
Hillhouse Nab

[SE 659 993]

Introduction

Hillhouse Nab has yielded a distinctive Middle Jurassic flora from the Aalenian Saltwick Formation. The flora is dominated by conifers and differs from others of similar age, indicating that it originated from a drier, less waterlogged habitat. A thin coal in the section yields a different flora again.

Harris discovered the plant bed at Hillhouse Nab (Figure 3.27) in about 1950 and mentioned the locality in his species accounts in *The Yorkshire Jurassic Flora* (Harris, 1961a, 1964, 1969, 1979a; Harris *et al.*, 1974) and in his discussion of *Matonia braunii* (Harris, 1980). No published description of the site exists so the observations below are largely based on Harris' manuscript description, which is housed in the Palaeontology Department of the Natural History Museum, London.

Description

Stratigraphy

Based on Harris' unpublished notes, the stratigraphy at Hillhouse Nab is as shown in (Figure 3.28). The basal sandstone was reported as extending for about 500 m, thinning towards the edges, but Harris recorded that he only collected from the plant bed over about 70 m. This bed is about 2 m thick. It overlies a pale yellow sandstone and is in turn overlain by 10 cm of crumbly coal composed mainly of fusainized wood fragments. Above the coal are a few metres of grey clays that weather to a bright yellow.

The basal sandstone is over 2 m thick; its base is not exposed. At the top of the sandstone the lithology changes to a micaceous sandy siltstone and for the first 1 m it alternates unevenly between fine sandstone and grey or brown micaceous siltstones and there are lenses of hard sandstone. The plants occur in the silty layers.

Palaeobotany

The complete list of species is given in (Table 3.1). There are lenses within the silty layers with each having a single species in great abundance. The best of these gave *Phlebopteris braunii*, the stems of *Pachypteris papillosa*, *Pseudotorellia tibia* or *Equisetum* sp. with stems about 3–5 mm wide and pronounced nodes. Many of the other species are widespread although often rather fragmentary. Conifers are especially common here, including *Cyparissidium rudlandicum*, *Brachyphyllum crucis* and *B. mamillare*.

The coal has a small flora of megaspores and leaf cuticles quite different from those of the plant bed. Although there are many fragments of fusain, the coal itself is not fusainized because it dissolves on maceration. It yields many small fragments of *Czekanowskia* cuticle and *Erlansonisporites* (al. *Triletes*) *sparassis* and *Horstisporites* (al. *Triletes*) *areolatus* megaspores and occasional fragments of *Farndalea fragilis*. There are also 'red eggs', now thought to be clitellate cocoons. There was no *Ptilophyllum pectinoides*, *Brachyphyllum crucis*, *Pachypteris papillosa* or *Equisetum* spp., all of which are normally easy to see in macerations.

The clay above the coal is full of flattened stems of *Equisetum columnare* and nothing else. They are well preserved in the first 2 cm but only broken bits occur higher up.

Interpretation

This is a relatively small flora, much smaller than that of Broughton Bank, for instance. However, it is rather different from others of comparable age in that it contains a relatively high percent age of conifers. This indicates that the flora was at

least partly derived from a drier, less waterlogged, environment than the others. Significant among these conifers are the remains of foliage called *Elatides thomasii* Harris, which occurs with abundant male and female cones indicating that it belonged to the Taxodiaceae.

The stems of *P. papillosa* are particularly well preserved at the Hillhouse Nab GCR site. They gave Harris (1983) plenty of material for his interpretation of them as the young succulent stems of large shrubs that formed mangrove-like thickets along tidal rivers. Harris (1980) also used the rich source of *Matonia braunii* to redescribe the species, consider the overall status of the Yorkshire Jurassic Matoniaceae, and review the earlier descriptions of the family. The species had previously only been collected as occasional specimens at Saltwick and from the Gristhorpe Bed.

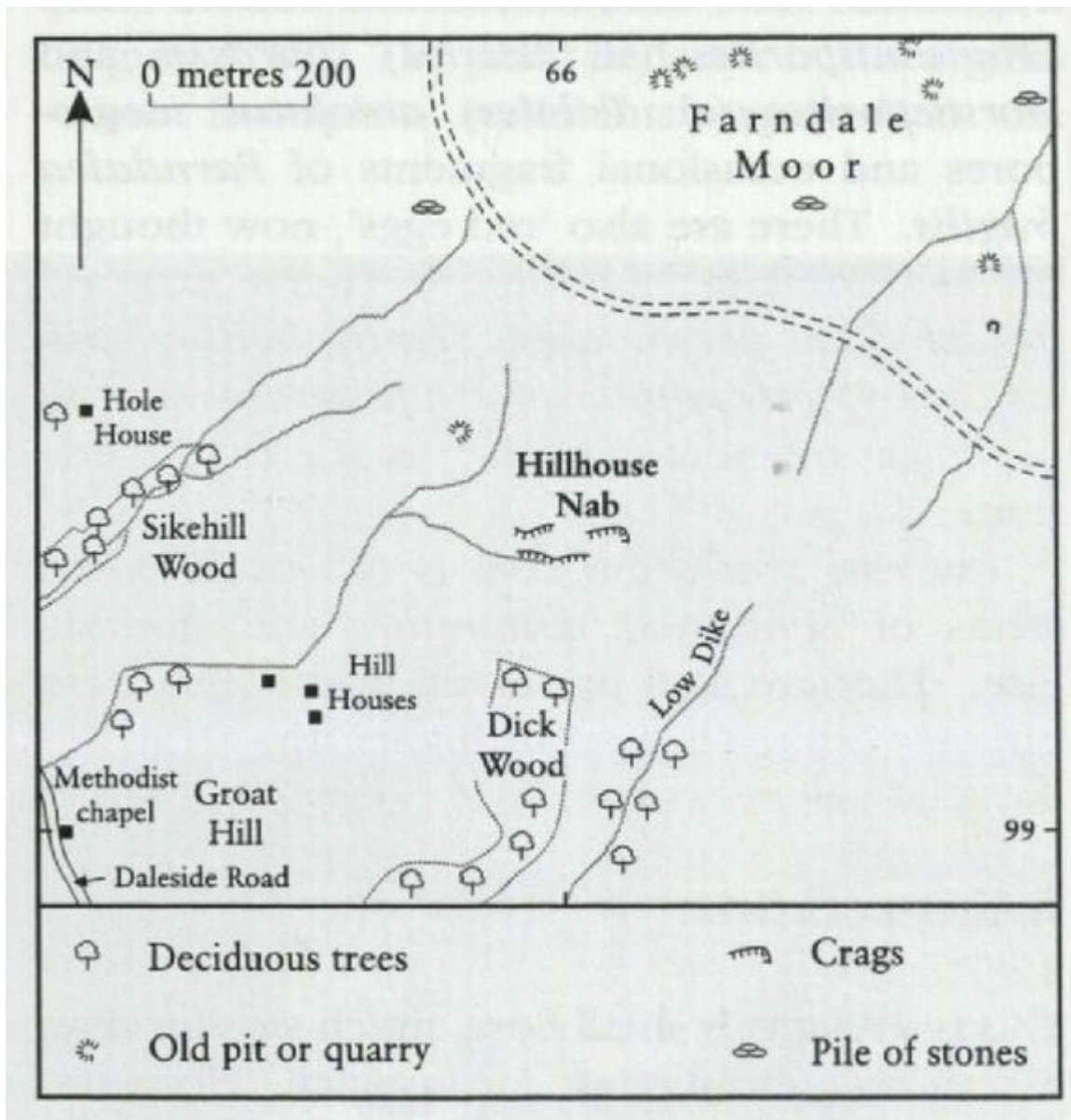
Harris stressed in his manuscript that *Equisetum columnare* was absent in the plant bed below the coal and that he did not encounter any suggestion of vertical roots. He suggested that the water level must have been consistently too high for *Equisetum* to invade, being at least 1 m deep and often more than this, implying deposition in open water into which came fragments of plants from the surrounding area. The coal would have been formed from a mass of plant debris that accumulated in the water body rather than from in-situ Carboniferous-type swamp vegetation.

This is the only known British locality for Jurassic macrofossils of the unusual ginkgophyte foliage *Pseudotorellia tibia*, although dispersed cuticles of another species of the same genus have been found elsewhere (Harris, 1974a). It is similar in leaf shape to *Eretmophyllum* but has a significantly different epidermal structure and provides further evidence for the diversity of the ginkgoaleans in Mesozoic vegetation.

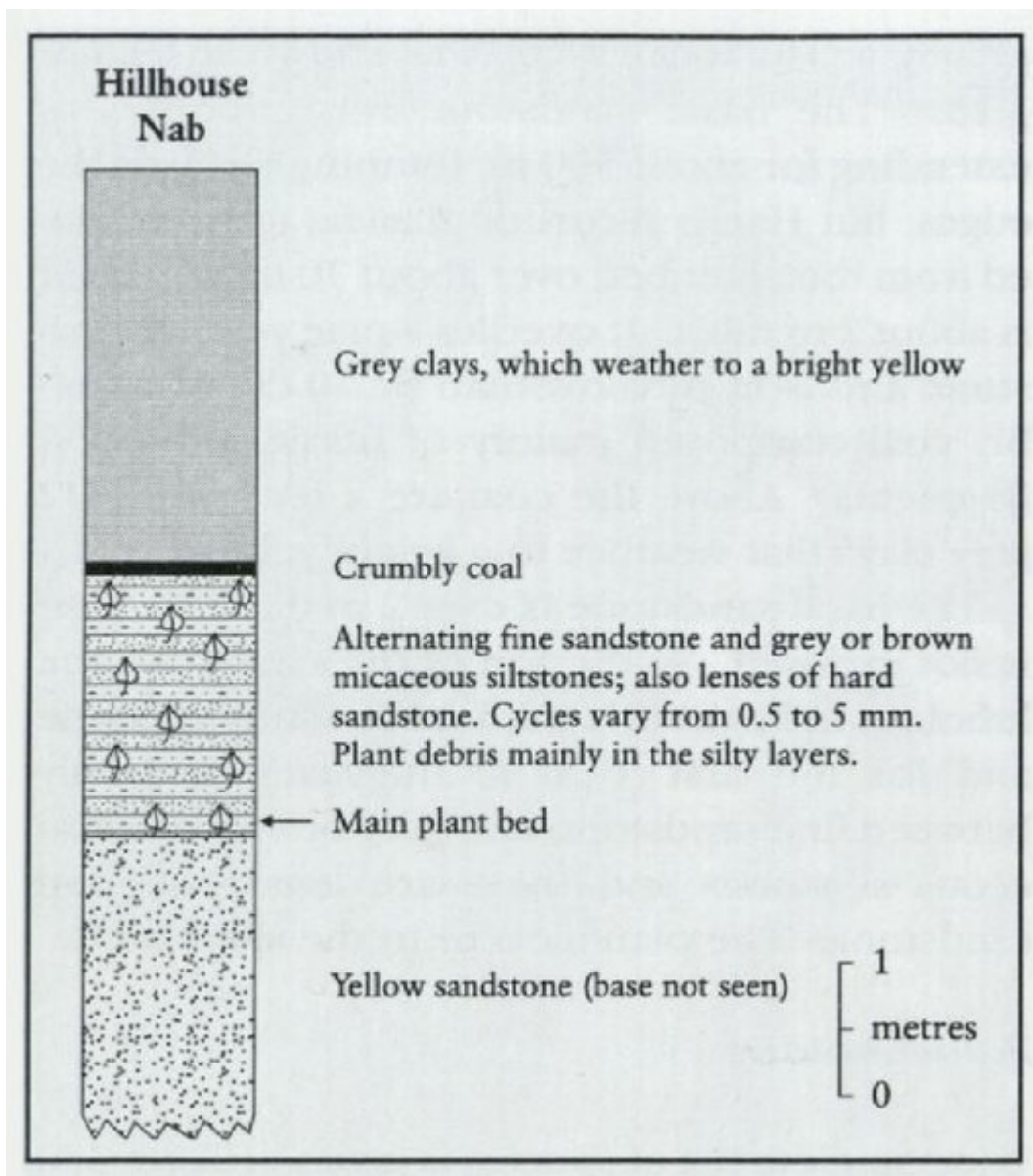
Conclusions

Hillhouse Nab is an important locality for its conifer-dominated flora, which complements those at Broughton Bank and Roseberry Topping. The rich lenses of individual species offer good opportunities for future detailed studies. The inclusion of the coal seam in the short sequence at this GCR site also gives an unrivalled opportunity for future palaeoecological research.

[References](#)



(Figure 3.27) Location of the Hillhouse Nab GCR site.



(Figure 3.28) Stratigraphical section at Hillhouse Nab, based on manuscript notes by T.M. Harris.

