Preserving Our Geological Heritage

King Barrow Quarry, Portland

SY 690 728

King Barrow is the site of former stone quarries abandoned over a hundred years ago and allowed to regenerate naturally with some scrub management. It is an important habitat for wild flowers and butterflies. One part of this S.S.S.I. is of particular geological interest and is maintained by Dorset's Important Geological Sites Group.

A view across the quarry from the west

A view of the site July 2011

The rocks in the quarries are Upper Jurassic Portland Stone with Purbeck Limestone strata lying conformably above. Our interest is a small remnant of a fossil forest similar to that seen at Lulworth. A number of circular algal limestone structures are visible on a ledge at the western edge of the quarry. In recent years these have been overwhelmed by the growth of cotoneaster to such an extent that they were barely visible. In 2010 an effort was made to clear the site with good results.

The structures are in the lowest Purbeck strata (the Caps & Dirts Member) laid down about 146 million years ago. The British Isles was at the latitude of southern Spain and northern Africa about 30 to 35 degrees north of the Equator. The Portland Stone was laid down in marine conditions but, by Purbeck times, water levels had dropped and the area was low lying land covered by coniferous trees bordering an extensive lagoon. The 'Dirt Beds' refer to beds of fossil soil in which fossilised roots of coniferous trees have been found elsewhere on Portland. The 'Caps' are algal limestone situated immediately above each Dirt Bed in the sequence.

A painting of an early Purbeck landscape by Anthea Dunkley

The conifers are *Protocupressinoxylon purbeckensis,* now extinct. The painting was one of four illustrations of Purbeck life used in the Purbeck CD project in 2009.

Later the water level in the lagoon began to rise and gradually flooded the area causing the trees to die. Calcium carbonate secreting algae living in the lagoon colonized the area around the bases of the tree trunks. They gradually built up a limestone sheath around each trunk which increased in height as the water deepened. The tree trunks themselves, in most cases gradually decayed. An impression of the bark often remains on the inner wall. Sometimes remnants of silicified wood have been found still within the central hole.

Part of the site before conservation with cotoneaster threatening to overwhelm the geology

One of the algal limestone sheaths newly excavated

PAS 2010