

The historical ecology of Beckford, Worcestershire, England, a Bredon Hill settlement with evidence of more than 100,000 years of human occupation

P.F. Whitehead

Moor Leys, Little Comberton, Pershore, Worcestershire, WR10 3EH. Email: paul@thewhiteheads.eu

Form of reference: Whitehead, P.F., 2014. *The historical ecology of Beckford, Worcestershire, England, a Bredon Hill settlement with evidence of more than 100,000 years of human occupation*. pp. 1-7. Summary report prepared for Beckford Nature Reserve Ltd.

Preamble

Whilst visiting Beckford Nature Reserve on 28 September 2014 I by chance met Tina Brown, the present warden of the reserve which was purchased by and is owned by the community of Beckford. The account that follows stems from that meeting and provides a simplified rationale for the existence of the Beckford Gravel Pit SSSI, for the reserve itself, and for the development of the settlement of Beckford. The SSSI is contained within the curtilage of the nature reserve.

This is not a scientific paper written for the scientific community; it is an account of evidence assembled by the author most of which is now housed in the major London museums where it is permanently available to specialists. A diorama of regional ice age life can be viewed in The Almonry Museum at Evesham, Worcestershire. Time permitting I intend to assemble and formally publish original findings on the Quaternary biota of the midland River Avon valley. In the meantime this account should be regarded as an accessible exposition. It is written for and presented to the Trustees of Beckford Nature Reserve Ltd for that body to use as it may wish while it exists. All of **the images are subject to author copyright and may not be reproduced elsewhere or by individuals.**

Introduction

There can be little doubt that Beckford, in terms of the length and scale of its prehistoric human occupation ranks amongst the best endowed civil parishes in Britain; arguably it may be THE best. What is it that makes Beckford special and concentrates such abundant archaeobiological evidence in one spot? Key things combine closely; fresh water, well-drained sediments, aspect, slope and not least available food resources. All of these characterise the internationally important biocultural site of Bredon Hill. The sands and gravels worked and reworked by what is now the Carrant Brook, most notably during the past 40000 years, began to be exploited on an increasing commercial scale from the mid twentieth century A.D. Contained within, overlying and underlying those sediments is an internationally outstanding portfolio of evidence for human and natural life.

The human story

The Beckford human story begins well before 300000 years BP (BP = before present) when ice sheets moving from the north-east introduced a range of rocks from eastern counties to higher ground above the modern river drainage. They also transported large battered crude Acheulean hand axes which passed through multiple cycles of derivation before reaching Beckford and the River Avon valley. These are rare at Beckford and represent a Lower Palaeolithic cultural tradition that extended over a million years of time. Limited evidence indicates that Lower Palaeolithic tool bearers also had a physical presence near or in what is now the Carrant valley more recently. Yet more recent are distinctive Middle Palaeolithic artefacts (Fig. 2) mostly derived in current-bedded sands and gravels, many in fresh little-abraded condition. Beckford is one of Europe's more north-westerly outposts of the Mousterian of Acheulean Tradition culminating perhaps c50000 years BP in small magnificently worked flint bifaces shaped by shallow invasive scalar retouch. These tools were not manufactured by modern man *Homo sapiens* but by contemporaneous Neanderthal man *Homo neanderthalensis*. It is by no means impossible that Beckford was where modern humans acquired some of their Neanderthal genes. Neanderthal man died out in Britain about 40000 years ago possibly as a result of the challenge posed by the new coloniser, modern man. Beckford suited Neanderthal taste and during early warm vacillations of the last ice age they almost certainly established encampments there.

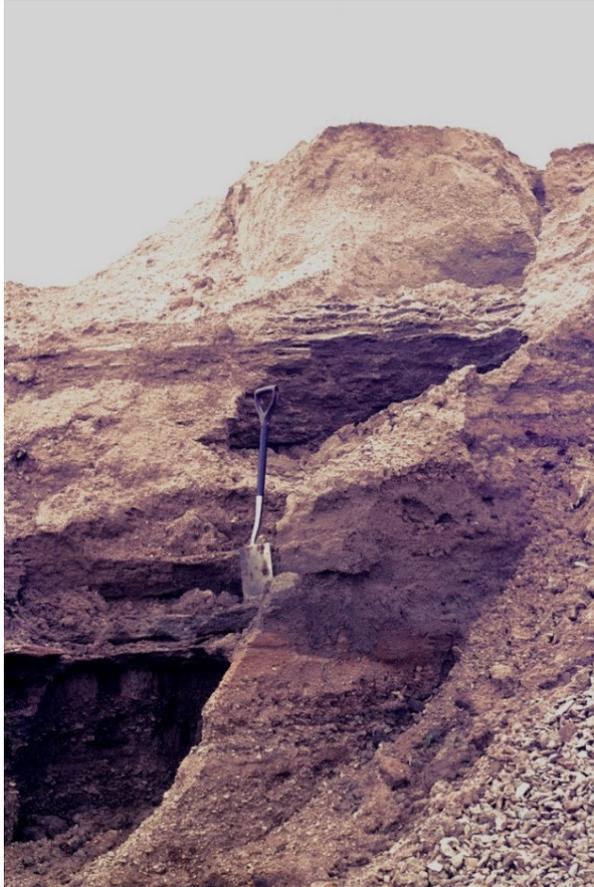


Fig. 1. A distinctive section in the Beckford sands and gravels. Well-sorted fluvial gravels at the base are overlain by darker lacustrine organic beds. These beds date to c27000 years BP and yielded organic remains of plants snails, beetles and rodents together with Upper Palaeolithic flint artefacts. The whole is overlain by periglacial varves. 4 September 1977 at SO98373626. © P.F. Whitehead.

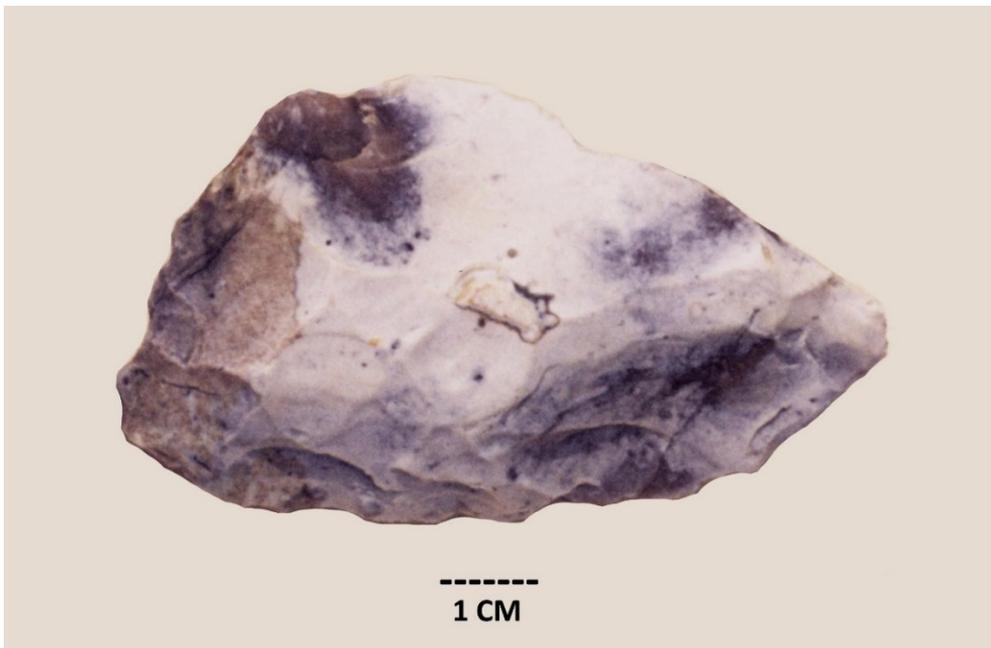


Fig. 2. Bifacial scraper with stepped scalar retouch probably late in the developmental history of the Middle Palaeolithic c45000 years BP, Beckford sands and gravels, 21 August 1977. © P.F. Whitehead.

Entrained in the Beckford sands and gravels is archaeological evidence of the Upper Palaeolithic including elegant blades and 'Aurignacian' zone fossils (32000-21000 years BP), the Mesolithic (11600-6000 years BP), Neolithic (6000-4200 years BP), Bronze Age (4200-2800 years BP), Iron Age (2800-1971 years BP), Roman (1971-1604 years BP), Saxon, medieval and its modern post-medieval population.

Before 'industrial man' made his presence felt at Beckford, Bredon Hill, its tributary streams and circumventing productive valleys and floodplains provided rich pickings for the table. The following examples of Beckford's wild megafauna demonstrates the impact of climate change: Woolly Mammoth *Mammuthus primigenius*, Woolly Rhinoceros *Coelodonta antiquitatis*, Steppe Bison *Bison priscus*, Musk Ox *Ovibos moschatus* (Fig. 3), Reindeer *Rangifer tarandus* and Horse *Equus ferus*, and since the last ice age Giant Ox *Bos primigenius* (Bronze Age) and Red Deer *Cervus elaphus* (Neolithic onward). Both Lion *Felis leo*, significantly larger than modern lions, and Spotted Hyaena *Crocuta crocuta* are represented in the Carrant valley ice-age biota but are unrecorded at Beckford.



Fig. 3. Axis vertebra of Musk Ox *Ovibos moschatus*, mid-last ice age, Beckford sands and gravels, 26 November 1972. The large dense vertebra, bleached and weathered on an ice age land surface, forms part of the axial skeleton supporting the large horn-bosses of this scarce species. © P.F. Whitehead.

The Beckford sands and gravels

The environment of deposition of Beckford's sands and gravels during the last ice age is complex; they extend as a drape over Bredon Hill's southern flank downwards from at least 48 m altitude almost to the level of modern alluvium at 34 m altitude. In their lower levels they are typically well-sorted by fluvial activity but show evidence of flow rate variations associated with nival braided rivers. In their higher levels (represented by the visible SSSI section at Beckford Nature Reserve at 39 m altitude) the sediments are less well-bedded and a precise landscape analogue is difficult to create. It is known that the nature and extent of sediment movement downslope varied over time; in some places basins and channels are filled with great thicknesses of fine-grained Jurassic sediment from the Toarcian ('Middle Lias') which was well developed on the higher hill slopes above. This downward movement of softer sediments created a network of rivulets diverging and coalescing above the flood plain sometimes forming 'fan-gravels' the special habitat of Musk Ox (Fig. 3).

As braided streams charged by spring thaws and warmed permafrost moved across their floodplains, sediments were selectively resorted as previous sediments bars and ridges were incised; for the stratigrapher this may turn the geological Law of Superposition on its head so that silty organic bands contained within them may be older than others below them. A great deal is known about the insect life and vegetation of these sediments including their contained macrofossils and pollen; from them it has been possible to infer that mean July temperatures some 9000 years before the maximum of last-glacial cold did not exceed 10°C.

It is this background that makes Natural England's geological SSSI at Beckford Nature Reserve notified on 24 March 1993, so special and one that should be preserved for as long as is humanly possible. Although the sediments date from the last ice-age, the Devensian cold period of British workers, their content includes quartzose sands swept across the region by anticyclonic winds in dry polar desert conditions and a superb record of the derived Jurassic marine biota. This can be interpreted in the same way as the pages of a book, even if it is a little thicker than most!

Jurassic bedrock: the Charmouth Mudstone

The Charmouth Mudstone (formerly Lower Lias Clay) underlies the Beckford sands and gravels. It is dominantly composed of clay deposited in an actively deepening north-westerly extensions of the Tethys Sea, the ancestral Mediterranean Sea. This event occurred some 195 million years BP in an increasingly humid ameliorating climate which allowed evergreen trees to luxuriate together with a terrestrial fauna of large reptiles and a rich marine fauna. This marine fauna includes plesiosaurs (Fig. 4), ichthyosaurs or fish lizards, fish, ammonites, nautiloids, shrimps, crabs, squids, sea lilies and corals all well-known at Beckford. Ammonites and the big reptiles or megasauria are all now extinct with nautiloids reduced globally to just two genera; in many cases their proliferation was abruptly terminated by a major extinction event associated with a well-established asteroid strike 65 million years ago. The Charmouth Mudstone covers a number of defined zones often containing diagnostic index species; at Beckford the Sinemurian is notably represented by small pyritised ammonites in the genera *Coeloderocheras*, *Echiocheras*, *Gemellerocheras*, *Microderocheras* and *Paltechiocheras*. Occasional large pyritised *Oxynoticeras* ammonites also occur (Fig. 5).

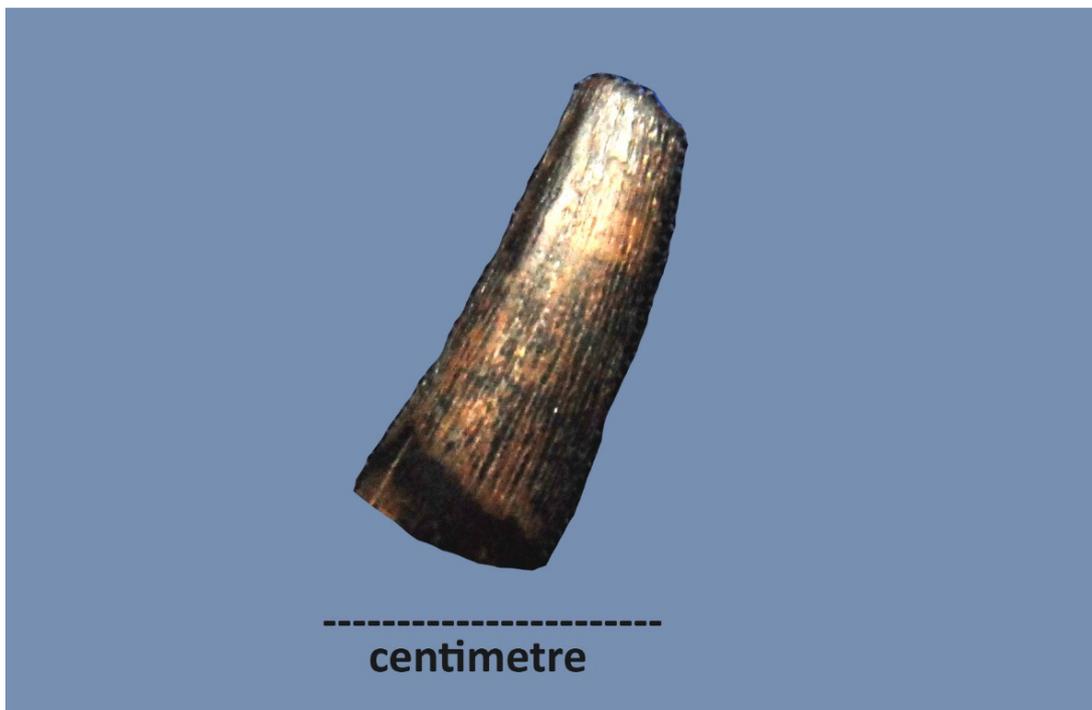


Fig. 4. Tooth of indeterminate plesiosaur, c195 million years BP, Lower Jurassic Charmouth Mudstone, derived in the Beckford sands and gravels, 21 July 1971. © P.F. Whitehead.

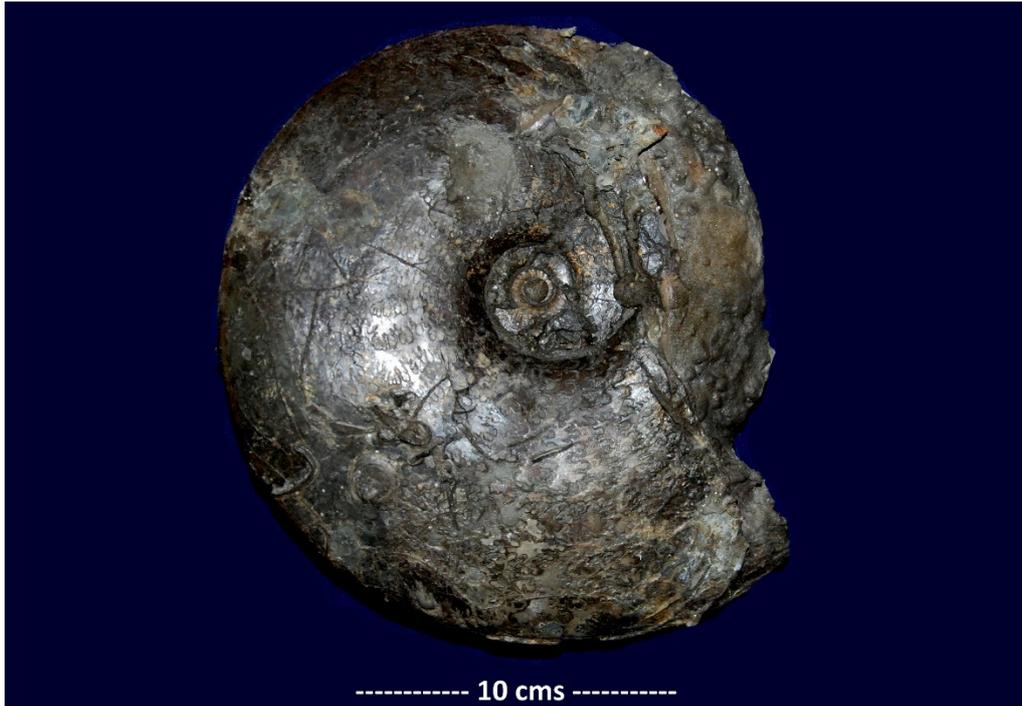


Fig. 5. A pyritised ammonite *Oxynoticeras oxynotum* from the Lower Jurassic Charmouth Mudstone of the Carrant valley, 14 July 1970. Ammonite shells contain internal buoyancy chambers. © P.F. Whitehead.

The Jurassic component of Beckford Gravel Pit SSSI

The visible section through the Beckford sands and gravels at Beckford Gravel Pit SSSI reveals derived evidence of somewhat more recent Jurassic life than that of the Charmouth Mudstone underlying it. Molluscs, sponges, corals and ammonites include index fossils of the Pleinsbachian and Toarcian (c175-185 million years BP) derived from formations higher upslope on Bredon Hill over tens of thousands of years. Ammonites include the genera *Coeloceras*, *Grammoceras*, *Hildoceras*, *Phlyseogrammoceras* and *Pleuroceras* as well as abundant brachiopods and bivalve molluscs. Marine nerineid snails (Fig. 6) confirm continuing climatic warmth at this time. Clasts visible in the section include abundant Toarcian mudstones and siltstones.



Fig. 6. Internal casts of indeterminate Lower Jurassic marine nerineid gastropod molluscs, Beckford Gravel Pit, 12 July 1970. From the Toarcian sediments of Bredon Hill. © P.F. Whitehead.

Beckford Gravel Pit SSSI today

The visible evidence for the Beckford sand and gravels today, in 2014, is largely confined to the Beckford Gravel Pit SSSI section which, unsurprisingly, is a vertical section. It cannot therefore be compared directly with the 'fan gravels' that radiated from Bredon Hill and were ultimately terraced by what is now the Carrant Brook. However, wherever light, well-aerated, well-drained sediments occur, they support definable assemblages of species, especially invertebrates, and this has been true throughout all the key episodes of human activity at Beckford.

Because the Quaternary sediments at Beckford Gravel Pit SSSI are contained exclusively within a vertical section certain species of invertebrate known to have occurred recently on sands exposed in the Carrant valley, such as the ground beetles *Amara consularis* and *Amara fulva*, are excluded from them. The section however operates in other ways. Its vertical disposition allows it to function as a 'heat-sink' retaining and slowly releasing stored solar energy through the evening and night. It functions also as an insect trap momentarily garnering flying insects which are then channelled to specialised predators (Fig. 8) that live in fine sediment eroded from the section. Some of these are exclusively psammophilous or sand-loving.

The SSSI also benefits fossorial or burrowing species from many groups. Foremost amongst these are solitary wasps and mining bees. Some of the former are ecologically important predators that provision their nests with paralysed caterpillars or flies; in turn they attract their own specialised parasites. The formerly rare parasitic bee *Sphcodes niger* was first observed at Beckford SSSI during 2007 during an expansive phase and still occurs there. Others such as the Bee Wolf *Philanthus triangulum* are rather more sporadic in their appearance.



Fig. 7. Pompilid wasp *Priocnemis exaltata* carrying paralysed spider *Pisaura mirabilis*, Beckford Gravel Pit SSSI, 28 September 2014. © P.F. Whitehead.

Hole-nesting birds in the vertical section have included Little Owl *Athene noctua*, Sand Martin *Riparia riparia*, and Great Tit *Parus major*. During 2014 a perfectly preserved Willow Warbler *Phylloscopus collybita* was found dead in an abandoned Sand Martin's gallery. Sand Martins bred in most of the sand quarries that once existed around Bredon Hill and the Beckford population is a small remnant of a much larger population that occurred there from the late 1960s. In 1989 the Sand Martin colony at Beckford gravel pit numbered 25 pairs. They sustain populations of a specialised rove beetle *Haploglossa nidicola* and flea *Ceratophyllus styx* ssp. *jordani* which are specific to them and highly adapted to a fossorial existence where they remain dormant overwinter until the martins return in the early spring. On 1 August 1987 a blind Sand Martin was observed flying at Beckford.



Fig. 7. *Arctosa perita* a well camouflaged fiercely predatory psammophilous hunting spider, Beckford Gravel Pit SSSI, 24 April 2007. © P.F. Whitehead.

It is important that vertical sections such as these are carefully conserved with due regard to all of these organisms and that it remains accessible to insolation. This requires a certain amount of well-conceived management, long-term decision-making and forward planning. As we have seen the Beckford sands and gravels bear witness to biodiversity that is internationally outstanding, to episodes of interfingering relationships between two species of hominid and wild animals and to major episodes of faunal turnover. In the continuum of this process it is likely that the SSSI will be a key recipient of species the presence of which cannot yet be predicted; no doubt eventually sediments will once more descend Bredon Hill reducing much of what we all now know to a surface 'techno-period' layer able to support further specialised life forms.