

PLANKTIC FORAMINIFERA FROM THE PROPOSED GSSP FOR THE OXFORDIAN STAGE: REDCLIFF POINT, NEAR WEYMOUTH

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In the course of the stratigraphical and palaeontological investigations for the Global Stratotype Section and Point (GSSP) for the base of the Oxfordian Stage at Redcliff (near Weymouth) an assemblage of planktic foraminifera has been described. Planktic foraminifera are exceptionally rare in the Jurassic of the United Kingdom and only a few records have been reported in the last few years. At Redcliff, the assemblage is preserved as pyrite steinkerns, but the fauna contains a number of morphotypes which match onto known species from this interval (*Globuligerina oxfordiana*, *Compactogerina stellapolaris*) while others have no described species to which they can be ascribed. The samples in which the planktic taxa are most abundant were collected from just above the boundary horizon (defined by the ammonite assemblages) and appear to represent proximity to a maximum flooding surface. The same horizon in Normandy has also yielded *Globuligerina oxfordiana* while a coeval level in the Mariae Chronozone on the banks of the Fleet has also yielded this assemblage. The occurrence of this Redcliff assemblage, close to the Callovian/Oxfordian boundary, is important in both the evolution of the planktic foraminifera and our understanding of the palaeobiogeography of the time.

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INTRODUCTION

Redcliff Point near Weymouth (Dorset, South-West England) exposes one of Europe's most complete Callovian/Oxfordian boundary sequences and has been the subject of rigorous multidisciplinary research (Figures 1, 2). The boundary sequence, which has been proposed as a candidate GSSP (Global Stratotype, Section and Point) for the base of the Oxfordian Stage (Page *et al.*, 2006, *in press*), lies entirely within the clay facies of the Oxford Clay Formation. Ammonites, in particular, are conspicuous and in some cases retain their aragonite shell. By convention the stage boundary is drawn at the first occurrence of the genus *Cardioceras*, which has been interpreted as corresponding to the transition between '*Quenstedtoceras paucicostatum* (Lang) and *Cardioceras* ex gr. *scarburgense* (Young and Bird), specifically at the first occurrence of *C. woodhamense* Arkell *sensu* Callomon (*non* Marchand). This transition is recorded at Redcliff and provides the primary means through which the boundary can be correlated.

Samples for micropalaeontological analysis were collected throughout the boundary sequence. Splits of these samples were provided to Dr Paul Bown (University College, London) for an investigation of the calcareous nannofossils while the bulk of these samples were prepared for an analysis of the foraminifera and Ostracoda by MBH at the University of Plymouth. All the samples were disaggregated using the 'Solvent Method' described by Brasier (1980). This method disaggregates the samples gently causing minimal (if any) damage to the fauna. Samples were washed on a 63 µm stainless steel sieve, dried in a cool (<40°C) oven and inspected in splits of >500 µm, 500-250 µm, 250-125 µm and 125-63 µm.

FORAMINIFERA OF THE OXFORD CLAY FORMATION

The foraminifera of the Oxford Clay Formation have been investigated by a number of workers in recent years (Barnard, 1952, 1953; Cordey, 1962; Gordon, 1965; Shipp, 1978, 1989). More recently PhD theses by Henderson (1997) and Oxford (2004) have up-dated much of the taxonomy. Page *et al.*, (2003, figure 7) have illustrated some of the species of foraminifera and ostracoda recorded in a pilot investigation of the Redcliff succession. The fauna is quite well preserved although some of the epistominids (which have an aragonite test) show signs of dissolution and/or are infilled with pyrite. Many of the agglutinated taxa are compressed, the chitinous inner wall allowing the specimens to collapse during burial and compaction (Page *et al.*, 2003).

At the time of this pilot investigation of the Redcliff succession no planktic foraminifera were recorded, probably because the upper levels of the succession were not investigated at that time. None of the earlier workers on the Oxford Clay Formation in the UK had ever recorded the presence of planktic foraminifera and, indeed, none had been expected during that research. However, in 2001, Melissa Oxford discovered an assemblage of planktic foraminifera (preserved as pyrite steinkerns) from the Furzedown Clays of the Mariae Chronozone exposed on the shore of the Fleet just west of Wyke Regis (see House, 1993; figure 14). This assemblage was described by Oxford *et al.* (2002) and the problems of its preservation discussed.