and European contexts.

- This remains highly relevant (see above) with, for example, links established between EUP lithic collections from Wales and those from Belgium and France.
- The Welsh Framework can also be linked to other areas of high potential for Mesolithic and Palaeolithic activity (The Wye Valley [Herefordshire and Gloucestershire]), The Mendips, Creswell Crags and Star Carr.

(vi) Continue to promote the need to consider a potential Palaeolithic and Mesolithic resource.

- It is essential that developers understand the potential for there to be a Palaeolithic and Mesolithic resource and that investigation is undertaken of deposits of such age. It will mainly be through future developer-funded work that new sites, particularly of Mesolithic age, may be recognised. For this, landscape 'hotspots' need to be identified, such as coastal sites, estuarine sites, riverine sites and upland sites. The four regional HERS would assist in identifying areas of potential significance.

4) Recent or additional literature

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