Biostratigraphy of a suite of samples from the region around Marlborough

Internal Report IR/06/004
Biostratigraphy of a suite of samples from the region around Marlborough

Ian P. Wilkinson

The National Grid and other Ordnance Survey data are used with the permission of the Controller of Her Majesty’s Stationery Office. Licence No: 100017897/2005.

Keywords
Foraminifera, biostratigraphy, Kimmeridgian, Cretaceous.

Bibliographical reference

Maps and diagrams in this book use topography based on Ordnance Survey mapping.

© NERC 2006. All rights reserved
The full range of Survey publications is available from the BGS Sales Desks at Nottingham, Edinburgh and London; see contact details below or shop online at www.geologyshop.com.

The London Information Office also maintains a reference collection of BGS publications including maps for consultation.

The Survey publishes an annual catalogue of its maps and other publications; this catalogue is available from any of the BGS Sales Desks.

The British Geological Survey carries out the geological survey of Great Britain and Northern Ireland (the latter as an agency service for the government of Northern Ireland), and of the surrounding continental shelf, as well as its basic research projects. It also undertakes programmes of British technical aid in geology in developing countries as arranged by the Department for International Development and other agencies.

The British Geological Survey is a component body of the Natural Environment Research Council.

British Geological Survey offices

Keyworth, Nottingham NG12 5GG
☎ 0115-936 3241 Fax 0115-936 3488
e-mail: sales@bgs.ac.uk
www.bgs.ac.uk
Shop online at: www.geologyshop.com

Murchison House, West Mains Road, Edinburgh EH9 3LA
☎ 0131-667 1000 Fax 0131-668 2683
e-mail: scotsales@bgs.ac.uk

London Information Office at the Natural History Museum (Earth Galleries), Exhibition Road, South Kensington, London SW7 2DE
☎ 020-7589 4090 Fax 020-7584 8270
☎ 020-7942 5344/45 email: bgslondon@bgs.ac.uk

Forde House, Park Five Business Centre, Harrier Way, Sowton, Exeter, Devon EX2 7HU
☎ 01392-445271 Fax 01392-445371

Geological Survey of Northern Ireland, Colby House, Stranmillis Court, Belfast BT9 5BF
☎ 028-9038 8462 Fax 028-9038 8461

Maclean Building, Crowmarsh Gifford, Wallingford, Oxfordshire OX10 8BB
☎ 01491-838800 Fax 01491-692345

Columbus House, Greenmeadow Springs, Tongwynlais, Cardiff, CF15 7NE
☎ 029–2052 1962 Fax 029–2052 1963

Parent Body

Natural Environment Research Council, Polaris House, North Star Avenue, Swindon, Wiltshire SN2 1EU
☎ 01793-411500 Fax 01793-411501
www.nerc.ac.uk
Summary

This report summarises the palaeontological results obtained from Kimmeridgian to late Cretaceous deposits of the region around Marlborough. Biostratigraphical conclusions are based principally on the foraminifera recorded.
1 Introduction

A suite of 19 samples from the Kimmeridge Clay through to the Chalk was examined for calcareous microfaunas in order to place them into a biostratigraphical context. Conclusions given below are based predominantly on the foraminiferal content.

2 Faunal list and conclusions

MPA54258  PMH4013  ST95366 62147
Epistomina parastelligera
Frondicularia franconica
Epistomina reticulata
Dentalina pseudocommunis
Citharina cf serratocostata (Frag)
Epistomina reticulata is a good marker in the Oxfordian it range coinciding with the Tenuiserratum-Serratum macrofaunal zones.

MPA54262  PMH4017  ST 95917 62979
Citharina flabellata/serratocostata
Frondicularia franconica
Lenticulina cf majori (Jason-athleta
Lenticulina munsteri
Frondicularia franconica (which becomes extinct in the Cymodoce macrofaunal zone) and single very questionable specimen of L. majori- a species that becomes extinct in the athleta Zone suggests a nupper Jurassic age, no younger than the Cymodoce Zone (lower Kimmeridgian).

MPA54263  PMH4018  ST 96444 62402
Epistomina parastelligera
Lenticulina subalata (=infravolgaensis in Russia)
Lenticulina munsteri
Oyster chips
Epistomina parastelligera goes into extinction in the Mutabilis Zone and L. subalata has a longer range, through into the Rotunda macrofaunal Zone. This places the fauna no higher than the lower Kimmeridgian, Mutabilis Zone

MPA54265  PMH4020  ST 96703 62495
Frondicularia nikitini
Epistomina parastelligera
Frondicularia franconica (extinct at top Cymodoce)
Lenticulina subalata
Lenticulina munsteri
Oyster chips, echinoid spine, crinoid ossicle
Long ranging species were encountered, including Frondicularia nikitini (Oxfordian-Kimmeridgian), Epistomina parastelligera (common up to Mutabilis Zone but rare in basal Eudoxus Zone) and Frondicularia franconica (which becomes extinct at top the Cymodoce Zone). The fauna is Late Jurassic in age, no higher than the early Kimmeridgian Cymodoce Zone.

MPA54266    PMH4021    ST 96651 62537
Arenobulimina chapmani
Arenobulimina obliqua
Arenobulimina cf barnardi (=truncata of some authors)
Tritaxia pyramidata
The foraminiferal fauna is exclusively agglutinated and comprises mid to late Albian taxa.

MPA54268    PMH4023    ST 96137 62811
Foraminifera:
   Epistomina parastelligera
   Lenticulina munsteri
Radiolaria:
   Praeconocaryomma cf hexagona
   Orbiculiforma sp
   Cenosphaera sp
Taxa are long ranging, but on the basis of the presence of Epistomina parastelligera, the fauna is no higher than Lower Kimmeridgian (early Eudoxus Zone).

MPA54270    PMH4025    ST 96024 63212
Barren.

MPA54271    PMH4026    ST 96083 63217
Frondicularia franconica (Callovian- Cymodoce Zone)
Citharina inconstans
Planularia beieran (mid-upper Jurassic)
Haplophragmoides camui (up to autissiodorensis)
Citharinella serratocostata (Oxfordian-Maraie-to Low Portlandian)
Lenticulina munsteri
Oyster-rich
The fauna is generally long-ranging, but the concurrent range is Oxfordian (Mariae Zone) to Lower Kimmeridgian (Cymodoce Zone).

**MPA54273** PMH4028 ST 96931 63230
*Haplophragmium sp*
Virtually barren, age unknown.

**MPA54276** PMH4031 ST97055 62698
*Epistomina sp cf. E bireticulata*
*Citherinella inconstans*
*Lenticulina munsteri*
*Haplophragmoides canui*
Oyster-rich
The reticulate/punctate specimen of *Epistomina sp* resembles the Russian species *E bireticulata*. The fauna comprises mainly long-ranging species. The Oxfordian to early Kimmeridgian is indicated.

**MPA54277** PMH4032 ST97411 63011
*Frondicularia franconica*
*Lenticulina subalata*
*Citharina inconstans*
*Lenticulina munsteri*
*Planularia ‘protracta’*
Shell chips
Only long ranging species were found, but no higher than Lower Kimmeridgian.

**MPA54277** PMH4040 ST98086 63409
*Tritaxia singularis/pyramidata*
*Arenobulimina sp cf obliqua*
*Arenobulimina sp*
An assemblage of agglutinated taxa of Albian age.

**MPA54168** WMD11064 SU 19475 68380
*Reussella kelleri*
*Dicarinella canaliculata*
*Gavelinella tourainensis*
*Stensioeina* is absent. The upper part of BGS12 is suggested and the LewesChalk inferred.
Arenobulimina anglica?

Frondicularia mariae

Pseudotextulariella cretosa

*Pseudotextulariella cretosa* ranges no higher than BGS5, whereas *F. mariae* is indicative of BGS4-BGS6, although its acme is within BGS5 (it occurs in moderate numbers in the present sample). The fauna is considered to be from the lower part of the Zigzag Chalk (and no higher than Jukesbrownei macrofaunal Zone)

Whiteinella archaeocretacea

Gavelinella tourainensis

Almost barren. Although very impoverished, the fauna suggests a position no higher than BGS12. As *G. tourainensis* is a Lazarus species and generally absent in BGS10, BGS11 and lower BGS12, a position within upper BGS12 is tentatively suggested.

Gavelinella *sp cf tourainensis* (frag)

*Praeglobotruncana helvetica*

Forams very rare and poorly preserved. *Praeglobotruncana helvetica* is indicative of BGS9 to lower BGS 12 and *G. tourainensis* ranges into top of BGS12 (but probably not BGS10, 11 or lower 12 where it is generally absent in Britain). This poor fauna is used to suggest either BGS9 (*Mytiloides* zone) or ‘mid’ BGS12- the *lata/planus* boundary interval.

Rotalipora *cushmani*

Plectina *mariae*

Lingulogavelinella *globosa*

Gavelinella *tourainensis*

*Gavelinella tourainensis* and *Lingulogavelinella globosa* occur in BGS6 and upwards, whereas *Rotalipora *cushmani* ranges from BGS4iii to BGS7. The concurrent range of BGS6 to BGS7 places the assemblage within the upper Zigzag Chalk or a position no higher than the top of Bed 3 of the Plenus Marl.

Praehelvetica *stephani*

Rotalipora *cushmani*

Lingulogavelinella *globosa*

Gavelinella *tourainensis*

Globigerinelloides *bentonensis*
The assemblage is placed within foraminiferal zones BGS6 to BGS7. *Gavelinella tourainensis* and *Lingulogavelinella globosa* occur in BGS6 and upwards, whereas *Rotalipora cushmani* ranges from BGS4iii to BGS7. A position no higher than the top of Bed 3 of the Plenus Marl is suggested.

MPA54179    WMD11076    SU 22567 63961
Barren