

Institution: Cardiff University		
Unit of Assessment: Archaeology (15)		
Title of case study: Consuming prehistory: changing attitudes to food and enhancing heritage practice		
Period when the underpinning research was undertaken: 2008-2019		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Prof Jacqui Mulville	Professor	01/10/2002 - present
Prof Alasdair Whittle	Professor	01/10/1978 - 31/12/2017
Dr Richard Madgwick	Senior Lecturer	01/01/2013 - present
Prof Niall Sharples	Professor	01/08/1995 - present
Period when the claimed impact occurred: 01/01/2016-31/12/2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact (indicative maximum 100 words)		
<p>Cardiff University research into prehistoric food, feasting, and farming challenged assumptions on what and how people ate in the past by showing that food was varied, travelled long distances, and had social and cultural significance. This research underpinned a year-long exhibition at Stonehenge and an accompanying wider events programme, which benefited English Heritage by increasing visitor numbers, enhancing visitor experience, upskilling volunteers, and embedding changes to site use. The researchers also reached non-traditional audiences at 17 UK festivals and community-led events and influenced the practice of heritage professionals. In total, they engaged over 580,000 people face-to-face and changed their understanding of prehistoric food and its relevance to modern cuisine.</p>		
2. Underpinning research (indicative maximum 500 words)		
<p>People eat to satisfy physical needs, but food is also a fundamental part of cultural and social interactions. Cardiff research into prehistoric farming, food, and feasting helped transform understanding of the economic, social, and cultural role of food in the past.</p>		
2.1 The role of food in prehistoric society		
<p>Prior to the Cardiff-led research, the diversity of people undertaking rituals at Neolithic monuments and the extent of population movement were unknown. The Cardiff team revealed evidence of the earliest large-scale celebrations in Britain and the most detailed picture yet of the degree of mobility across Britain at the time of Stonehenge – around 2500 BC. Supported by several major grants [G3.1-G3.4], the team also examined the manipulation of both the physical form and social meaning of food over the past 6,000 years by evidencing farming revolutions and culinary transformations.</p>		
<p>The team developed new methodologies specifically to investigate ancient diets, particularly refining the use of strontium isotopes for food provenancing [3.1] and integrating zooarchaeology with lipid analyses [3.2]. The Cardiff team's large-scale application of direct dating and Bayesian statistics also revolutionised understanding of the timing and routes by which domestic crops and animals arrived in the UK and Europe [3.3, 3.4]. This enabled accurate and refined dating on a large scale for the first time, allowing identification of the cultural and dietary changes that accompanied this shift in food acquisition [3.3, 3.4].</p>		
<p>The researchers demonstrated that widely held assumptions (that prehistoric diets were natural, dictated largely by practicality, focused on locally available resources, and involved minimal "food miles") do not stand up to the archaeological evidence. The uptake and form of farming practiced varied by location, and the choices go beyond pragmatism, instead showing preference and agency [3.1 to 3.5]. Significantly, the researchers:</p>		
<ul style="list-style-type: none"> refined the dating of farming introduction in Britain [3.3, 3.4]; 		

- confirmed the presence of large-scale feasting at the site of Durrington Walls near Stonehenge and connected this to ceremonial activities at the monument [3.1, 3.5];
- showed that food resources were brought from across the British Isles to provision the communities around Stonehenge, moving over large distances [3.1, 3.5];
- detailed the preparation, consumption and seasonality of food, and associated activities; and contrasted special and 'utilitarian practices' in Neolithic Britain [3.1 to 3.5], demonstrating that food played a significant role in social and cultural practices;
- highlighted preference and food intolerance, by showing a shift from fishing to dairying at the start of the Neolithic, whilst revealing (through fats found in pottery) that early farmers processed milk to overcome lactose intolerance [3.2, 3.4, 3.5].

2.2 Archaeology and public engagement: Guerilla Archaeology

Through Guerilla Archaeology, an engagement collective led by Mulville, the researchers developed a public engagement framework which employs archaeology to challenge preconceived assumptions. They developed new ways of working with hard-to-reach audiences in non-traditional settings such as music festivals [3.6]. For example, Mulville identified that when individuals were less constrained by conventional methods of engaging with heritage, they became receptive to new explanations and proactive in interrogating information themselves [3.6]. This provocative approach to public engagement stimulates debate and leads to co-creation of the past [3.6]. Building on these novel approaches, the team has collaborated with science and arts festivals, museums, youth organisations, and community groups local to Stonehenge to share their research on Neolithic food with new and non-traditional audiences [3.6].

3. References to the research (indicative maximum of six references)

[3.1] Madgwick, R., Mulville, J. and Evans, J. 2012. Investigating diagenesis & the suitability of porcine enamel for strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) isotope analysis. *Journal of Analytical Atomic Spectrometry* 27, pp. 733-742 DOI: 10.1039/C2JA10356G

[3.2] Cramp, L., Jones, J., Sheridan, A., Smyth, J., Whelton, H., Mulville, J., Sharples, N. and Evershed, R. 2014. Immediate replacement of fishing with dairying by the earliest farmers of the northeast Atlantic archipelagos. *Proceedings of the Royal Society B* 281(1780) DOI: 10.1098/rspb.2013.2372. Available in REF2.

[3.3] Whittle, A. and Bickle, P. (eds.) 2014. *Early Farmers: The view from Archaeology and Science*. Oxford: Oxford University Press. Available from HEI on request.

[3.4] Whittle, A., Healy, F. and Bayliss, A. 2011. *Gathering Time: Dating the Early Neolithic Enclosures of Southern Britain and Ireland*. Oxford: Oxbow. Available from HEI on request.

[3.5] Madgwick, R., Lamb, A., Sloane, H., Nederbragt, S., Albarella, U., Parker Pearson, M., and Evans, J. 2019. Multi-isotope analysis reveals that feasts in the Stonehenge environs and across Wessex drew people and animals from throughout Britain. *Science Advances* 5(3) DOI: 10.1126/sciadv.aau6078. Available in REF2.

[3.6] Mulville, J. 2019. Exhibitions, engagement and provocation: From future animals to guerilla archaeology. In: P. Bjerregaard, (ed.) *Exhibitions as Research: Experimental Methods in Museums*. Abingdon: Routledge, pp. 131-147 DOI: 10.4324/9781315627779

Selected grants:

[G3.1] Whittle, A. (PI), AH/F018126/1: The first farmers of Central Europe: diversity in LBK lifeways. Arts and Humanities Research Council. 01/10/2008-29/02/2012. £610,126.

[G3.2] Madgwick R. (PI), PDF/pf120025: Reconstructing the Feasts of Late Neolithic Britain. British Academy, 01/01/2013-31/12/2015. £234,512.

[G3.3] Mulville, J. (Co-I), NE/F021054/1: Changing Patterns of Marine Product Exploitation in Human Prehistory via Biomarker Proxies in Archaeological Pottery. NERC. 01/03/2009-30/09/2012. £379,250.

[G3.4] Whittle A. (PI), 295412: The times of their lives: towards precise narratives of change in the European Neolithic through formal chronological modelling. European Research Council. 01/05/2012-31/08/2017. €2,540,638

4. Details of the impact (indicative maximum 750 words)

Cardiff research on prehistoric food and feasting underpinned the 'Feast' exhibition at English Heritage's iconic site, Stonehenge. Using a strategic approach to public engagement developed through Guerilla Archaeology, the research also underpinned a series of interactive events across the UK (including at Stonehenge itself) and influenced wider heritage best practice. This engaged over 580,000 members of the public between 2016 and 2019 with lasting impact on how English Heritage presents its site and prehistoric food.

4.1 Feast at Stonehenge: attracting visitors and redefining presentation of the past

"Cardiff University research on animal movement for food and feasting at Durrington Walls has underpinned the current interpretation that we provide to the 1.5 million visitors who come to Stonehenge each year...and revolutionised how people perceive prehistory" [5.1 - Sue Martindale, Volunteer Manager at English Heritage].

The Cardiff team worked with English Heritage from 2016 to co-create the year-long exhibition 'Feast! Food at Stonehenge', showcasing prehistoric food. The exhibition ran at Stonehenge between October 2017 and October 2018. The team also developed a year of accompanying UK-wide interactive events and workshops in 2018 (funded by the AHRC - 'Consuming Prehistory', £76,594 AH/R005621/1) in collaboration with University of York. Susan Greaney, Stonehenge's Senior Properties Historian, noted that *"the isotope analyses and interpretations conducted by Richard Madgwick and Jacqui Mulville formed a significant part of the research presented in the Feast exhibition...Knowing that people and animals travelled over long distances to the area completely changes how we think about the people who built Stonehenge, who they were and where they may have come from" [5.2]*. She notes that this major shift in understanding *"made media headlines across the world" [5.2, 5.3]*. Cardiff's research also mapped a sudden uptake of dairying, which was particularly valuable as it provided wider context for the *"evidence for dairy processing found at Durrington Walls"* and *"contributed to how we present resource availability and food processing in the past" [5.2]*.

The Feast Exhibition culminated with the 'Big Feast Weekend' (BFW) festival (1-2 September 2018) which attracted over 11,000 people [5.1, 5.2]. Organised by Cardiff's Consuming Prehistory Postdoctoral Research Assistant Julia Best, the event embedded Guerilla Archaeology's provocative and interactive methods to explore farming and feasting in Britain around the time that Stonehenge was built [5.1]. Participants were engaged through: 'Stonehengebury's' (a pop-up immersive Neolithic shop), recipe creation, take home gardening kits, flour and pottery making, butchery demonstrations, cooking a Neolithic feast, themed catering, and pop-up hand-on talks by researchers [5.1, 5.2]. As *"the first of its' kind at Stonehenge"* Martindale confirms that *"we would not have been able to develop this without the CU research and the expertise of Guerilla Archaeology" [5.1]*.

a. Attracting visitors and enhancing experience

The Feast Exhibition:

- attracted over 560,000 visitors, which formed part of *"a 14.5% increase in visitor numbers from the previous year" [5.2]*;
- was described by 1 in 7 visitors as *"very influential"* in their decision to visit Stonehenge [5.2, 5.4] and a third of visitors said it significantly increased enjoyment of the site [5.4];
- increased revenue for English Heritage. With 1 in 7 visitors recording that the Feast Exhibition strongly influenced their decision to visit, Greaney states that this *"income could equate to £2.7 million"* (based on average ticket price of £12 * 225,714) [5.2];
- drew a more diverse pool of visitors, with 55% international visitors, compared to an English Heritage project average of 23% [5.4].

An evaluation survey commissioned by English Heritage noted that visitors to the exhibition rated their Stonehenge experience *"significantly higher"* than those just visiting the monument [5.4]. Additionally, the BFW festival *"was significant in increasing visitor duration, engagement, and information retention" [5.2]*. The festival's interactive elements *"created excitement and enhanced experience"* adding an extra dimension for younger visitors, for whom Stonehenge itself is not particularly exciting as *"they cannot touch it or independently explore it" [5.2]*.

b. Changing knowledge of prehistoric food

Greaney confirmed that Feast (both the exhibition and the BFW festival) “*created knowledge change for visitors*” [5.2]. This is further evidenced by visitor feedback: one visitor noted that Feast “*absolutely [added value], I know more than I did going in*”, and another that “*we could see how they lived... how they made their food. Can imagine what it would be like*” [5.4]. Edwards Heritage, food historians/interpretation specialists who delivered cooking recreations at the BFW festival, also noted that the practical and interactive format of the events run by the team created “*significant knowledge change in the visitors’ understanding of prehistoric technology and food*” and allowed visitors to engage on a personal level [5.5]. For both staff and visitors, the additional sensory experience of smell “*put the people back into the past*” by evoking a very “*different understanding of what it would have actually been like to attend a feast at Stonehenge thousands of years ago*” [5.5].

Accompanying online resources on the English Heritage website, which are available to people all over the world, have had over 41,700 unique views from Oct 2017 [5.2] and a video on cheesemaking has been viewed more than 173,262 times [5.1]. For English Heritage, this popularity highlights “*the universal attraction of Food and Feasting, and why it has become a key component of how we present Stonehenge to the world*” [5.2]. The researchers have stimulated ongoing knowledge change by developing (in collaboration with English Heritage and STEM Learning) a suite of KS2, KS4 and KS5 educational resources for the STEML website on food and feasting at the time of Stonehenge. The resources, described by teachers as showcasing “*strong links between the history and science*” [5.6a], have been viewed over 7,200 times, had 3,079 unique downloads, 1,061 additional video watches, and have been used in the UK and abroad [5.6b].

4.2 Changing heritage practice

a. Training heritage volunteers and professionals

Following the Feast activities, Greaney noted that “*the most major knowledge change was amongst our volunteers and staff in that they learnt a huge amount from the exhibition, workshops run throughout the project, and the feast weekend*” [5.2]. The success of the exhibition demonstrated to English Heritage “*the importance of having new research incorporated into our displays and into our staff and volunteer training to equip them with information in a timely fashion*” [5.2]. To achieve this, the Consuming Prehistory team worked with 21 (of around 50) Stonehenge site volunteers from 2016 to share knowledge of relevant research such as the development of farming, feasting, mobility, and food processing [5.1].

The activities and exhibition increased the volunteers’ ability to confidently share new research around food and feasting with visitors [5.1]. It also meant they could provide interactive experiences through live demonstrations of ancient cooking techniques, something not previously delivered at the site, and plan the development of new projects such as a Neolithic Garden (where prehistoric plants will be grown and showcased) [5.1]. This has been beneficial as “*these types of meaningful activities engage and enthuse volunteers, increasing retention and encouraging others to join the team. Volunteers are keen to share their new skills with the public and are able to speak from experience, so enriching their visits*” [5.1].

Collaboration with the Cardiff team for the BFW also influenced and enhanced the practice of Edwards Heritage [5.5]. The approaches developed for the BFW have led to their continued experimentation with prehistoric cookery, including creating prehistoric-themed menus with Heston Blumenthal and The Fat Duck group (Blumenthal’s restaurant group) [5.5]. This allowed Edwards Heritage to reach broader audiences and further challenge preconceptions of prehistoric food, by showing that “*prehistoric food certainly does not have to be boring, but can appeal to all the senses of taste, display and feasting that we enjoy today*” [5.5].

b. Embedding changes to site use at Stonehenge

Greaney confirmed that the Feast Exhibition and BFW festival delivered by the Cardiff team “*has had lasting legacy in how we now present Stonehenge (e.g. the catchment area of the monument and the movement of people/animals), how we conceptualise use of our site space (e.g. interactive large-scale events), and how we are developing future public interactions*”

[5.2]. The Feast Exhibition was the first to meet English Heritage's objective of using its indoor temporary exhibition space to present new archaeological research to the public [5.2] and its success led English Heritage's summary report to recommend that *"future exhibitions should adopt the best practice and 'wow' factor of the exhibits shown in Feast"* [5.4]. 'Making Connections', the exhibition that followed Feast, explicitly *"focused on creating such a wow factor"* and continued *"to incorporate new research and person-focused pasts"* [5.2].

The BFW festival was the first time that English Heritage used the Stonehenge site for large-scale visual events [5.1, 5.2]. Greaney stated that in contrast to previous events *"the Big Feast Weekend was visible from the carpark and drew people through the space from the visitor centre. Even if people did not know the event was taking place, on arrival you could see it, smell it, and hear it"*. She added that it *"influenced site use at Stonehenge"* as its success *"gave confidence to English Heritage staff that event-led and outdoor activities/events are not only feasible, but successful, and make good use of the space and resources available"* [5.2].

The events contributed to strategic discussions to implement a more event-based and interactive format at Stonehenge over the next decade [5.2]. These discussions are particularly relevant in light of COVID-19 as *"a novel example of site use"* which maximises the space available [5.2]. As a result of the confidence created by Feast, volunteers and staff have run other public engagement activities [5.1] and Greaney noted that now *"people expect to see demonstrations and things happening within the space at Stonehenge"* [5.2].

4.3 Opening archaeology to non-traditional audiences

The Cardiff team, via their co-creative Guerilla Archaeology approaches, expanded the reach of their work by delivering interactive events, developed with English Heritage for Feast, to over 20,000 people at 17 major music, arts, and science festivals (e.g. Settlement; Green Man; Bluedot; Lunar; Shambala; How The Light Gets In; New Scientist Live) and community-led events near Stonehenge (e.g. Wiltshire and Swindon Food Festival; Ready Steady Cook: Neolithic) between 2018-2019 [5.7]. The activities have also drawn over 230,000 social media interactions [5.7] and the research findings have attracted over 385 pieces of media coverage worldwide, including the UK, USA, Canada and Australia [5.3]. Participant responses highlight knowledge change and the importance of linking archaeology to modern experience, for example: *"I had no idea that the first farmers were lactose intolerant...It makes the past more relatable and gives me evidence when people say intolerances are a modern fad!"* [5.8].

In one example of a community-led event, 'Ready Steady Cook: Neolithic' the Cardiff team worked with Operation Nightingale (which uses archaeology and cultural heritage to assist the recovery of service personnel) to recreate prehistoric food near Stonehenge. Richard Osgood (Defence Infrastructure Organisation Senior Archaeologist) confirmed that several participants had *"experienced the landscape in some depth in their military training"*, that they *"learnt more about the past and their local heritage through the event"* and as a result *"feel altogether differently about lands upon which they trained"* [5.9]. He notes the benefits of introducing participants to archaeology for the first time as it *"challenges them to use mental AND physical skills"* which *"together provide a superb package for recovery and wellbeing"* [5.9].

5. Sources to corroborate the impact (indicative maximum of 10 references)

- [5.1] Testimonial: Sue Martindale, Volunteer Manager, English Heritage
- [5.2] Testimonial: Susan Greaney, Senior Properties Historian, English Heritage
- [5.3] Selected Media coverage of isotopes research in the news (Cision report)
- [5.4] BDRRC Report on the 'Feast! Food at Stonehenge' exhibition for English Heritage.
- [5.5] Testimonial: Edwards Heritage (Marc Meltonville, Emily Edwards and Edmund Simons)
- [5.6] STEML resources a. Teacher feedback b. Statistics from STEML showing numbers of visits, views, watches, and downloads.
- [5.7] Blog: Festival knowledge change, incorporating social media statistics.
- [5.8] Statement of knowledge change from Guerilla Archaeology Activities (Emily Jones)
- [5.9] Testimonial: Richard Osgood (MBE) Operation Nightingale