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# Foraminiferal biostratigraphy of the Seaford Chalk in the Devizes district

Internal Report IR/04/148



BRITISH GEOLOGICAL SURVEY

INTERNAL REPORT IR/04/148

# Foraminiferal biostratigraphy of the Seaford Chalk in the Devizes district

Ian P Wilkinson

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## Summary

Foraminifera from zones BGS 14 to BGS17 were identified. These zone are confined to the Seaford Chalk elsewhere in southern England.

# 1 Introduction

Fourteen samples of chalk (MPA52960-52973; AJN37-53, excluding AJN38, 48 and 51) from the Devizes district were examined for foraminifera in order to determine their stratigraphical position. Foraminifera are related to the schemes outlined by Bailey et al (1983, 1984) and Wilkinson (2000).

## 2 Foraminiferal biostratigraphy

Species lists below included selected taxa only. Full lists are housed in the BGS biostratigraphy files, Keyworth.

### 2.1 MPA52960 AJN37 SU 03798 46983

*Stensioeina granulata granulata*  
*Reussella kelleri*  
*Osangularia cordieriana*  
*Lingulogavelinella arnagerensis*  
*Gavelinella thalmani*

The presence of *Stensioeina granulata granulata* and *Gavelinella thalmani* indicates an age no older than BGS14. The absence of *Stensioeina exsculpta exsculpta* and *Loxostomum eleyi* suggests that the zonal age is unlikely to be BGS15 or BGS16 (although those taxa recorded extend up into those zones. The best fit is BGS14 (basal coranguinum macrofossil zone) and correlation with the basal Seaford Chalk.

### 2.2 MPA52961 AJN39 SU 05038 49386

*Globorotalites michelinianus*  
*Gavelinella pertusa*  
*Osangularia cordieriana*  
*Lingulogavelinella arnagerensis*  
*Reussella kelleri*

This flinty chalk lacks key zonal indices such as *Stensioeina granulata granulata*, *Stensioeina exsculpta exsculpta* and *Loxostomum eleyi*. The occurrence of *Osangularia cordieriana* suggests a position no lower than the highest part of BGS13 (the Shoreham Marls and lateral equivalents) and *Lingulogavelinella arnagerensis* indicates an age no younger than BGS17i (it disappears from the record immediately above Whitaker's 3" Flint and lateral equivalents). This age and the flinty nature of the sample suggests a position within the flintier horizons in the lower part of the Seaford Chalk.

### 2.3 MPA52962 AJN40 SU 05564 47747

*Neoflabellina praerugosa*  
*Lingulogavelinella arnagerensis*  
*Stensioeina granulata granulata*  
*Gavelinella pertusa*  
*Osangularia cordieriana*  
*Reussella kelleri*

The presence of *Stensioeina granulata granulata* indicates an age no older than BGS14, but index species of stratigraphically higher foraminiferal zones such as *Stensioeina exsculpta exsculpta* (BFS15) and *Loxostomum eleyi* (BGS16), were not found. *Lingulogavelinella arnagerensis* indicates an age no younger than BGS17i (it disappears from the record immediately above Whitaker's 3" Flint and lateral equivalents). The best fit is BGS14 in the basal part of the Seaford Chalk Formation.

**2.4 MPA52963 AJN41 SU 06195 48911**

*Lingulogavelinella arnagerensis*  
*Stensioeina granulata granulata*  
*Gavelinella pertusa*  
*Osangularia cordieriana*  
*Stensioeina exsculpta exsculpta*

The inception of *Stensioeina exsculpta exsculpta* marks the base of BGS15, however *Loxostomum eleyi* (BGS16) was not found. BGS15 is confined to the lower (but not basal) part of the Seaford Chalk, below the Hope Point Marl and lateral equivalents

**2.5 MPA52964 AJN42 SU 06867 45901**

*Lingulogavelinella arnagerensis*  
*Stensioeina granulata granulata*  
*Gavelinella pertusa*  
*Osangularia cordieriana*  
*Stensioeina cf polonica*

As for MPA52962 (AJN40). However a single specimen closely related to *Stensioeina polonica* was found. *Stensioeina polonica* first enters the record at the Chartham Flint (and lateral equivalents) and is the index for BGS17. The lack of other key indices are not present in this small sample, so that there is some doubt as to whether the sample should be placed as high as this. The lower part of the Seaford Chalk is indicated, but the exact stratigraphical position is less clear.

**2.6 MPA52965 AJN43 SU 07621 48555**

*Lingulogavelinella arnagerensis*  
*Stensioeina granulata granulata*  
*Gavelinella pertusa*  
*Osangularia cordieriana*  
*Stensioeina exsculpta exsculpta*  
*Loxostomum eleyi*  
*Reussella kelleri*

The occurrence of *Loxostomum eleyi*, *Lingulogavelinella arnagerensis* and frequent *Stensioeina granulata granulata* together with the absence of *Stensioeina polonica* indicates BGS16. This zone is confined to the lower part of the Seaford Chalk elsewhere in southern England, between the Hope Point Marl and Chartham Flint.

**2.7 MPA52966 AJN44 SU 08563 47280**

*Lingulogavelinella arnagerensis*  
*Stensioeina granulata granulata*  
*Osangularia cordieriana*  
*Loxostomum eleyi*

*Reussella kelleri*  
*Stensioeina polonica*  
*Stensioeina exsculpta exsculpta*

The concurrent range of *Lingulogavelinella arnagerensis* and *Loxostomum eleyi* places the assemblage into BGS16 to BGS17i. Elsewhere in southern England these taxa are confined to the Seaford Chalk, between Hope Point Marl and immediately above Whitaker's 3" Flint (and lateral equivalents). A single specimen of *Stensioeina polonica* was observed and if this is in situ, subzone BGS17i is indicated. This subzone is confined to the Seaford Chalk Formation, between Chartham Flint and immediately above Whitaker's 3" Flint (and lateral equivalents).

**2.8 MPA52967 AJN45 SU 09344 47530**

*Lingulogavelinella arnagerensis*  
*Stensioeina granulata granulata*  
*Osangularia cordieriana*  
*Loxostomum eleyi*  
*Stensioeina polonica*  
*Vaginulinopsis scalariformis*  
*Stensioeina exsculpta exsculpta*

The assemblage is essentially similar to that in MPA52866. Elsewhere in southern England, *Vaginulinopsis scalariformis* first appears in the basal part of BGS16, where it is rare and patchily distributed, becoming more numerous and more consistent in BGS17. The assemblage is placed in subzone BGS17i, which is confined to the Seaford Chalk Formation, between Chartham Flint and immediately above Whitaker's 3" Flint (and lateral equivalents).

**2.9 MPA52968 AJN46 SU 09386 46719**

*Lingulogavelinella arnagerensis*  
*Stensioeina granulata granulata*  
*Stensioeina exsculpta exsculpta*

The fauna is no older than BGS15 (defined by the first appearance of *Stensioeina exsculpta exsculpta*) and the absence of *Loxostomum eleyi* and *Stensioeina polonica* suggests that it is unlikely to be as high as BGS16 or BGS17. The lower, but not basal, Seaford Chalk Formation is indicated, stratigraphically no higher than the Hope Point Marl (and lateral equivalents) at which horizon *L. eleyi* appears. The sample contained common *Inoceramus* prisms on the 125 micron sieve

**2.10 MPA52969 AJN47 SU 09106 44879**

*Lingulogavelinella arnagerensis*  
*Stensioeina exsculpta exsculpta*  
*Loxostomum eleyi*  
*Stensioeina polonica*  
*Reussella kelleri* (juvenile)  
*Praebulimina cf carsayae*

This sample is flinty and foraminifera are poorly preserved (and very rare on the 250 micron sieve). *Stensioeina polonica* and *Lingulogavelinella arnagerensis* place the assemblage into zone BGS17i (between the Chartham Flint and immediately above Whitaker's 3" Flint, and lateral equivalents). However, if the rare, poorly preserved specimens tentatively assigned to *Praebulimina carsayae* are correctly identified, subzone BGS17ii is indicated (immediately



above Whitaker's 3" Flint to immediately above Barrois Sponge Bed). *Lingulogavelinella arnagerensis* and *Praebulimina cf carsayae* are occasionally found together, their concurrent range being close to the BGS17i/BGS17ii subzonal boundary. This and the flinty nature of the sample may indicate a position very close to the Whitaker's 3" Flint.

**2.11 MPA52970 AJN49 SU 05100 43798**

*Lingulogavelinella arnagerensis*  
*Loxostomum eleyi*  
*Stensioeina polonica*  
*Reussella kelleri*  
*Praebulimina cf carsayae*  
*Stensioeina granulata granulata*

As for MPA52969

**2.12 MPA52971 AJN50 SU 95598 47300**

*Osangularia cordieriana*  
*Gavelinella pertusa*  
*Stensioeina granulata granulata*

The fauna is composed mainly of long-ranging species. The occurrence of *Stensioeina granulata granulata* indicates an age no older than foraminiferal zone BGS14 (lowest coranguinum macrofaunal Zone), and index species for BGS 15 and 16 were not observed. The lowest Seaford Chalk is indicated.

**2.13 MPA52972 AJN52 SU 97339 47806**

*Reussella kelleri*  
*Osangularia cordieriana*  
*Stensioeina granulata granulata*  
*Lingulogavelinella arnagerensis*  
*Loxostomum eleyi*  
*Stensioeina exsculpta exsculpta*

The first appearance of *Loxostomum eleyi* defines the base of BGS16 at Hope Point Marl, and lateral equivalents. The absence of *Stensioeina polonica* means that BGS17 is unlikely. BGS16 is confined to the lower (but not lowest) Seaford Chalk Formation between Hope Point Marl and Chartham Flint (and lateral equivalents).

**2.14 MPA52973 AJN53 SU 09640 47872**

*Reussella kelleri*  
*Osangularia cordieriana*  
*Stensioeina granulata granulata*  
*Neoflabellina praerugosa*  
*Lingulogavelinella arnagerensis*  
*Stensioeina exsculpta exsculpta*  
*Gavelinella pertusa*  
*Stensioeina polonica*

*Stensioeina polonica* and *Lingulogavelinella arnagerensis* place the assemblage into zone BGS17i (Seaford Chalk, between the Chartham Flint and immediately above Whitaker's 3" Flint, and lateral equivalents).

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