Deer Park Road

[SO 4845 7135]–[SO 4899 7111]

Introduction

The exposures occur along the north side of Deer Park Road forestry track, in the Haye Park region of Mortimer Forest, about 2.8 km SSW of Ludlow, Shropshire (Figure 5.6), (Figure 5.14). The sequence helps to characterize formations within the Ludlow Series in its type area in the Ludlow Anticline (see Holland *et al.,* 1963). The rocks exposed were first recorded by Lawson (1973a), soon after the Forestry Commission had established a complex of tracks in Mortimer Forest. The stratigraphy of this and the other then new sections was detailed by White and Lawson (1978); Cherns (1988) gave additional data on the Bringewood and Leintwardine groups of Deer Park Road. Most of the Deer Park Road sequence later became designated reference horizons of the standard Ludlow Series (see Lawson and White, 1989) and also featured in field guides to the Silurian (Bassett *et al.,* 1979; Siveter *et al.,* 1989, locality 3.5, figs 45, 46, 51 [*non* 47, in error]).

The site extends for some 550 m and consists of fairly continuous, low bank exposure of fossil-rich strata. It includes body stratotypes for the Lower Bringewood [SO 4850 7128], Upper Bringewood [SO 4852 7122], Lower Leintwardine [SO 4878 7117], Upper Leintwardine [SO 4882 7116] and Lower Whitcliffe [SO 4884 7115] formations and basal boundary reference sections for the Upper Bringewood [SO 4852 7122], Lower Leintwardine [SO 4869 7119], Upper Leintwardine [SO 4882 7116] and Lower Whitcliffe [SO 4884 7115] formations (Lawson and White, 1989). With the deterioration of the original basal boundary stratotype section for the Upper Bringewood Formation (see GCR site report for Deepwood, in the Bringewood Chase part of the Ludlow Anticline; Holland *et al.,* 1963), the equivalent sequence on Deer Park Road assumes added importance.

Description

The section shows a total thickness of about 84 m; all beds dip gently, 10–15° ESE (White and Lawson, 1978). Some 21 m of the upper part of the Lower Bringewood Formation is exposed, consisting of irregularly bedded, olive-grey, calcareous siltstones containing, in particular, brachiopods such as *Strophonella euglypha, Atrypa reticularis, Leptaena depressa, Sphaerirhynchia wilsoni* and *Pholidostrophia lepisma* and corals such as *Rhabdocyclus* and *Favosites.* Near the top of the Formation calcareous nodules are quite common and about 4 m below the junction with the Upper Bringewood Formation there is a 10 cm thick bentonite.

The Upper Bringewood strata consist of hard, grey, silty and in places nodular limestones. Only the lowermost 2 m and highest 5 m of the formation are recorded, the intervening 10 m being unexposed (White and Lawson, 1978). Chitinozoans are abundant and diverse in both the Lower and Upper Bringewood formations; particularly characteristic of the late Gorstian are *Belonechitina* and *Eisenackitina toddingensis* (Sutherland, 1994). The diverse Upper Bringewood macrofauna, typified by the brachiopods *Kirkidium knightii, Shagamella ludloviensis, Amphistrophia funiculata, Leptostrophia filosa, P. lepisma* and *S. euglypha* and by tabulate and rugose corals, is common up to the sharp lithological boundary with the overlying flaggy calcareous siltstones of the Lower Leintwardine Formation.

A complete Lower Leintwardine sequence, 20 m thick, is characterized especially by the brachiopods *Microsphaeridiorhynchus nucula, Howellella elgans, Dayia navicula, Salopina lunata, Isorthis orbicularis, Shaleria ornatella* and *Shagamella ludloviensis.* Several trilobite taxa including *Proetus obconicus, Warburgella ludlowensis* and *Alcymene* occur. The siltstones have also yielded the biozonal graptolite *Saetograptus leintwardinensis* (White and Lawson, 1978; Cherns, 1988).

The Upper Leintwardine Formation is represented by merely 3.5 m of strata, immediately west of a small man-made cut through the section (Figure 5.14). Lithologically similar to the Lower Leintwardine, it is easily differentiated by the occurrence of a varied macrofauna that includes the ostracod *Neobeyrichia lauensis* and the acme of *Aegiria grayi* and

the trilobites *Encrinurus stubblefieldi* and *Alcymene puellaris* (Bassett *et al.,* 1979, fig. 25). The large, distinctive *N. lauensis* and/or its associates provide one of the best correlative tools in the type Ludlow, and can be traced into sequences in Sweden, the eastern Baltic and Podolia in the former USSR (see Siveter, 1989). The Deer Park Road section ends with about 21 m of greyish, flaggy, Lower Whitcliffe calcareous siltstones with abundant *Protochonetes ludloviensis* and *M. nucula,* together with *D. navicula, Orbiculoidea rugata,* the worm tube *Serpuloides longissimus,* the bivalve *Fuchsella amygdalina* and orthoconic nautiloids (Bassett *et al.,* 1979, fig. 25). The latter stratigraphical unit and the Leintwardine Group have abundant microfloras and other palynomorphs (Elliott, 1995).

Interpretation

The rocks at Deer Park Road represent a variety of subtly different, relatively shallow water environments on the eastern, Midland Platform of the Welsh Basin (see Cherns, 1988, text-figs 13, 14; Siveter *et al.,* 1989, fig. 10; Bassett *et al.,* 1992, figs S4b, S5a). During mid-Ludlow times the Ludlow area was an inner shelf region

(Watkins and Aithie, 1980). The Upper Bringewood Formation limestones at Deer Park Road represent relatively low energy, back-barrier deposits. These predominantly nodular and argillaceous, coarse-grained, sparitic carbonates (the Aymestry Limestone facies) also form the basal beds of the Lower Leintwardine Formation across much of the shelf region (e.g. as at Deer Park Road).

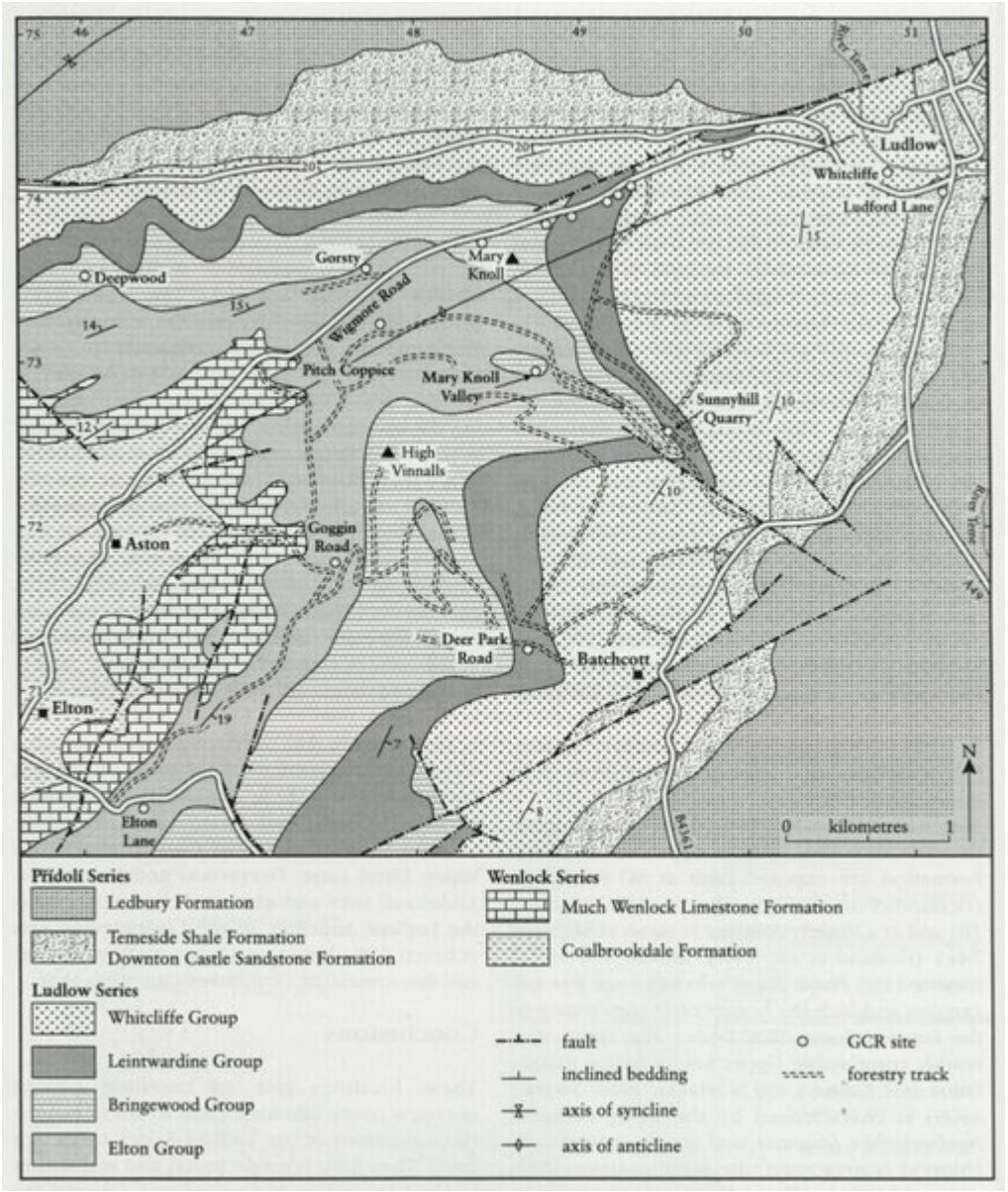
The upward transition into the calcareous siltstone facies typical of the Leintwardine Group in the Ludlow area signifies an increased influx of silt and frequency of skeletal sands (accompanied by higher abundance of skeletal fauna) relative to carbonate deposition, and a general lowering of depositional energy levels (Cherns, 1988). The siltstone sequence represents storm-influenced subtidal environments in which energy levels fluctuated: the winnowed skeletal sands formed as a result of episodes of marked current disturbance, such as storm waves; during quieter water periods carbonate and terriginous muds and silts were deposited.

Coeval GCR sites of shelf aspect are represented locally at Wigmore Road, Sunnyhill and Aymestrey Quarries. The Welsh Basin shelf sequences at nearby Goggin Road, Mocktree Quarries and Bow Bridge sites, together with those at Woodbury Quarry, Perton Road, Wood Green and Linton Quarry in the southern Welsh Borderland and Turner's Hill in the West Midlands also, in part, duplicate the stratigraphical interval seen at Deer Park Road. Likewise, the Sawdde Gorge section near Llandeilo contains the same interval, but reflects a more basin margin setting.

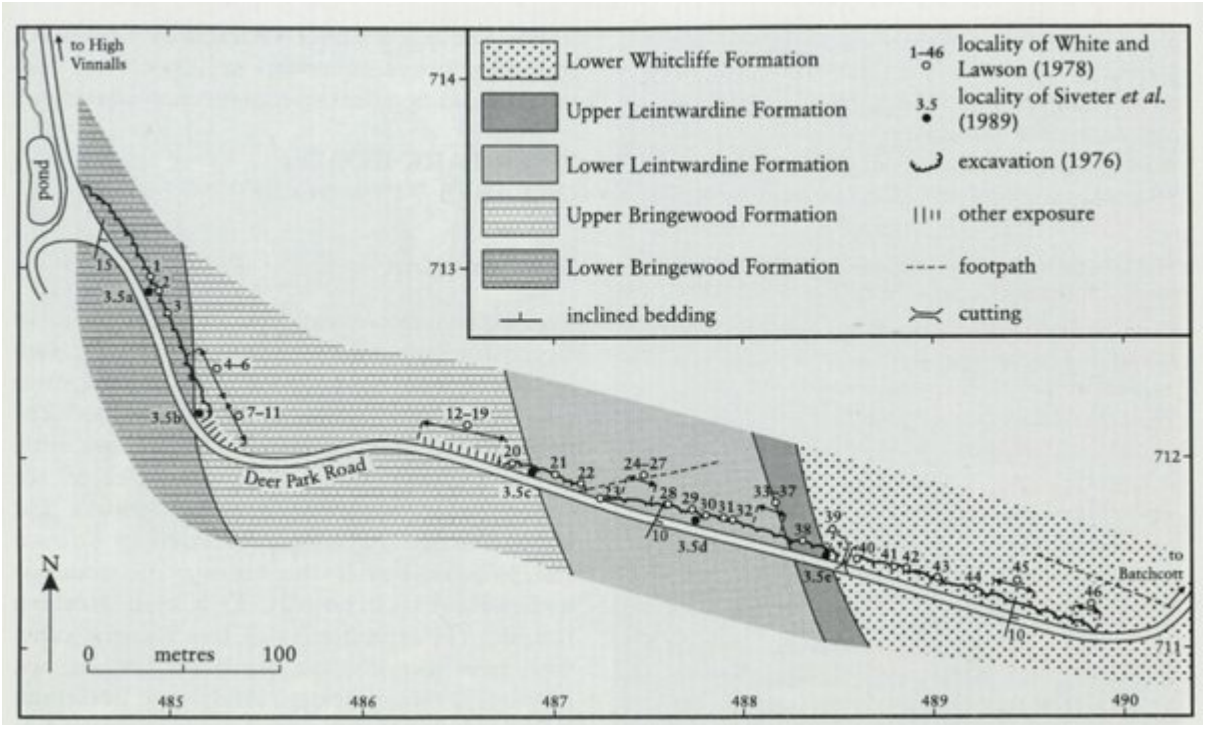
Conclusions

This well-documented, abundantly fossiliferous locality has international status in stratigraphy. It provides one of the most complete sections available through the middle and upper parts of the type Ludlow Series and contains designated reference sequences of several of the standard lithostratigraphical divisions of the Ludlow: that is, basal boundary reference sections and body stratotypes for formations in the Bringewood, Leintwardine and Whitcliffe groups. The site should be adequately maintained and accessibility should be assured for researchers. Its scientific attractions include the potential to collect bed-by-bed through a continuous section of strata.

References



(Figure 5.6) Map of the geology south-west of Ludlow, showing GCR sites along the Wigmore Road and elsewhere in the eastern part of the Ludlow Anticline (after Holland et al., 1963; Lawson, 1977; Lawson and White, 1989).



(Figure 5.14) Geology of the section along the Deer Park Road, Mortimer Forest, near Ludlow, Shropshire (after White and Lawson, 1978 with modifications from Siveter et al., 1989).