

Death on Ridgeway Hill

How science unlocked the secrets of a mass grave

BELOW Overlooking the Ridgeway Hill mass grave, where archaeologists have discovered a jumble of decapitated human skeletons, with the skulls piled up at the southern edge of the grave.

When archaeologists discovered a mass grave on Ridgeway Hill in Dorset, it was unclear who was buried there, let alone when or why. These were just some of the questions asked by scientists as they began their detailed laboratory investigations on the grave. Chief scientist Louise Loe reports.

In the summer of 2009, on Ridgeway Hill in Dorset, archaeologists were engaged in a routine watching brief when they made a completely unexpected find: a mass grave of around 50 skeletons. What made their discovery even more peculiar was that each skeleton had been decapitated. But while the skulls had been 'neatly' piled up at the southern edge of the grave, the beheaded bodies appear to have been dumped in the ground with little care. What was this grave, why was it here, and who were the unfortunate victims?

Excavation: base-line facts

Digging the grave was a complicated undertaking. The site, discovered by my colleagues at Oxford Archaeology, was found during the construction of the new Weymouth Relief Road that was built to facilitate the Dorset sailing events of the 2012 Olympics. Luckily, however, the site lay outside the path of the immediate construction works, which meant we were able to fence off the



area – essentially as a small island – while the major roadworks continued round us.

It took us three months fully to excavate the grave. The skeletons had survived as complete, articulated individuals, but they were very tangled with overlapping limbs. Because we were dealing with a highly complex deposit, it meant that we had to expose as many bones as possible before they could be recorded and then lifted for further investigation in the lab.

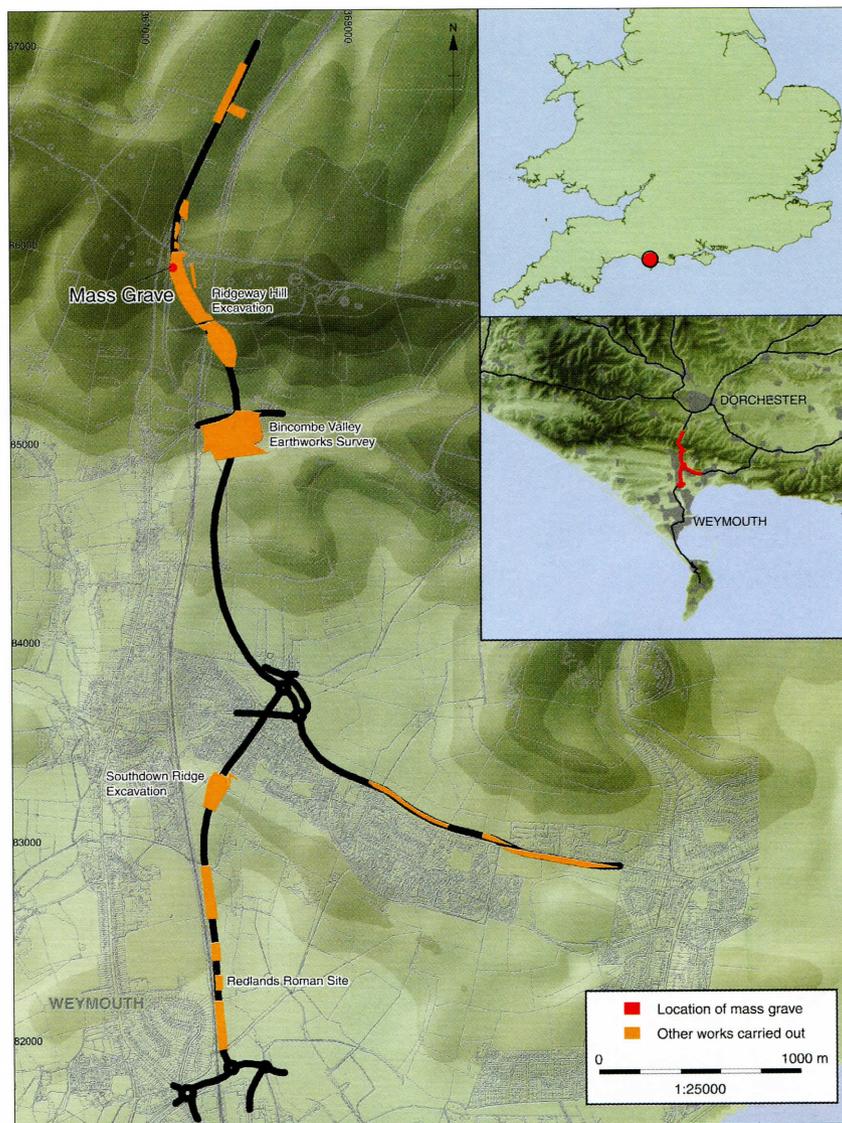
Fortunately, we had the on-site technology to undertake two- and three-dimensional recording, which revealed exactly how each skeleton was lying, despite their jumbled positions. This helped us to establish that the burial had been a one-off event that took place shortly after a mass execution, which had itself probably been performed at the graveside. It also revealed that the individuals – all men – seem to have been buried in no particular order, possibly simultaneously thrown in from all sides of the grave. We found no evidence for clothing on their bones, suggesting that the men may have been stripped prior to their burial. Yet, despite their violent demise, they did not appear to have had their hands bound, as might be expected of an organised execution. Finally, we determined that the grave itself was a disused, silted-up quarry pit, originally dug in Roman times.

These were the main facts that we were able to establish through excavation; other information was far more elusive. Principal questions, such as ‘what date was the grave?’ and ‘why had the men been executed?’, could only be addressed in the laboratory. The excavation had been a fascinating and complicated business, but the laboratory was where our investigations into the nature of the burials entered a second – and perhaps even more interesting – phase.

Revelations from the lab

Generally speaking, archaeological burials are dateable from associated artefacts, structures, and/or treatments, which in turn can provide information about the identity of the individuals. However, this was not the case for the Ridgeway Hill men, who had no associated items. In fact, initially we thought the individuals were Romans, owing to the amount of Roman pottery sherds scattered throughout the grave-fill.

Science came to the rescue, and produced some surprising results. As we were nearing the end of our excavation, we selected three bones

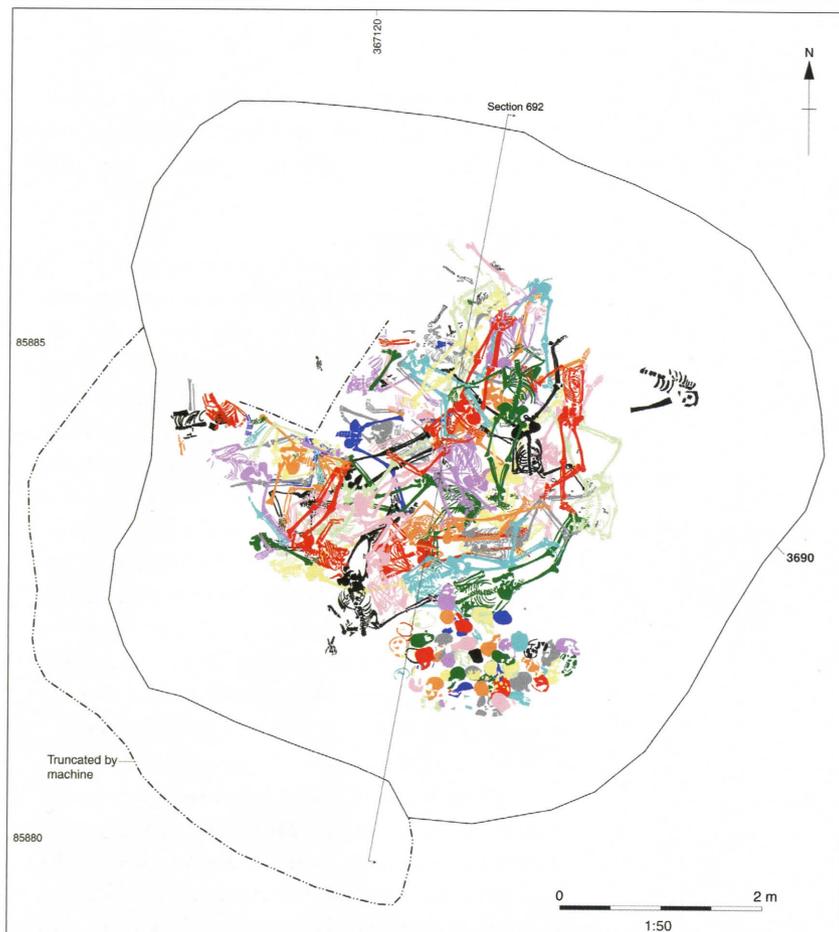


– taken from three different skeletons, one from the top, one from the middle, and one from the bottom of the grave – and sent them to the Scottish Universities Environmental Research Centre for AMS radiocarbon dating. This confirmed our suspicions that the grave represented one event: the bones returned three carbon-14 dates that were statistically consistent, and together gave the calibrated date of AD 970-1025 – that is, in the late Anglo-Saxon period.

This was big news, since the time period in question was one of considerable conflict between resident Saxons and invading Danes. Dorset was ruled by Wessex kings, including

ABOVE This plan shows the location of the site, which was uncovered during the construction of the new Weymouth Relief Road.

“The burial took place shortly after a mass execution... the men seem to have been... simultaneously thrown in from all sides of the grave.”



Who were the dead?

Now we had a time-frame for the grave, this opened several doors of enquiry in our investigation. It raised the possibility that the men were of non-local origin, and brought into sharp focus another pressing question: who were they? This led us to another scientific application: isotope analysis.

Tooth samples were sent to a team led by Dr Jane Evans at the NERC Isotope Geoscience Laboratory, British Geological Survey, based in Nottingham. These were studied for strontium and oxygen isotopes to explore where the men had lived as children. Strontium and oxygen, which give indications of geology and climate respectively, are among various elements derived from drinking water and food that are fixed in the enamel and dentine of teeth during their formation early in life. Readings from the teeth can be compared with documented readings for different parts of Europe, and an opinion formed on where the individuals originated. In the case of our men, the combined readings showed that they had grown up in a variety of places within the Scandinavian countries: we could be fairly certain we were looking at a group of executed Vikings.

Further isotope-testing of collagen from ribs and femurs indicated that, as well as being born in Scandinavia, the men had lived there in later life. Moreover, it showed they had not settled in England for any significant period of time, and that they had mixed migratory histories. This was also reflected in their carbon and nitrogen isotopes, which showed that their diets had been mixed.

The wide geographic origins, varied migratory histories, and mixed diets are all consistent with current knowledge of Viking armies. The possibility, then, that the men represented a Viking raiding party was a very real one, and we explored this further through careful forensic examination of the bones.

A picture of poor health

Although most of the men were around 18-25 years old when they died, the youngest was in his early or mid teens, and the oldest was over 50. They possessed features, particularly those relating to height and facial appearance, that were very similar to Scandinavian populations of similar date. Strikingly, some also had a physique similar to other skeletons of fighting/warrior-class status, although this was not the case for all individuals.

ABOVE The human remains formed a tangle of overlapping limbs, making the team's task of recording them complex – but 3D imaging helped to make sense of the skeletons.

Aethelred the Unready (or 'ill-advised', to be strictly accurate), but also by Danish kings, including Cnut. There are, unfortunately, no historical records that link the Ridgeway executions to any known event, but there are a number of possibilities, such as the ravaging of Portland in 982, or Viking attacks on Dorset in 998, 1015, and 1016. Another possibility is that they were victims of the St Brice's Day massacre of 1002, in which King Aethelred ordered that all Danes (thought to refer to all Scandinavians) be killed.



PHOTO: NERC Isotope Geoscience Laboratory, British Geological Survey

Added to this, at least one individual had filed his teeth, seen as horizontal grooves on his two front central, upper incisors. In life, these tooth grooves may have been coloured, making them clearly visible when he smiled; they may have been a status-symbol or a marker of their (often warrior) occupation. This is an exceptionally rare find, for while examples are known from Scandinavia, none had been found in the UK before.

Despite the fact that this was a group of predominantly young individuals who had died in their prime of life, we found a surprising amount of evidence for infection and physical impairment. In one particularly unfortunate case, the leg bone had been infected, making it twice the size of a normal bone – there were also holes in the bone that would have oozed smelly pus during his life. The leg would have been swollen and painful, and must have posed a considerable disability both to the individual and to the rest of the group. Despite this impairment, neither this nor any other individual bore convincing evidence for previous war wounds. These observations undermine the idea, heavily promoted in the media, that we had found an elite group of Viking warriors, possibly a ship's

TOP Piecing together the evidence: Helen Webb examines one of the Ridgeway Hill skeletons. **ABOVE** Dr Jane Evans of the NERC Isotope Geoscience Laboratory, British Geological Survey, led analysis of the strontium and oxygen isotopes preserved in the skeletons' teeth, which yielded clues to where the executed individuals had grown up.

crew. But if the men weren't elite warriors, what then might they have been? And could the way in which they were killed help to provide answers?

Horrific deaths

When we analysed the wounds they had received around the time of death in forensic detail, a picture emerged that was far more ugly and chilling than we had initially anticipated. Wounds were concentrated in the region of the neck, indicating that, in most cases, it had taken several attempts, from a variety of angles, to remove the heads. Blows intended to decapitate had been delivered from as high up as the back of the head to as low down as the shoulder blades, indicating that the executions had not been very well performed or well organised. Approximately 188 wounds were observed on all of the skeletons: that is, an average number of almost four wounds per individual.

The decapitations had probably been performed with a sword. This is the weapon used in the *Jómsvíkinga saga*, a probable Icelandic story of a mass execution, composed around AD 1200.

The saga describes the beheading of 70 captured warriors, who were roped together and had their hair secured back to keep it out of the way of the sword blade. Perhaps this had also been the case at Ridgeway Hill.

Not all of the injuries on the Ridgeway skeletons were directly associated with decapitation. Some individuals had received cuts to their arms and hands, and the sides/tops of their heads, including perhaps one of the most vivid lesions observed: a large egg-shaped wound where the bone had been completely removed, causing considerable trauma to the brain. This injury had been delivered prior to the man's decapitation, but he may have still been alive when his head was removed.

The cuts to the hands, arms, and tops/sides of heads may have been defence injuries and decapitating injuries, implying that not all men had succumbed to their fate without a struggle. But any notion that the injuries suggest a battle, or similar, had taken place prior to their execution is hard to reconcile with the evidence. The pattern and extent of the injuries are simply not consistent with those observed on other skeletons from battle- or massacre-related contexts. This said, it is important to consider that not all injuries will penetrate the soft tissues and affect the skeleton, which means that while combat prior to the executions is highly unlikely, it cannot be entirely ruled out. ➔



THIS PAGE Painful discoveries: one of the men (Skull 3736) had deliberately filed horizontal lines onto his front teeth, a distinctive look that may have been a mark of his social status or occupation. Another had suffered from a suppurating leg wound since childhood – this chronic bone infection, known as osteomyelitis, would have caused unpredictable latent and active episodes, with symptoms that can include tiredness, local swelling, and a temperature, in addition to impaired mobility and a leg that would have oozed smelly pus. A third individual had a deformed right leg, caused by a fractured femur that had healed to leave one limb shorter than the other.



The location of the site adds another strand to the story. The grave sits on the crest of Ridgeway Hill, next to a parish boundary and Roman road, near prehistoric monuments and within view of Maiden Castle. There is little doubt that this position was selected to make an example of the individuals buried here. It implies that the executions had been a formal event, perhaps attended by spectators. However, the large number of individuals executed and the methods used to do so make it unlikely that official criminal justice was being practised here.

The final analysis?

So, in the final analysis, who were these men and why were they here? We know they came from Scandinavian countries. We know this

RIGHT Skeleton 3777 showed signs of peri-mortem sharp-force trauma affecting his left hand – possibly defensive wounds indicating that this individual may not have gone down without a fight. Skull 3738 also bore witness to brutal violence: the large scoop of bone cut away from the cranium points to an injury that would have caused devastating damage to the man's brain.



was a single, brutal, mass killing. We know that some of them ‘look’ like warriors (for example, the grooved teeth, and some robust skeletons). We know they were mostly young men. But still we wonder: can they really be considered to have been a group of warriors given their poor state of health and lack of war wounds? Moreover, if they had resisted their fate – as we might expect of warriors – then why is this not more evident on the skeletons? And since the wounding pattern could in fact point to disorganised assaults, how does this fit with the suggestion that the executions had been a formal event on the crest of Ridgeway Hill?

Standing on Ridgeway Hill today, it is difficult to believe that it was the scene of one of the most dramatic episodes of early medieval violence. It is also strange to think that, had the grave been discovered sometime during our more recent past, prior to the development of radiocarbon dating, isotope analysis, and osteology, the context would have been interpreted quite differently.

Though we have come far, and science has pushed us even further, there are still many questions to answer about the grave. Although we have now completed our work, further scientific applications (for example, ancient DNA) are, no doubt, on the horizon, and will continue to unlock the secrets of this extraordinary discovery. @



ABOVE Skull 3742 demonstrates that some of the executions had been messy, drawn-out affairs: traces of multiple cuts to the individual’s vertebra suggests that it took numerous blows to sever his head.

ACKNOWLEDGEMENTS

The author would like to acknowledge Skanska Civil Engineering, who built the Weymouth Relief Road in partnership with Owen Williams – part of Amey plc – on behalf of Dorset County Council. Overall project management was by David Score. Osteology was by Louise Loe, Angela Boyle, and Helen Webb. Isotope work was by Carolyn Chenery, Angela Lamb, Jane Evans, Hilary Sloane, and Carlyn Stewart. The C14 dating was by Alex Bayliss.

FURTHER READING

Louise Loe, Angela Boyle, Helen Webb, and David Score, *‘Given to the Ground’: a Viking Age mass grave on Ridgeway Hill, Weymouth* is published by Oxford Archaeology (Oxford Archaeology Monograph No.22), and distributed by Oxbow Books, priced £29 (www.oxbowbooks.com/oxbow/given-to-the-ground.html).

SOURCE

Dr Louise Loe is Head of Heritage Burial Services, Oxford Archaeology, where she manages a range of burial projects undertaken by the company’s three offices, including the post-excavation work on the Ridgeway Hill mass grave.



ABOVE Another view: the men’s bodies seem to have been thrown carelessly into the mass grave, but their skulls were piled relatively neatly to one side.