

Palaeolithic Archaeology Teaching Resource Box

Pleistocene Climate, Flora and Fauna: Basic

Pleistocene Plants & Animals

Although it is often referred to as the Ice Age, the geological period associated with the Palaeolithic (known as the *Pleistocene*) is actually a mixture of warm and cold periods. These changing climates resulted in changing fauna (animals) and flora (plants) in Britain during the Palaeolithic period.

During the cold periods there were still many species in Britain. Some are still found in the far north of Scandinavia and the Arctic today, such as reindeer and Arctic lemming. Some of the other animals however are now extinct, such as woolly mammoth and woolly rhinoceros.

During the warm periods some of the most common animals in Britain were red deer, fallow deer, elephant and rhinoceros. During one of the warmest periods (around 125,000 years ago) there were even hippopotami in the River Thames.

The plants of Britain during the Ice Ages varied according to the climate: in general during the warm periods Britain was covered with forests, made up of both deciduous and coniferous trees, while during the cold periods the land (other than those parts buried under the ice) was covered with short grasses, mosses, and lichens.

The Cycles of Pleistocene Climate

The warm and cold periods of the Pleistocene are otherwise known as *glacials* (cold) and *interglacials* (warm). These periods occurred in cycles (i.e. one after the other), with a single pair of glacial and interglacial events occurring roughly every 100,000 years. Each cycle included the following stages:

- End of a glacial period/start of an interglacial period (improving climate)
- Full interglacial period (warm climate)
- End of the interglacial period/start of a glacial period (worsening climate)
- Full glacial period (very cold climate)

During the cold glacial periods the north and the midlands of Britain were covered by *glaciers* hundreds of metres thick. To the south of these glaciers (the south-west was never covered by glaciers during the Pleistocene) vegetation was still scarce, with just mosses and lichens. Towards the end of the glacial periods (as climate improved), grasslands spread over much of Britain: these grasslands were home to a wide range of herd animals such as mammoth and horse.

During the warm interglacials of the Pleistocene Britain was dominated by forests: these included both coniferous tree species such as pine and deciduous species such as oak and elm. Occasionally archaeologists have recovered pollen from tree and other plant species which are restricted to southern Europe today (such as wild grape): these species (known as southern exotics) can give a clear indication of just how warm the interglacial climates sometimes were (similar to modern temperatures or even slightly warmer).

How cold were the Glacials?

Unlike the warm interglacials, there are rarely any plant pollen remains from the glacial periods to enable archaeologists to reconstruct temperatures. However, we can estimate temperature on the basis of features known as ice wedges (pictured overleaf). These features are formed by water seeping into cracks in the ground. Due to the cold weather the water freezes and expands, and the force of the expanding ice makes the cracks wider.

Many episodes of freezing and thawing of the water can result in the development of large cracks up to several metres deep: much later the cracks fill with soils and other material from the surface, leaving a clear feature for archaeologists to see. Modern studies suggest that for these types of ice wedges to form, a mean annual temperature of -7°C is required.

Plant and Animal Extinctions and Migrations:

As the climates changed, plants became locally extinct (e.g. warm-loving tree species which couldn't cope with the colder climates), while animals would either have become extinct or migrated to other areas: for example, as climates became warmer the woolly mammoths would migrate to colder parts of continental and northern Europe.

Terminology:

Glacial: a cold period during the *Pleistocene*, lasting roughly 50,000 years, although some periods are longer or shorter than this. Temperatures are difficult to estimate, but on average were probably well below freezing.

Interglacial: a warm period during the *Pleistocene*, lasting roughly 50,000 years, although some periods are longer or shorter than this, and the periods of greatest warmth (known as the full interglacial) probably only lasted a few thousand years. Temperatures during the full interglacials were similar to those of the present day, or even slightly warmer.

Pleistocene: the geological period associated with the Palaeolithic period. Often referred to as the Ice Age, it consists of a series of *glacial* and *interglacial* periods.

Glaciers: massive sheets of ice, up to several hundred metres thick, which covered large parts of northern and central Britain during the *glacial* periods.

Quiz Questions:

1. Would woodlands or grasslands be better environments for Palaeolithic people to live in?
2. What impact might migrating animals have upon hominins?
3. What would be the ideal size of animal for Palaeolithic people to hunt?

Further Resources:

http://www.bbc.co.uk/nature/wildfacts/animals_a_z.shtml [BBC website with a wide range of information about both living (e.g. reindeer) and extinct (e.g. cave bear, woolly mammoth, and woolly rhinoceros) animals]

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Ice wedge (the 'V'-shaped feature in the centre of the image)



Part of a mammoth skull (upside down: note the large teeth in the centre-top of the image)