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# Cattybrook Claypit

## Highlights

Cattybrook Claypit is the only good exposure of Productive Coal Formation of the Bristol–Somerset Coalfield.

## Introduction

This is an active quarry near Cattybrook Farm, 11.5 km south-west of Almondsbury, Avon [ST 592 833], being worked for clays to produce high-quality bricks. It was opened in 1863, to provide bricks for the Severn Tunnel (Richardson, 1862, 1888) but it was more than 60 years before the first description of the geology was published (Smith and Reynolds, 1929). The site has since been mentioned several times (Reynolds *et al.*, 1929; Moore and Trueman, 1937; Welch and Trotter, 1961), and a list of plant fossils found there was given by Moore and Trueman (1942). The first published log of the section, together with a description of the fossil systematics, has been given by Cleal and Thomas (1988).

The strata exposed here are in a displaced thrust-slice, representing part of the Ridgeway Thrust Zone (Kellaway and Hancock, 1983), which has caused significant tectonic disturbance of the sequence.

## Description

### Lithostratigraphy

The main exposure on the south-east side of the quarry, shows a near-strike section of steeply dipping strata (Figure 6.3). Consequently, although it is a relatively large site, the exposed sequence is only 10 m thick. Mostly it consists of mudstones, shales and a thin coal (0.25 m thick), typical of flood-plain deposits of the Productive Coal Formation. Several thin (<2 m) sandstones probably represent crevasse-splays. A somewhat thicker (2.5 m) lenticular sandstone in the middle of the succession may represent a crevasse-channel.

### Biostratigraphy

Plant fossils provide the only biostratigraphical evidence here. The assemblage includes *Laveineopteris loshii* (Brongniart) Cleal *et al.*, *L. tenuifolia* (Sternberg) Cleal *et al.*, *Paripteris pseudogigantea* (Potonié) Gothan, *Lonchopteris rugosa* Brongniart and *Karinopteris acuta* (Brongniart) Boersma (see Cleal and Thomas, 1988 for a systematic account of the entire assemblage), suggesting the upper part of the *L. loshii* Subzone (uppermost *Lyginopteris hoeninghausii* Zone), and thus indicates a position in the top Langsettian.

## Interpretation

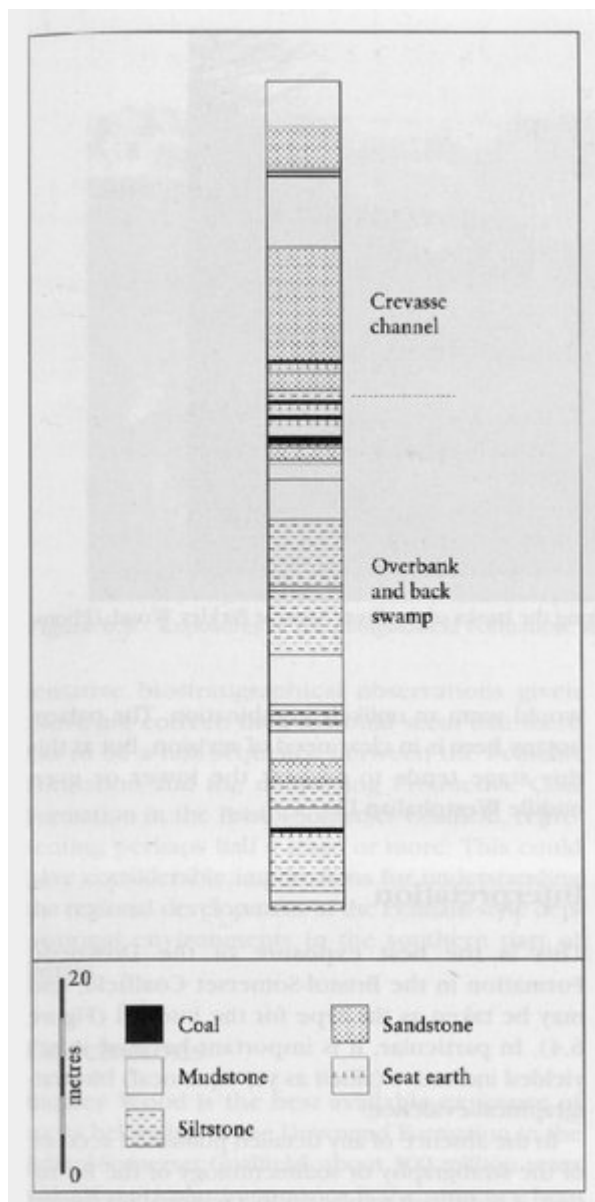
This exposure is frequently described as part of the Severn or Avonmouth Coalfield (e.g. Welch and Trotter, 1961). However, there is otherwise no evidence of strata below the upper Westphalian D in this coalfield (Cleal, 1986). Rather, the strata exposed are probably part of an allochthonous thrust slice, which originated in the Bristol–Somerset Coalfield. Assuming this is correct, the Cattybrook sequence must represent strata just below the Vanderbeckei Marine Band in the Bristol–Somerset Coalfield, and the thick coal reported in the neighbouring Cattybrook railway cutting (Jones, 1882) is probably an equivalent of the Red Ash Seam.

Despite an extensive search carried out as part of the Geological Conservation Review, no other suitable site was found showing the Productive Coal Formation in the Bristol–Somerset Coalfield.

## Conclusions

Cattybrook Claypit is the only good exposure of rocks of the Productive Coal Formation of the Bristol–Somerset Coalfield. They have yielded a diverse assemblage of plant fossils, which allow their age to be established as late Langsettian (about 313 million years old). It is also possible to show here how these rocks were formed in a large river-delta.

### References



(Figure 6.3) Stratigraphical section exposed on the south-east side of Cattybrook Claypit. Based on Cleal and Thomas (1988, fig. 2).