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Foraminifera from the Chalk south of Salisbury

Internal Report IR/03/175

BRITISH GEOLOGICAL SURVEY

INTERNAL REPORT IR/03/175

Foraminifera from the Chalk south of Salisbury

Ian P. Wilkinson

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Summary

This report outlines the biostratigraphical result obtained from samples from south of Salisbury. Foraminiferal zones BGS18 to BGS20, characteristic of the Portsdown, Culver and Newhaven chalk formations, were identified.

1 Introduction

A suite of chalk samples were collected from an area between Charlton and West Harnham, south of Salisbury. Ten of these samples were examined for calcareous microfossils in order to provide biostratigraphical age determination for the chalks of the area.

2 Sample details

MPA52349	AJN3	SU18591 25491
MPA52350	AJN4	SU17800 28400
MPA52351	AJN5	SU16021 25209
MPA52356	AJN10	SU14794 26538
MPA52359	AJN13	SU14050 27210
MPA52360	AJN14	SU14058 27236
MPA52362	AJN16	SU14070 27750
MPA52368	AJN22	SU12500 28900
MPA52369	AJN23	SU11670 28320
MPA52394	AJN27	SU12700 26600

3 Biostratigraphical conclusions

Faunal lists are appended at the end of this report

MPA52349

The presence of *Bolivinooides culverensis*, *Bolivinooides* cf. *decoratus*, *Stensioeina granulata incondita* and *Gavelinella* cf. *voltziana* indicates a position in foraminiferal Subzone 20iv, high in the *quadrata* macrofaunal Zone. Species from the base of the *mucronata* Zone were not seen. *Bolivinooides culverensis* and *Stensioeina granulata incondita* become extinct at Scratchell's Marl (and lateral equivalents) and *Bolivinooides decoratus* occurs in abundance above Scratchell's Marl (and lateral equivalents), although transitional species appear a little lower stratigraphically. The basal Portsdown Chalk is suggested.

MPA52350

The presence of *Gavelinella usakensis* indicates a position stratigraphically above the Arundel Sponge Bed (and lateral equivalents). *Pullenia quaternaria* is first found at The Whitecliff Marl and lateral equivalents. *Bolivinooides culverensis* is abundant indicating a position stratigraphically no higher than Scratchell's Marl. Foraminiferal Subzone BGS 20iii is indicated, in the upper part of the *quadrata* Zone. The fauna is characteristic of the upper Culver Chalk and the Spettisbury Chalk Member is probable.

MPA52351 The presence of *Gavelinella usakensis* places the fauna no lower than foraminiferal Subzone 20i (at or above the Arundel Sponge Bed). *Gavelinella lorneiana* is generally missing between the Lancing Flint and the Cotes Bottom Flint, so that its presence in the present sample suggests a position either in the lower part of foraminiferal zone BGS 20 (the *quadrata* Zone) or high in the that zone. The latter suggestion is unlikely as index fossils for the upper part of the zone were not encountered. A position in the lower Culver Chalk is suggested, but the assemblage is no lower than the Arundel Sponge Bed.

MPA52356 Although the fauna is lower in diversity compared to that MPA52351, it is essentially similar and the same conclusions are drawn.

MPA52359 *Gavelinella cristata*, the ancestral species from which *Gavelinella usakensis* evolved was common in the sample. This species first appears in the highest Seaford Chalk (immediately below Peake's Sponge Bed and lateral equivalents) and ranges through the Newhaven Chalk (disappearing from the record immediately above the Arundel Sponge Bed (and lateral equivalents)). The presence of *Bolivinooides culverensis* indicates that the assemblage is from the upper part of this range as it first appears at the base of the *pilula* Zone and *Stensioeina pommerana* appears to evolve within the *pilula* Zone. In terms of the foraminiferal zonal scheme, the assemblage can be placed within the upper part of BGS 19. The Upper Newhaven Chalk is suggested.

MPA52360 *Gavelinella cristata* is again present in the sample, characteristic of the highest Seaford Chalk (immediately below Peake's Sponge Bed and lateral equivalents) and Newhaven Chalk (stratigraphically no higher than immediately above the Arundel Sponge Bed and lateral equivalents). The presence of *Stensioeina exsculpta exsculpta* (which becomes extinct in the basal foraminifera Zone BGS19, basal *pilula* Zone) and the absence of *Bolivinooides* spp places the fauna in the lower part of that range. The Lower Newhaven Chalk is inferred.

MPA52362 The fauna is essentially similar to that of MPA52349 and similar conclusions can be drawn.

MPA52368 The occurrence of *Gavelinella cristata* and *Stensioeina exsculpta exsculpta* places the assemblage in BGS18 to basal BGS19. *Bolivinooides* is absent and very rare specimens of *Stensioeina granulata* cf *perfecta* were seen, indicating that the assemblage can be tentatively placed within BGS18ii (which equates with the lower part of the *socialis* macrofaunal zone). The Lower Newhaven Chalk is implied.

MPA52369 Foraminifera are rare and poorly preserved. *Gavelinella usakensis* is present suggesting foraminiferal zone BGS20 (*quadrata* macrofaunal zone). The Culver Chalk is likely, but no further conclusions can be drawn.

MPA52394 Foraminifera are very rare and poorly preserved. Species are long-ranging and few conclusions can be drawn. The presence of a single, poorly preserved specimen of *Archaeoglobigerina* cf *bosquetina*, if correctly identified, suggests foraminiferal zones 16-18, in the Seaford or Lower Newhaven Chalk.

Appendix 1 Species lists

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SAMPLE/SLIDE No. MPA52350

Palaeontology & Biostratigraphy

Identification by ...IPW.....

Date

Micropalaeontology Data Sheet

REMARKS: ?microcrinoid plates rare

Cell	Species	Total	%
	<i>Arenobulina</i> sp	R	
	<i>Stensioeina pomerana</i>	F	
	<i>Lenticulina</i> sp	R	
	<i>Gavelinella usakensis</i>	A	
	<i>Globorotalites michelinianus</i>	C	
	<i>Osangularia cordieriana</i>	F	
	<i>Gavelinella pertusa</i>	R	
	<i>Gyroidinoides nitidus</i>	R	
	<i>Gavelinella lorneiana</i>	R	
	<i>Pullenia quaternaria</i>	VR	
	<i>Reussella</i> sp	VR	
	<i>Neoflabelina rugosa</i>	VR	
	<i>Marssonella trochus</i>	VR	
	<i>Bolivinooides culverensis</i>	A	

British Geological Survey

SAMPLE/SLIDE No. MPA52351

Palaeontology & Biostratigraphy

Identification by ...IPW.....

Date

Micropalaeontology Data Sheet

REMARKS: *Inoceramus* prisms frequent at 125 micron sieve
 Mainly long ranging orams

Cell	Species	Total	%
	<i>Osangularia cordieriana</i>	F	
	<i>Gavellinella usakensis</i>	C	
	<i>Arenobulimina</i> sp	R	
	<i>Gyroidinoides nitidus</i>	R	
	<i>Gavelinella lorneiana</i>	F	
	<i>Gavelinella stelligera</i>	R	
	<i>Valvulineria lenticularis</i>	R	
	<i>Gavelinella pertusa</i>	R-F	
	<i>Heterohelix</i> sp	R	
	<i>Globorotalites michelinianus</i>	F	
	<i>Ataxophragmium variabile</i>	VR	
	<i>Stensioeina granulata nitidus</i>	R	
	<i>Hedbergella</i> sp	R	
	<i>Reussella szajnochae praecursor</i>	R	

British Geological Survey

SAMPLE/SLIDE No. MPA52359

Palaeontology & Biostratigraphy

Identification by ...IPW.....

Date

Micropalaeontology Data Sheet

REMARKS: <i>Rare bryozoa</i>			
Cell	Species	Total	%
	<i>Arenobulimina sp</i>	R	
	<i>Gavelinella stelligera</i>	R-F	
	<i>Gavelinella lorneiana</i>	R	
	<i>Gavelinella cristata</i>	C	
	<i>Valvulina lenticularis</i>	R	
	<i>Stensioeina pommerama</i>	R-F	
	<i>Globorotalites michelinianus</i>	F	
	<i>Gavelinella pertusa</i>	R-F	
	<i>Stensioeina granulata incondita</i>	R-F	
	<i>Stensioeina granulata granulata?</i>	R	
	<i>Reussella kelleri</i>	VR	
	<i>Osangularia cordieriana</i>	C	
	<i>Gavelinella thalmani</i>	VR	
	<i>Praebulimina sp</i>	VR	
	<i>Globigerinelloides aspera</i>	VR	
	<i>Bolivinooides culverensis</i>	F	
	<i>Bolivinooides cf strigillatus</i>	VR	

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SAMPLE/SLIDE No. MPA52360

Palaeontology & Biostratigraphy

Identification by ...IPW.....

Date

Micropalaeontology Data Sheet

REMARKS: Similar to MPA52356 but lacking *S pommerana* and *Bolivinooides culverensis*

Cell	Species	Total	%
	<i>Arenobulimina sp</i>	R	
	<i>Gavelinella stelligera</i>	F	
	<i>Gavelinella lorneiana</i>	F	
	<i>Gavelinella cristata cristata</i>	C	
	<i>Valvulina lenticularis</i>	R-F	
	<i>Globorotalites michelinianus</i>	F	
	<i>Gavelinella pertusa</i>	R	
	<i>Stensioeina granulata incondita</i>	R	
	<i>Reussella kelleri</i>	VR	
	<i>Stensioeina exsculpta exsculpta</i>	R	
	<i>Osangularia cordieriana</i>	C	
	<i>Globigerinelloides aspera</i>	VR	
	<i>Gyroidinoides nitidus</i>	R	
	<i>Voloshinovella sp?</i>	VR	
	<i>Heterohelix sp</i>	VR	
	<i>Eouvigerina gracilis</i>	VR	

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SAMPLE/SLIDE No. MPA52362

Palaeontology & Biostratigraphy

Identification by ...IPW.....

Date

Micropalaeontology Data Sheet

REMARKS: <i>Microcrinoid plates</i>			
Cell	Species	Total	%
	<i>Globorotalites michelianus</i>	F	
	<i>Stensioeina exsculpta gracilis</i>	R-F	
	<i>Gavelinella usakensis</i>	C	
	<i>Gavelinella stelligera</i>		
	<i>Arenobulimina sp</i>	R	
	<i>Osangularia cordieriana</i>	F	
	<i>Gavelinella pertusa</i>	R	
	<i>Gavelinella trochus</i>	VR	
	<i>Stensioeina pommerana</i>	F	
	<i>Saracenaria sp</i>	VR	
	<i>Bolivinooides culverensis</i>	C	
	<i>Gyroidinoides nitidus</i>	R-F	
	<i>Bolivinooides cf decoratus</i>	VR	
	<i>Rugoglobigerina pilula</i>	VR	

