



**British
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Foraminiferal biostratigraphy of the Chalk near Kintbury and Elcot (1:50K sheet 267)

Internal Report IR/02/179

BRITISH GEOLOGICAL SURVEY

INTERNAL REPORT IR/02/179

Foraminiferal biostratigraphy of the Chalk near Kintbury and Elcot (1:50K sheet 267)

I.P. Wilkinson

The National Grid and other
Ordnance Survey data are used
with the permission of the
Controller of Her Majesty's
Stationery Office.
Ordnance Survey licence number
GD 272191/1999

Key words

Foraminifera, Late Cretaceous,
Biostratigraphy.

Bibliographical reference

WILKINSON, I.P. 2002
Foraminiferal biostratigraphy of
the Chalk near Kintbury and
Elcot (1:50K sheet 267). *British
Geological Survey Internal
Report*, IR/02/179. 8pp.

BRITISH GEOLOGICAL SURVEY

The full range of Survey publications is available from the BGS Sales Desks at Nottingham and Edinburgh; see contact details below or shop online at www.thebgs.co.uk

The London Information Office 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.

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.thebgs.co.uk

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: bgs london@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, 20 College Gardens, Belfast BT9 6BS

☎ 028-9066 6595 Fax 028-9066 2835

Maclean Building, Crowmarsh Gifford, Wallingford, Oxfordshire OX10 8BB

☎ 01491-838800 Fax 01491-692345

Parent Body

Natural Environment Research Council, Polaris House, North Star Avenue, Swindon, Wiltshire SN2 1EU

☎ 01793-411500 Fax 01793-411501
www.nerc.ac.uk

Contents

Contents.....	i
Summary	i
1 Introduction	1
2 Sample details and faunal list.....	1
2.1 Sample details	1
2.2 Faunal lists.....	1
3 Conclusions	2
References.....	3

FIGURES

Figure 1. Stratigraphical relationships of the foraminiferal species mentioned in the text ..	3
--	----------

Summary

This report places the foraminiferal assemblages collected from the Kintbury-Elcot area of 1:50K sheet 267, into a stratigraphical context. Assemblages can be placed into foraminiferal Zone 18 (subzones 18ii to 18iv) and although the very basal part of foraminiferal Zone BGS19 cannot be ruled out entirely, the absence of key species makes it unlikely. BGS 18ii to 18iv are situated in the lower, but not basal, part of the Newhaven Chalk Formation.

1 Introduction

Four samples of Chalk (MPA51261-51264; PMH3625-3688) from Kintbury and Elcot were submitted for biostratigraphical analysis in order to confirm stratigraphical conclusions determined during mapping. Foraminifera were encountered in all samples.

2 Sample details and faunal list

2.1 SAMPLE DETAILS

MPA51261	PMH3625	SU 35539 65955	500m SW of Templeton Stud, Kintbury
MPA51262	PMH3626	SU 35851 66393	Templeton Stud, Kintbury
MPA51263	PMH3627	SU 36607 67226	1000m NE of Templeton Stud, Kintbury
MPA51264	PMH3628	SU 3928 6974	Haycroft Farm, Elcot

2.2 FAUNAL LISTS

Selected species are listed below. For a full species list, see sample data held in the biostratigraphy data set housed in the Keyworth Office.

MPA 51261

Eouvigerina gracilis
Gavelinella cristata
Gavelinella lorneiana
Gavelinella stelligera
Heterohelix striata
Reussella szajnochae praecursor
Rugoglobigerina pilula
Stensioeina cf. *pommerana*
Stensioeina exsculpta exsculpta
Stensioeina exsculpta gracilis
Stensioeina granulata perfecta

MPA51262

Gavelinella cristata
Gavelinella stelligera
Globotruncana linneana
Reussella kelleri
Reussella szajnochae praecursor
Stensioeina exsculpta exsculpta
Stensioeina granulata perfecta

MPA 51263

Bolivinoidea strigillatus
Gavelinella cristata

Gavelinella lorneiana
Gavelinella stelligera
Reussella szajnochae praecursor
Stensioeina exsculpta exsculpta
Stensioeina granulata perfecta

MPA51264

Gavelinella cristata
Gavelinella stelligera
Reussella szajnochae praecursor
Stensioeina exsculpta exsculpta
Stensioeina granulata granulata
Stensioeina granulata perfecta

3 Conclusions

Foraminifera are common in the samples examined. Their stratigraphical distribution and the recognition of zones/subzones follows WILKINSON (2000). The presence in all samples of *Gavelinella cristata*, *Gavelinella stelligera*, *Reussella szajnochae praecursor*, *Stensioeina exsculpta exsculpta* and *Stensioeina granulata perfecta* indicates a position between foraminiferal zone BGS 18ii (above Peake's Sponge Bed and lateral equivalents) through to the very basal part of foraminiferal zone BGS19 (basal part of the *pilula* macrofaunal zone). The absence of *Bolivinoidea culverensis* probably rules out the possibility that the assemblages came from a position as high as foraminiferal zone BGS19 (the *pilula* macrofaunal zone). As such, the lower (but not basal) Newhaven Chalk is likely for all Chalk samples collected (Figure 1).

Further details can be used to subdivide the succession.

MPA51261 yielded *Stensioeina exsculpta gracilis*, which first appears in foraminiferal zone/subzone BGS18iii, above the *Echinocorys elevata* Band and lateral equivalents. However, it is accompanied by *Rugoglobigerina pilula* and *Heterohelix striata*, both of which appear for the first time at the base of Foraminiferal zone BGS18iv (Figure 1). This foraminiferal zone is approximately contemporaneous with the *U. anglicus* macrofaunal zone, however the very basal *pilula* zone cannot be ruled out entirely as indicated above.

The presence of *Stensioeina granulata perfecta* in MPA51262 indicates a stratigraphical position no lower than BGS 18ii (i.e. at or near to Peake's Sponge Bed). However, the sample could be from as high as basal BGS19 (*pilula* macrofaunal zone). This is considered unlikely because additional species characteristic of higher stratigraphical levels (e.g. *Stensioeina exsculpta gracilis*, *Rugoglobigerina pilula*, *Heterohelix striata* and *Bolivinoidea culverensis*) were not found (Figure 1).

MPA51263 yielded common *Bolivinoidea strigillatus*, a species that appears for the first time within the 'mid' part of the *socialis* macrofaunal zone, at the base of foraminiferal zone 18iii (Figure 1). A position no lower than 'mid-way' between the Peake's Sponge Bed and *Echinocorys elevata* Band (and lateral equivalents), can be inferred. The assemblage may be from as high as basal BGS19, and although this is unlikely because *Stensioeina exsculpta gracilis*, *Rugoglobigerina pilula*, *Heterohelix striata* and *Bolivinoidea culverensis* were not recovered, it cannot be ruled out entirely. The assemblage is probably from BGS 18iii or possibly from 18iv and the lower, but not basal, Newhaven Chalk is suggested.

Finally, MPA51264 contained rare *Stensioeina granulata granulata*, a species that becomes rare and patchily distributed in the upper part of its range, thus reducing its biostratigraphical usefulness to some degree. However, it apparently ranges through to the

approximate top of BGS18 iii. The assemblage in MPA51264 can thus be dated to BGS 18ii or possibly 18iii and the basal Newhaven Chalk is inferred (Figure 1).

Lithostratigraphy	Marker horizons	Stratigraphical ranges of samples based on foraminifera	Macrofaunal zonation	Foraminifera		Foraminiferal bioevents
				Zones	Subzones	
Newhaven Chalk (pars)	Echinocorys elevata Band	MPA51264	<i>pilula</i>	BGS19		← extinction inception
		MPA51263	<i>anglicus</i>	BGS 18	iv	
		MPA51262	<i>testudinarius</i>		iii	
		MPA51261	<i>socialis</i>		ii	
Seaford Chalk (pars)	Peake's Sponge Bed	? unlikely	<i>coranguinum</i> (pars)	BGS 17 (pars)	i	←
					iii	←
	Barrois Sponge Bed	? unlikely			ii	←

Figure 1. Stratigraphical relationships of the foraminiferal species mentioned in the text

References

WILKINSON, I.P.2000. A preliminary foraminiferal biozonation of the Chalk Group (In preparation for the Holostrat Project: Upper Cretaceous). *British Geological Survey Internal Report*, IR/00/13, 21pp.