Institution: University of Oxford		
Unit of Assessment: 15 - Archaeology		
Title of case study: Raising Public Understanding of Hillforts in Britain and Ireland		
Period when the underpinning research was undertaken: 2000 – Dec 2020		
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:**
Professor Gary Lock	(Now Emeritus) Professor of Archaeology	1990 – 2010
Dr John Pouncett	Research Fellow in Spatial Archaeology	2010 – present
Dr Paula Levick	Post-Doctoral Research Assistant	2012 – 2016
Dr Ian Brown	Post-Doctoral Research Assistant	2012 – 2016
Period when the claimed impact occurred: 2015 – 31 Dec 2020		
Is this case study continued from a case study submitted in 2014? N		

1. Summary of the impact (indicative maximum 100 words)

The *Atlas of Hillforts of Britain and Ireland* collated and synthesised records relating to hillforts in Britain and Ireland, providing training and support activities for around 400 citizen scientists to document hillforts in their local communities. An online version of the *Atlas* was launched in June 2017, offering open access to the *Atlas* data and, more importantly, providing users with tools to use the data independently. It has had strong user engagement and global reach, with over 55 million hits and visitors from 205 countries. The *Atlas* has helped both project volunteers and (following extensive media engagement) independent *Atlas* users to develop a better sense of place, inspiring new initiatives and projects to explore, manage and protect hillforts in local communities. It has also demonstrated the ease with which information about places can be shared, enabling heritage organisations and web users to unlock the potential of their locational data, providing an exciting way for the public to engage with their work.

2. Underpinning research (indicative maximum 500 words)

The Atlas of Hillforts of Britain and Ireland (hereafter referred to as the *Atlas*) was a 4-year collaborative research project (2012-2016) funded by AHRC. Building on a tradition of mapping dating back to the 19th century, the *Atlas* draws together all the evidence (predominantly but not limited to) from archives, publications and monuments records relating to hillforts – iconic monuments which form the dominant component of the settlement record during the 1st millennia BC and AD – on both sides of the Irish Sea for the first time. The *Atlas* project developed out of a substantial earlier body of research led by Lock on hillforts, with pioneering work on GIS and the landscape setting of hillforts (**R1**) and regional synthesis of hillforts in southern Britain emerging from work carried out as part of the Hillforts of the Ridgeway project between 1994 and 2000 (**R2**). Pouncett and Lock are long-term collaborators on research on GIS and archaeology (**R3**), including the development of analytical and interpretative approaches to mapping hillforts (**R1**). This research laid the platform for the *Atlas*, highlighting the need to develop an authoritative list of hillforts to allow regional synthesis, defining the mapping requirements of the project and providing a framework for the research on the landscape settings of the hillforts.

From 2012 onwards, the *Atlas* project was led by archaeologists from the University of Oxford (Lock, in an Emeritus role) and the University of Edinburgh (Ralston), together with colleagues from University College Cork, Ireland. The University of Oxford team (Levick, Brown and Lock) carried out the elements of the project relating to England and Wales (data collection and citizen science), and landscape and GIS). Pouncett acted as a technical advisor to the *Atlas* project (both for Oxford researchers and the wider project team) and built the online version of the *Atlas* (**R4**) – one of the two principal research outputs of the project: 1) a web-mapping application that provides open access to the collated records for all 4,147 hillforts in Britain and Ireland and 2) a forthcoming paper version of the *Atlas*. Additional support came from project partners who provided access to archival data, including Historic England, CADW (the Welsh national heritage body), Historic Environment Scotland and the Department of Culture, Heritage and the Gaeltacht (which supports Irish language and culture).

The *Atlas* cut across research traditions as well as national boundaries and it was first necessary to define a set of criteria that could be used to identify sites which constituted hillforts from one country to the next. Three criteria – topographic position (sites which occupied a prominent/focal position in the landscape), scale of enclosing works (sites with enclosing works designed to impress) and size of enclosed area (sites with an enclosed area > 0.2 hectares) – were used to select the list of sites that were included as hillforts in the *Atlas*. Citizen scientists were enlisted through a public appeal, conferences and public talks to complete structured surveys of hillforts in order to enhance the records held in local and national archives. The survey form was designed to record criteria relating to landscape setting and surface morphology of the hillfort site, as well as guidance notes on the recording process, for example, how to include hillforts reduced to cropmarks, and how to identify and record external and internal hillfort features (e.g. stone walls, ditches, palisading; stone structures, platforms, quarry hollows). In total 304 surveys were carried out by the citizen scientists, including 220 surveys in England (180 undertaken by local archaeology and historical groups) that were supported by Lock, Levick and Brown (**R4**). To provide high-quality information for the Atlas database, the citizen scientists were supported to think critically about the earthworks that they encountered and to gather information on the current condition of the site. Some of the surveys built upon the basic survey form, and included extra information such as photographs, maps and LiDAR images. Citizen science data were checked against existing information and investigated further where differences were apparent.

The online *Atlas* (**R4**), published in June 2017, embodies the ethos of the citizen science element of the project by ensuring that all of the data collated for the *Atlas* was made freely available to the public. Pouncett and Lock have been strong advocates of GIS as a tool for spatial thinking (**R3**) and have highlighted that Web 2.0 technologies have the potential to open this tool up to a wider audience through the creation of web-mapping applications. The web-mapping application for the online version of the *Atlas* is hosted at the University of Oxford and provides an easy-to-use set of tools that allow all users to find hillforts, query attribute data, visualise spatial patterns and produce distribution maps, irrespective of their level of technical expertise (**R5**).

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

R1. Lock, G. and Pouncett, J. (2010) 'Walking the Ridgeway Revisited: The Methodological and Theoretical Implications of Scale Dependency for the Derivation of Slope and the Calculation of Least-Cost Pathways', in Frischer, B., Crawford, J., and Koller, D. (eds) *Making history interactive: computer applications and quantitative methods in archaeology (CAA), proceedings of the 37th international conference, Williamsburg, Virginia, United States of America, March 22-26, 2009*. Oxford: Archaeopress, pp. 191–202. [output type: E] Available at: https://proceedings.caaconference.org/paper/25_lock_pouncett_caa2009/.

R2. Lock, G. (2007) 'Wessex Hillforts after Danebury: Exploring Boundaries', in Gosden, C. et al., *Communities and Connections*. Oxford: Oxford University Press. [output type: C] doi: 10.1093/oso/9780199230341.003.0028.

R3. Lock, G. and Pouncett, J. (2017). 'Spatial thinking in archaeology: Is GIS the answer?', Journal of Archaeological Science, 84, pp. 129–135. [output type: D] doi: 10.1016/j.jas.2017.06.002.

R4. Lock, G. and Ralston, I. (2017) *Atlas of Hillforts of Britain and Ireland, online*. Available at: https://hillforts.arch.ox.ac.uk. [output type: H] [Physical copy of May 2018 version available upon request].

R5. Pouncett, J.(2019) 'The Atlas of Hillforts of Britain and Ireland online', in Lock, G. and Ralston, I. (eds) *Hillforts: Britain, Ireland and the Nearer Continent: Papers from the Atlas of Hillforts of Britain and Ireland Conference, June 2017*, Oxford: Archaeopress Publishing Ltd, pp. 155–162. [output type: E] http:// www.archaeopress.com/ ArchaeopressShop/ Public/ displayProductDetail.asp?id=%7bF5C3FA88-CC89-4012-9342-97092CFA025D%7d

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

Hillforts are often located in attractive and remote places and many are popular destinations for walkers and countryside visitors. The *Atlas* drew together information about hillforts which had previously been widely scattered across a range of local and national monuments records, publications and other sources. The process of creating the *Atlas, as well as the publication of the online version,* captured the public imagination, building **capacity** in community groups and

heritage organisations through citizen science, increasing public **understanding** of hillforts through media engagement, and helping some of those groups and organisations to share their work with the public in an exciting way through web-mapping

Improving local/regional heritage capacity through citizen science

Between 2012 and 2014, the *Atlas* team provided training on identifying and recording hillforts for the citizen scientists through a combination of site visits and public talks (see **R4**). The cohort is conservatively estimated to be around 400 citizen scientists. The majority of the citizen scientists were affiliated with local or regional archaeology and history groups. 23 groups (which range from c.4-5 members to c.60+ members) from Devon to North Scotland carried out surveys of hillforts. *Bath and Counties Archaeological Society* (BACAS – see website **S1**) and *Gloucestershire Archaeology* were major contributors, each carrying out surveys of over 40 hillforts. 24 highly-committed individual citizen scientists carried out independent surveys, including one person who carried out surveys of 45 hillforts in Scotland. These individuals could also be expected to bring friends or family with them to sites. The depth of engagement by all of the citizen scientists is reflected in the fact that once at a site, to do an initial walk around for reconnaissance, then walk around again to measure and complete the detailed survey form would take on average 3 to 4 hours. The total of 304 surveys means at least 912 hours (114 working (8hr) days) of time was invested by the citizen scientists. For best practice, the groups were encouraged to have interpretive discussions of the survey process and findings, which were supported further by the *Atlas* team. For example, the characteristics of hillforts captured by the survey forms were explored though research talks (n=86) delivered to members of community groups (many of whom were also in the citizen science cohort). These talks furthered the participants' understanding of their findings. Participation in the project by has led to some notable subsequent developments undertaken independently by local organisations, including:

- The establishment of *Friends of Berry Castle* (FoBC) in Devon, which was formed by some of the *Atlas* citizen scientists to protect a hillfort under threat from commercial forestry in Devon. In their first newsletter from January 2015, one of the citizen scientists describes a call *'for some volunteer help to complete a survey of Berry Castle for Oxford University's proposed Atlas of Iron Age Forts [sic]'*. They go on to say they *'had no previous archaeological experience… I had vaguely heard about Berry Castle, but like many other local people, had no idea of its history or condition… one of the most interesting aspects of this project was to try to imagine what could have been the original purpose for constructing these fascinating earthworks at a time when implements and tools would have been very rudimentary… I feel that it is very important to conserve this site for posterity.'* (**S2a**). FoBC went on to secure support from Historic England and the landowner (Clinton Devon Estates) to agree a management plan (including archaeological recording, geophysics, and guided walks) for the hillfort. Clinton Devon Estates have now stopped commercial forestry on the site, which has now been cleared of trees and is managed as a woodland clearing (**S2b**). Consequently, **Berry Castle was removed from the Historic England At-Risk Register** in 2016 (**S2c**).

- In Sept 2013, *Atlas* team member Brown led a site visit for local archaeological society the Chilterns Hillforts Group (CHG) to support their participation in the *Atlas* citizen science surveys. The CHG are sponsored by the Chilterns Conservation Board (CCB) – who are the public body established to enhance and protect the Chilterns Areas of Natural Beauty (AONB). In 2014 CCB sponsored an additional (independently-led) survey-training day intended to further equip volunteers with the skills needed to assist on the citizen science aspects of the *Atlas* project. These training initiatives resulted in seven *Atlas* hillfort surveys in the AONB. '*Spurred by this activity*' (**S3**), CCB went on to organise two hillfort-themed day conferences held in the Chilterns (Nov 2013 and Oct 2014), which Lock and Brown presented at on both occasions. CCB then followed this with an application to the Heritage Lottery Fund in 2015. The successful project – *Beacons of the Past* - **secured GBP745,800 of regional investment** to commission a LiDAR survey in support of a program of work to allow local communities to discover, conserve and enjoy the 22 hillforts and chalk landscapes of the Chilterns AONB. The Beacons of the Past Project Manager has confirmed that '*the Atlas project was indeed the cornerstone of motivation for the first steps toward the Beacons*

funding bid' (**S3**). In August 2020, the archaeologists working on the *Beacons of the Past* project announced that a new hillfort had been identified in private woodland in the CAONB from the LiDAR data.

- *Community Landscape Archaeology Survey Project* (CLASP) are an umbrella organisation for 15 local history and heritage groups in Northamptonshire. Having completed surveys for the *Atlas*, CLASP identified further areas of research which they were inspired to develop and publish themselves in a March 2016 report: '*In 2013, CLASP undertook to assist national teams working to compile an "Atlas of British Iron Age Hillforts"… from this detailed research on the individual sites, it gradually became clear that it would be instructive to carry out further investigations (not confined to single sites)'*. (**S4**) The report expands upon the research into the landscape setting of hillforts carried out by the *Atlas* project, and examines the connections between hillforts and long-distance prehistoric trade routes and applies viewshed analysis (GIS-based modelling of visibility) to hillforts (**S4**).

Increasing public awareness of hillforts through media engagement

The online version of the *Atlas* (**R4**) was launched in June, 2017 and was accompanied by a press campaign led by the AHRC which resulted in extensive online, newspaper, radio and television coverage in the United Kingdom and the Republic of Ireland. An AHRC communications report on media activity relating to the research in **one week** (22-29 June 2017) shows that the *Atlas* was mentioned in **113 UK news outlets**, including 12 BBC Regional News programmes, 9 major newspapers (including *The Times*, *The Guardian*, and *The Independent*) and a mixture of web and regional newspapers interest across Britain and Ireland (**S5**). A Storify report of social media responses (**S6**) showed the site was of particular benefit to those interested in furthering their understanding of the hillforts on their doorstep *('Discovered one [hillfort] less than 2 miles from home, not marked on the OS'*; and *'Visited Cadbury Camp hill fort today, what a surprise, driven past there for years & never knew it was there'*). It has also been used on social media to promote Environment Agency LiDAR data and to encourage people to visit the Scottish Borders (**S6**). Links to the *Atlas* were shared by Robert McFarlane, the popular author of books on the natural world (his post with a link to the *Atlas* website received 1K 'likes' and 600 retweets alone). The level of interest in the *Atlas* website itself was exceedingly high, with **the site handling over 250,000 transactions an hour on the day of the launch**. Since it was launched (until 31 August 2020) the *Atlas* has received over 55,000,000 hits and over 17, 500,000 page views (**S7**), with over 425,000 visitors from 205 countries – the latter all the more surprising given the limited geographic scope of the *Atlas*. The number of page views per visitor (41) and mean length of visit (5:03 mins) indicate that some of these visitors are not just visiting the *Atlas* but are engaging in depth with its contents – an observation supported by continued feedback on sites that should be added to/removed from the *Atlas* and information on the record pages for individual hillforts that needs to be updated.

Unlocking the potential of locational data for web users

The *Atlas* has demonstrated the ease with which locational data can be shared with non-academic audiences, providing access to detailed description and rich attribute data through an accessible map-based user interface. It was developed using *Web AppBuilder for ArcGIS* (an application for creating web apps that run on any device without writing a single line of code developed by Esri – the global market leader in GIS) using out-of-the-box functionality. This approach eliminates the need to develop bespoke software, reducing costs and allowing specialists from heritage organisations to focus on their primary area of expertise – the data itself. The *Atlas* won the Esri UK *Customer Success Award for Community Engagement* in May 2018 and in announcing the award at the Esri UK Annual Conference to an audience of c.3,000 industry leaders and geospatial professionals remarked: *'the novel use of this technology has… opened up the world of academia to new and interested users.'* (**S8)**. Esri have featured the *Atlas* in the *Live Sites Showcase* on the Web AppBuilder product page (**S9**) and have used the *Atlas* to illustrate how their products can be used as a resource to teach geography and related subjects in schools and universities, including as a resource for virtual fieldtrips in the age of Covid-19. Esri commented: '*We have also chosen to share a fantastic resource from the University of Oxford detailing Hillforts across the UK. This demonstrates a way of sharing*

information about places without compromising the sensitivity of visiting with a large group in the field' (**S10**).

The *Atlas* has been used by a range of initiatives that support the public to connect with cultural and natural heritage both in the UK and Ireland. *Atlas* data has been added to *Heritage Maps* – a one-stop web tool to discover the built, cultural and natural heritage of Ireland produced by the Irish Heritage Council in partnership with the Local Heritage Officer Network and the Biodiversity Data Centre – where the *Atlas of Hillforts* is listed as a separate searchable category alongside *UNESCO World Heritage Sites* (**S11**). It has also influenced the thinking of heritage organisations on sharing their geospatial data, a notable example being the *English Place Names Society* (EPNS), who recently launched a pilot project to identify, collect and record historic name-forms as part of their current survey of the place-names of Staffordshire (**S12**). The Honorary Secretary of the EPNS states that the *Atlas* has been '*very influential in current EPNS thinking'* and has *'vividly demonstrated the potential to map data with a great deal of underlying information attached to it, so that end-users can easily search and analyse data geographically, and subsequently go deeper into understanding that data. It is very important for the EPNS to be able to see a developed and published webapp which has the best of Geographic Information System (GIS) software in its visual presentation of data, but which has not lost any of the fuller (more textual) information underlying that data. The Atlas of Hill Forts (sic.) has shown how it is possible to have both and not need to compromise on the level of detailed information.'* (**S12**)

The *Atlas* was selected as one of four projects selected by UKRI to be included in an exhibit and reception at the *American Association for the Advancement of Science* (AAAS) conference in Austin, Texas as part of the UK Government's *GREAT Britain* Campaign. AAAS conference is a 'world event' which attracts more than 8,000 delegates from broad ranging fields including government policy and business (as well as academia). The lead for the UKRI AAAS campaign summarises the inspirational nature of the project, saying: '*We selected the Hillforts Atlas exhibit as an excellent example of the best of UK multidisciplinary research – combining archaeology, remote sensing, citizen science and other techniques to provide not only a new research tool but an exciting way of engaging the public*' (**S13**).

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

S1. Bath and Counties Archaeological Society (BACAS) website https:// www.bacas.org.uk/2017/10/14/bacas-makes-major-contribution-to-hillforts-atlas/

S2. **a**) Newsletter, Friends of Berry Castle (Jan 2015) **b**) website https://www.berrycastlehuntshaw.com/ **c**) Newsletter Friends of Berry Castle (Nov 2016).

S3. E-mail testimonial (2021) from Beacons of the Past Project Manager, Chilterns AONB.

S4. Report - CLASP (March 2016) *Iron Age Hillforts Survey (Northamptonshire): Analysis of the Individual Hillfort Reports*.

S5. Report - Arts and Humanities Research Council (2017) *Communications Analysis: Hillforts Database*, 22-29 June 2017.

S6. Report (social media) - Storify (2018) *Atlas of Hillforts: The Response so Far…*

S7. Report (website traffic) - WebLog Expert (22 June 2017-31 August 2020) for https://hillforts.arch.ox.ac.uk.

S8. Esri UK (2018) *Esri UK Annual Conference, Presentations 2018, Closing Plenary*, https://youtu.be/3U-ke47K4Ck?t=788.

S9. Esri, Web AppBuilder for ArcGIS - Live Sites Showcase https:// www.arcgis.com/apps/MapAndAppGallery/index.html?appid=1e3085af6e1a48c8908fa624bdfef768.

S10. Esri UK Higher Education (2020) *Virtual Field Courses Beyond Geography* https://storymaps.arcgis.com/stories/9bb0493ace9540b2b733e465cbb7fa74

S11. The Heritage Council (2010-2020). *Heritage Maps*, visited 31 August 2020 https://heritagemaps.ie/WebApps/HeritageMaps/index.html.

S12. Testimonial from the English Place-Name Society

S13. Press release, University of Edinburgh, March 2018 https://www.ed.ac.uk/history-classics-archaeology/archaeology/news-events/news-archive/news-2018/atlas-of-hillforts-of-britain-and-ireland-aaas