

Breckland Underground

Pink, buff and cream coloured bricks seen in many Breckland buildings were made from Gault Clay from outside the district. This 105 million year old geological deposit also occurs deep under Breckland - this specimen, with a fossil ammonite, came from a water transfer tunnel near Mildenhall.



Full or Empty?



The Devil's Punchbowl is a large circular basin south of the 'Drove Road' in Croxton and has been explained as a solution feature in the Chalk bed-rock. Changes of ground water level in the underlying Chalk cause water to rise to give a small lake in the Punchbowl or fall to give dry bed (illustrated).

Answer a Scientific Question



Closed, near circular hollows abound in the Breckland landscape. Some have relatively clear origins – Chalk solution features such as the Devil's Punchbowl or pingoes such as those at Thompson Common. Most, like these (pictured) at Aspal Close, Beck Row, are less clearly defined. How did they form? They have no ramparts, but could they be eroded pingoes? Chalk is not far below the surface, so could there be solution features in the Chalk beneath them with subsidence of the cover material?

Learn More About Geology

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In BRECKLAND with

GeoSuffolk

Exploring Breckland

Breckland lies across the western borderlands of Suffolk and Norfolk. Its unique character is defined by its geology as shown by this GeoSuffolk trench on Knettishall Heath Suffolk Wildlife Trust Reserve. The white chalk-rich area in the foreground contrasts with the brown sand in the far end of the trench. These separate soils form large-scale patterned ground, evidence of our periglacial heritage – permanently frozen sub-soil during the Ice Age. The exact nature of such processes in chalk land continues to exercise inquisitive minds.

Clarke's Breckland

Breck district became Breckland in the Naturalists Journal in 1894. Its author was Wm. George Clarke (1877-1925), born in Yorkshire, but of Thetford parents. He married Miss Holden of Thetford and he is said to have shaved with a flint implement found near Brandon. W.G.C.'s son was R. Rainbird Clarke (1914-1963) who revised the classic 'In Breckland Wilds' in 1937, and was a senior colleague of one of this leaflet's authors (RM).



Exploring for Breckland

Extreme northern latitudes today exhibit some of the processes thought to be active in the Breckland landscape during the cold phases of the Ice Age. Pingoes – earth mounds pushed up by ground ice - are common on the coastal plains in Svalbard. This sketch was made by one of this leaflet's authors (CM) on a recent visit there – the shaded areas are cracks which expose the ice core.

Breckland is underlain by Chalk and the harder varieties suitable for building purposes, are known locally as 'clunch'. The photograph shows some of the many chalk-block cottages in Northwold village - much of this material came from chalk pits at the western end of the village. Many miles of chalk walls, easy to identify by their creamy white colour, occur in Breckland, with Lakenheath and Thetford having good examples.

The Easter Sepulchre in the chancel of Saint Andrew's Church, Northwold, was carved in chalk over 600 years ago. Its depicted soldiers have suffered much more from weathering than from military action!



Visit a Pingo

A short walk on the Norfolk Wildlife Trust Reserve at Thompson reveals numerous rounded shallow depressions (many with ponds) surrounded by ramparts. These have been interpreted as the remains of pingoes – where earth slumps down the sides of an ice mound to form the ramparts and a depression is left when the ice melts.



Wind on the Heath

Much of Breckland is covered by a thin layer of very fine, wind-blown sand. Sometimes this is heaped into mounds and ridges as on the open access heath at Icklingham (pictured). These features have been identified as wind-blown dunes, however the abundance of flints in many of the sandy exposures suggests a complex origin. They are for the most part vegetated and therefore inactive now.

A Frozen Landscape

Breckland exhibits a variety of ground features of periglacial origin formed subsequent to the great Anglian ice sheet which covered Norfolk and Suffolk about 450,000 years ago. Permafrost, prevalent during post-Anglian cold phases, and ground water in the Chalk underlying much of the area were significant in the development of these relict landforms. Large areas of patterned ground stand out like giant finger prints - here frost action has sorted the sand and chalk into polygons, stripes, and stripes anastomosing into polygons. There is also much 'hummock and hollow' topography created by ground ice – the lower ground pockmarked with dips and dells.



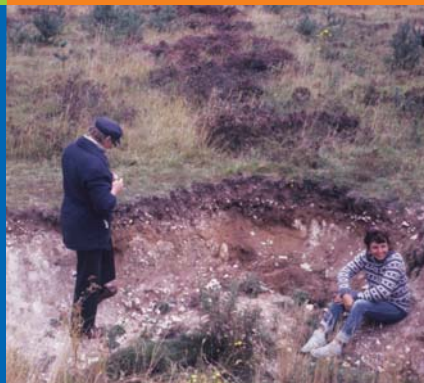
Stripes...

...common but little known

This enclosure east of the Peddars Way at Knettishall Heath Nature Reserve displays classic vegetation stripes. They are 2-4m wide and run down the gentle slope of the River Ouse valley side. 'Acid' vegetation stripes, dominated by Silver Hair Grass and Heath Bedstraw, contrast with 'alkaline' stripes with a range of grasses, plus Ladies Bedstraw and Dropwort.



In 2013 GeoSuffolk dug this research section through one of these features, revealing half a metre of fine, wind-blown sand at the surface and then shattered chalk under the 'alkaline' vegetation stripes, with a metre deep trough filled with coarse brown sand, flints and quartzites under the 'acid' vegetation stripe.



A public footpath crossing military land north-west of Grimes Graves passes near to this shallow excavation which shows that the grassy stripes have shattered chalk near the surface and that heather is growing on trough-like depressions filled with sand and flint. For the less adventurous, vegetation stripes are often well-shown on the land to the north-west of Grimes Graves car park.



Touch a Special Stone

Flint is everywhere in Breckland, and Brandon Heritage Centre (pictured) shows fine examples. Flint originates as hard black nodules in soft white Chalk, but how? Silica from sponges and other organisms has reacted chemically with decomposing organic matter, the silica then being precipitated as flint. These reactions took place at oxygen-sulphide boundaries, generally within sediments beneath the floor of the Chalk sea.

A knapped (flaked) flint from Brandon, trimmed into a rectangle 3cm across, as once produced for flintlock guns. This specimen is in Ipswich Museum. Palaeolithic flint hand-axes may be seen in Mildenhall Museum and flint sea-urchins at Grimes Graves Information Centre. There is an alphabet in flint in Thetford Museum and a flint necklace in Moyses Hall Museum, Bury St Edmunds - both made by Bill Basham of Brandon.



Old Father Bytham

Reddish-brown quartzite pebbles are common in some Breckland gravels and have here been used in this house wall adjoining Lakenheath churchyard. Unlike local flints, these pebbles have travelled from elsewhere, interpreted by some as brought from the West Midlands by an extinct river called the Bytham, before the Ice Age. Solifluxion of these pebbles down the slope of Knettishall Heath give clues to the origin of those Ice Age stripes.