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Stratigraphical interpretations of Chalk Group macrofossils from Sheet 254 (Henley-on-Thames): Autumn 2013

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Foreword

This report describes stratigraphical interpretations of Chalk Group macrofossils for 49 localities in the Henley-on-Thames district (Sheet 254). It was produced in connection with a programme of strategic survey of the Chalk Group of the Chilterns, on the northern flank of the Thames Basin. This survey work is a requirement of a related project which will enable detailed structural and facies modelling of the Chalk, both at outcrop and in the subsurface.

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Figure 1. The Chalk succession at (7) of report [SU 65600 89175], showing horizon details of collected material.

TABLES

Table 1. The stratigraphy of the Chalk Group referred to in this report (not to scale).

Summary

This report describes interpretations of Chalk macrofossils for 49 localities in the Henley-on-Thames district (Sheet 254). The lithostratigraphical units identified comprise: Holywell Nodular Chalk, New Pit Chalk, Lewes Nodular Chalk and Seaford Chalk Formation, spanning the Turonian and Coniacian stages and *Mytiloides* spp., *Terebratulina lata*, *Plesiocorys* (*Sternotaxis*) *plana*, *Micraster cortestudinarium* and lower *Micraster coranguinum* biozones. This work is in connection with a strategic survey of Chalk Group lithostratigraphy on the northern flank of the Thames Basin, to permit high-resolution facies modelling of the Chalk of southern England.

1 Introduction

This report provides stratigraphical interpretations for Chalk Group macrofossils collected from 49 localities by MAW and A R Farrant in Autumn 2013. This work is in connection with the current strategic revision of Chalk Group lithostratigraphy of the Chilterns, on the northern flank of the Thames Basin. Localities described in this report relate wholly to the Henley-on-Thames 1:50 000 geological sheet (Sheet 254).

The stratigraphy referred to in this report is shown in Table 1. Author citations for fossil species are listed in Appendix A.

2 Stratigraphy

Localities from which Chalk group macrofossils were collected, and their stratigraphical interpretations, are described below.

- (1) Old chalk pit 430 m ENE of Homer Farm, south of Nuffield, Oxfordshire.

Specimen nos: WMD 16635 – 16639 1:10 000 SU68NE

NGR: SU 66649 85892

The locality was also visited and collected in 2011 (WMD 15411 – 15433). The fauna includes the bivalves *Platyceramus* and ?*Volvicceramus involutus* (right valve fragment), and a cidarid echinoid spine fragment. The fauna occurs in soft and locally hard, nodular, sponge-bearing chalk.

Conclusion: White Chalk Subgroup, ?lower Seaford Chalk Formation; ?Coniacian, ?lower *M. coranguinum* Zone.

A fauna suggestive of the mid to upper Seaford Chalk Formation was collected from a nearby locality by MAW in 2011 [SU 66125 85756].

- (2) Old chalk pit adjacent to South Oxfordshire Way, 360 m NW of Watlington Hill farm, near Christmas Common, Oxfordshire.

Specimen nos: WMD 16640 – 16644 1:10 000 SU79SW

NGR: SU 71190 93781

The fauna includes a cidarid echinoid spine fragment, the sponge *Porosphaera* and the bivalve *Cremnoceramus*?. The succession from which the material was collected comprises bands of hard, nodular, sponge-bearing chalk, and horizons of softer chalk, with carious nodular flints.

Conclusion: White Chalk Subgroup, ?upper Lewes Nodular Chalk; ?Coniacian, ?upper *M. cortestudinarium* Zone.

- (3) Old chalk pit SW of Hammond's Wood and c. 200 m North of A4074, just north of Woodcote, Oxfordshire.

Specimen nos: WMD 16645 – 16654; 16673 – 16678; 16826 – 16828

1:10 000 SU68SW

NGR: SU 64389 82952

The fauna is as follows:

- Bivalvia: ?*Cremnoceramus denselamellatus*
 Cremnoceramus ex gr. *waltersdorfensis*
- Echinoidea: *Micraster?* (test fragments)
 ?*Plesiocorys placenta*
 Plesiocorys? (test fragments)
- Ichnofossils: *Zoophycos* (in marl preservation)

Most of the material was collected from distinctly soft chalk with *Zoophycos*. The section also includes patchily hard, iron-stained, sponge-rich chalk, thin, anastomosing sheet flints, highly carious nodular flints and hollow-centred tubular flints.

Interpretation: The association of the above fauna with soft chalk containing marl-preserved *Zoophycos* suggests the equivalent of the Cuilfail *Zoophycos* in the upper *P. (S.) plana* Zone.

Conclusion: White Chalk Subgroup, mid Lewes Nodular Chalk Formation; late Turonian, upper *P. (S.) plana* Zone.

- (4) Old chalk pit near Hammond's End, just north of road to Checkendon, and c. 100 m NW of Wheeler's Farm, near Woodcote, Oxfordshire.

Specimen nos: WMD 16655 – 16659 1:10 000 SU68SE

NGR: SU 65495 83854

The fauna, includes a shell fragment of the bivalve *Cremnoceramus?* and the echinoid *Micraster* sp. (in patchily hard chalk).

Conclusion: White Chalk Subgroup, ?upper Lewes Nodular Chalk; ?Coniacian, ?*M. cortestudinarium* Zone.

- (5) Old chalk pit 270 m WNW of Wheeler's Farm, north of Woodcote, Oxfordshire.

Specimen nos: WMD 16660 – 16672 1:10 000 SU68SE

NGR: SU 65287 83861

The fauna comprises shell fragments of the bivalve *Cremnoceramus*, including *C. crassus*.

Interpretation: *Cremnoceramus crassus* is typical of the *M. cortestudinarium* Zone, and the higher part of the Lewes Nodular Chalk can be inferred. However, the succession from which the material was collected is not typical of the Lewes Nodular Chalk, comprising soft, smooth-textured chalk with large nodular and semitabular flints.

Conclusion: White Chalk Subgroup, equivalent to upper Lewes Nodular Chalk Formation; Coniacian, *M. cortestudinarium* Zone.

- (6) Old chalk pit on Nuffield Hill, on north side of road, 500 m WNW of Nuffield church, Oxfordshire.

Specimen nos: WMD 16679 – 16694 1:10 000 SU68NE

NGR: SU 66367 87634

The fauna comprises the oyster *Pycnodonte vesiculare*, common shell fragments of the inoceramid bivalve *Platyceramus* and the echinoid *Micraster* sp. (fragment). The material was collected from a c. 1 m interval of soft, flinty, locally very sponge-rich chalk.

Interpretation: *Platyceramus* occurs at and above the *M. coranguinum* Zone. Field relationships for nearby localities favour the *M. coranguinum* Zone (see (23) to (26) below), and the Seaford Chalk Formation might be inferred.

Conclusion: White Chalk Subgroup, Seaford Chalk Formation; ?Coniacian, *M. coranguinum* Zone.

(7) SE face of large old quarry now used for storage of rubbish skips. 250 m SE of Potter's Farm, SE of Ewelme, Oxfordshire.

Specimen nos: WMD 16695 – 16702 1:10 000 SU68NE

NGR: SU 65600 89175

The material was collected from a c. 5 m section comprising weakly nodular chalk with marl seams in the lower part, passing upwards into strongly nodular chalk capped by glauconitised hardgrounds (Fig. 1). Horizon details refer to Fig. 1.

Horizon: I. cuvieri Horizon

Brachiopoda: *Terebratulina lata*

Bivalvia: *Inoceramus cuvieri*

Horizon: Fognam Marl

Foraminifera: *Labyrinthidoma*

Bivalvia: *Inoceramus cuvieri*

There is a sharp downward change below the Fognam Marl to distinctly less nodular chalk.

Interpretation: The presence of *Labyrinthidoma* confirms the identity of the Fognam Marl (= Southerham Marl 1 of Mortimore, 1986) and the fauna is characteristic of the upper *T. lata* Zone. Lithologically, the section largely equates with the basal Lewes Nodular Chalk Formation, although the weakly nodular chalk with marl seams in the lower part of the section is probably coeval with upper New Pit Chalk seen elsewhere in the Chilterns. The hardgrounds at the top of the section represent the lower part of the Chalk Rock Member.

Conclusion: White Chalk Subgroup, ?topmost New Pit Chalk Formation and basal Lewes Nodular Chalk Formation (including Chalk Rock Member); Turonian, upper *T. lata* Zone.

(8) Burrow brash on west side of footpath (Grindon Lane), c. 560 m NNE of Potter's Farm, near Ewelme, Oxfordshire.

Specimen nos: WMD 16703 – 16708 1:10 000 SU69SE

NGR: SU 65651 90058

The material comprises hard, shelly chalk with the bivalve *Mytiloides*, including *Mytiloides mytiloides*.

Conclusion: White Chalk Subgroup, Holywell Nodular Chalk Formation; lower Turonian, *Mytiloides* spp. Zone.

- (9) Brash from pipe trench dug along field margins adjacent to Swan's Way, Grindon Lane, and un-named track running E-W on southern boundary of field; c. 600 m NNE of Potter's Farm, near Ewelme, Oxfordshire.

Specimen nos: WMD 16709 – 16714 1:10 000 SU69SE

NGR: SU 65800 90000

The fauna is a generalised collection from the extensive spoil seen at this locality. Subsequent collections (see (10) to (12) below) are more localised. The material includes a thin-shelled inoceramid and the echinoid *Cardiaster* sp.

Conclusion: None possible.

- (10) Brash from pipe trench dug along field margins adjacent to Swan's Way, Grindon Lane, and un-named track running E-W on southern boundary of field; c. 600 m NNE of Potter's Farm, near Ewelme, Oxfordshire.

Specimen nos: WMD 16715 – 16717 1:10 000 SU68NE

NGR: SU 65703 89932

The fauna includes the brachiopod *Terebratulina lata* and an indeterminate inoceramid shell fragment.

Interpretation: Field relationships with material collected at (8) (above) suggest assignment to the basal *T. lata* Zone, and the basal New Pit Chalk Formation might be inferred.

Conclusion: White Chalk Subgroup, basal New Pit Chalk Formation; Turonian, basal *T. lata* Zone.

- (11) Brash from pipe trench dug along field margins adjacent to Swan's Way, Grindon Lane, and un-named track running E-W on southern boundary of field; c. 600 m NNE of Potter's Farm, near Ewelme, Oxfordshire.

Specimen nos: WMD 16718 – 16721 1:10 000 SU69SE

NGR: SU 66265 90504

The material comprises chalk with shell fragments of the inoceramid bivalve *Mytiloides*.

Interpretation: The fauna, and field relationships with (8) and (10) above, suggest assignment to the *Mytiloides* spp. Zone and the Holywell Nodular Chalk Formation.

Conclusion: White Chalk Subgroup, Holywell Nodular Chalk Formation; lower Turonian, *Mytiloides* spp. Zone.

- (12) Brash from pipe trench dug along field margins adjacent to Swan's Way, Grindon Lane, and un-named track running E-W on southern boundary of field; c. 600 m NNE of Potter's Farm, near Ewelme, Oxfordshire.

Specimen nos: WMD 16722 – 16724 1:10 000 SU68NE

NGR: SU 65837 89860

The fauna includes the inoceramid bivalve *Mytiloides* ex gr. *hercynicus* – *subhercynicus*.

Conclusion: White Chalk Subgroup, basal New Pit Chalk Formation; Turonian, basal *T. lata* Zone.

(13) Trench and spoil for new house development at Well Place, Oxfordshire (Locality 1).

Specimen nos: WMD 16725 – 16728 1:10 000 SU68NE

NGR: SU 65578 85631

The fauna is as follows:

Bivalvia: *Cremnoceramus waltersdorfensis hannoverensis?*

Cremnoceramus? (fragment)

Inoceramus lusatae

Inoceramus sp.

Conclusion: White Chalk Subgroup, middle Lewes Nodular Chalk Formation; early Coniacian, basal *M. cortestudinarium* Zone. The material probably represents a level at or slightly above the Navigation Marls of Sussex.

(14) Trench and spoil for new house development at Well Place, Oxfordshire (Locality 2).

Specimen nos: WMD 16729 – 16734 1:10 000 SU68NE

NGR: 65554 85619

The fauna includes the bivalve *Cremnoceramus waltersdorfensis hannoverensis?* and the echinoid *Micraster* sp.

Conclusion: As for (13) above.

(15) Trench and spoil for new house development at Well Place, Oxfordshire (Locality 3).

Specimen no.: WMD 16735 1:10 000 SU68NE

NGR: SU 65536 85616

The specimen is the echinoid *Micraster* (specifically indeterminate), glauconitised and associated with a hardground.

Interpretation: The hardground is inferred to represent the highest unit (Hitch Wood Hardground) of the Chalk Rock Member. In more basinal settings, the so-called 'large forms' of *Micraster leskei* (*M. leskei 'magna'*) are associated with a marl (Lewes Marl) that overlies strongly nodular chalks that are coeval with the Hitch Wood Hardground. The lowermost hardground of the inferred Chalk Rock was seen at [SU 65513 85602] (Locality 4), faulted, with a downthrow of c. 0.4 m into the hillside.

Conclusion: White Chalk Subgroup, lower Lewes Nodular Chalk Formation; late Turonian, *P. (S.) plana* Zone.

(16) Trench and spoil for new house development at Well Place, Oxfordshire (Locality 5).

Specimen no.: WMD 16736 1:10 000 SU68NE

NGR: SU 65509 85599

The material, collected from a plastic-textured marl, includes the brachiopod *Terebratulina lata* and questionable specimens of the giant agglutinating foraminifer *Labyrinthodoma*.

Interpretation: The above fauna, lithology and field relationships strongly suggest that the marl seam is the Fognam Marl (= Southerham Marl 1 of Mortimore 1986) in the upper *T. lata* Zone, and the basal Lewes Nodular Chalk might be inferred.

Conclusion: White Chalk Subgroup, basal Lewes Nodular Chalk; upper *T. lata* Zone, basal Lewes Nodular Chalk Formation.

(17) Trench and spoil for new house development at Well Place, Oxfordshire (Locality 6).

Specimen nos: WMD 16737 – 16739 1:10 000 SU68NE

NGR: SU 65504 85597

The material comprises specimens of the inoceramid bivalve *Inoceramus cuvieri*, collected from the succession just below the inferred Fognam Marl at (16) (above).

Interpretation: The record of common *Inoceramus cuvieri* at this locality and also (7) (above) is notable. At some localities a hardground (Ogbourne Hardground) is present below the Fognam Marl, and was stated by Gale (1996) to eliminate the higher part of the New Pit Chalk containing the acme of *I. cuvieri*. Slightly lower in the succession at this locality, at [SU 65492 85583], is a thick (0.17 m), grey marl associated with typical New Pit Chalk.

Conclusion: White Chalk Subgroup, basal Lewes Nodular Chalk Formation; Turonian, uppermost *T. lata* Zone.

(18) Tree roots exposure of Chalk adjacent to track in Icknielbank Plantation, east of Ewelme, Oxfordshire.

Specimen nos: WMD 16740 – 16744 1:10 000 SU69SE

NGR: SU 66870 91501

The material comprises specimens of the bivalve *Inoceramus cuvieri*?

Conclusion: White Chalk Subgroup, ?New Pit Chalk Formation; ?Turonian, ?*T. lata* Zone.

(19) Overgrown exposure of Chalk adjacent to footpath on Watlington Hill, c. 200 m WSW of car park on Watlington Hill, Oxfordshire.

Specimen nos: WMD 16745 – 16747 1:10 000 SU79SW

NGR: SU 70771 93456

The fauna is indeterminate.

Conclusion: None possible.

(20) Small, overgrown quarry on Watlington Hill adjacent to footpath, c. 670 m along path from SW edge of National Trust land (at SU 70010 93199), near Watlington, Oxfordshire

Specimen nos: WMD 16748 – 16762 1:10 000 SU79SW

NGR: SU 70644 93430

The fauna, collected from patchily hard and soft chalk with nodular and thin sheet flints, is as follows:

Bryozoa: bryozoan

Bivalvia: *Cremonceramus?* (shell fragments)

?*C. deformis erectus*

Echinoidea: indeterminate test fragment
 cidarid spine

Conclusion: White Chalk Subgroup, ?upper Lewes Nodular Chalk Formation; ?Coniacian, ?*M. cortestudinarium* Zone. The presence of thin sheet flints is consistent with this speculative conclusion.

(21) Small overgrown quarry with good brash of hard, nodular chalk; c. 400 m along path from SW edge of National Trust land (at SU 70010 93199), near Watlington, Oxfordshire.

Specimen nos: WMD 16763 – 16766 1:10 000 SU79SW

NGR: SU 70368 93329

The fauna is as follows:

Bivalvia: inoceramid shell fragments including *Mytiloides*?

Echinoidea: *Cardiaster* sp. (small)

Interpretation: Lithology and field relationships suggest a level around the middle part of the Lewes Nodular Chalk Formation. The fauna is not biozonally diagnostic, but is compatible with a level in the upper part of the *P. (S.) plana* Zone, where *Mytiloides* and *Cardiaster* both occur.

Conclusion: White Chalk Subgroup, ?middle Lewes Nodular Chalk Formation; ?late Turonian, ?upper *P. (S.) plana* Zone.

(22) c. 280 m along path from SW edge of National Trust land [at SU 70010 93199], near Watlington, Oxfordshire.

Specimen no.: WMD 16767 1:10 000 SU79SW

NGR: SU 70263 93313

The specimen is an inoceramid shell fragment, possibly representing *Inoceramus cuvieri*. The specimen occurs in relatively soft chalk, but is associated with brash of hard, nodular chalk, and locally intensely hard chalkstone.

Interpretation: The specimen questionably suggests the upper part of the *T. lata* Zone, and the range of associated chalk brash is consistent with a level around the junction of the New Pit Chalk and Lewes Nodular Chalk formations.

Conclusion: White Chalk Subgroup, ?including junction of New Pit Chalk and Lewes Nodular Chalk formations; ?Turonian, ?upper *T. lata* Zone.

(23) Grim's Ditch, c. 350 m SW of Nuffield church, Nuffield, Oxfordshire.

Specimen nos: WMD 16768 – 16780 1:10 000 SU68NE

NGR: SU 66492 87121

The fauna comprises shell fragments of the inoceramid bivalve *Platyceramus*, including thick-shelled examples (>5 mm). The specimens occur in chalk that is patchily hard, with flints and sponge remains.

Interpretation: *Platyceramus* is most typical of the *M. coranguinum* Zone, although it also occurs at younger horizons. Field relationship with the occurrence of basal Lewes Nodular Chalk at (25) below favours assignment to the lower *M. coranguinum* Zone and the lower Seaford

Chalk Formation. The record of hard, nodular chalk facies in the Seaford Chalk is not typical and may point to localised tectonic influence on lithofacies development.

Conclusion: White Chalk Subgroup, lower Seaford Chalk Formation; Coniacian, lower *M. coranguinum* Zone.

(24) Grim's Ditch, c. 430 m SW of Nuffield church, Nuffield, Oxfordshire.

Specimen nos: WMD 16781 – 16783 1:10 000 SU68NE

NGR: SU 66407 87118

The fauna comprises shell fragments of the bivalve *Platyceramus*. This locality is close to (23) above.

Interpretation: As for (23) above.

Conclusion: White Chalk Subgroup, lower Seaford Chalk Formation; Coniacian, lower *M. coranguinum* Zone.

(25) Eastern end of exposure in Grim's Ditch just west of Morrell's Bottom, c. 600 m SSW of Warren Hill Farm, near Nuffield, Oxfordshire.

Specimen nos: WMD 16784 – 16796 1:10 000 SU68NE

NGR: SU 65457 87276

The fauna, associated with intensely hard, nodular, grainy-textured chalk, includes the bivalves *Spondylus spinosus* and *Inoceramus cuvieri*, an oyster and an echinoid test fragment. Chalk at the western end of this locality is firm and sponge-rich, and also contains *I. cuvieri*.

Interpretation: *Inoceramus cuvieri* suggests the upper *T. lata* or basal *P. (S.) plana* Zone, from which the upper New Pit Chalk or lower Lewes Nodular Chalk might be inferred. The lithology at the eastern end of the exposure favours the lower (probably basal) Lewes Nodular Chalk, in which the long-ranging *S. spinosus* has local acmes. The western part of the exposure is probably New Pit Chalk Formation

Conclusion: White Chalk Subgroup, uppermost New Pit Chalk Formation and basal Lewes Nodular Chalk Formation; Turonian, upper *T. lata* Zone.

(26) Grim's Ditch, c. 1 km WSW of Warren Hill Farm, near Nuffield, Oxfordshire.

Specimen nos: WMD 16797 – 16801 1:10 000 SU68NW

NGR: SU 64852 87369

The fauna, in soft, blocky chalk, includes the bivalve *Inoceramus cuvieri*.

Interpretation: *Inoceramus cuvieri* suggests the upper *T. lata* or lower *P. (S.) plana* Zone, from which the upper New Pit Chalk or lower Lewes Nodular Chalk might be inferred. The lithology and field relations with (25) (above) favour assignment to the New Pit Chalk and the *T. lata* Zone.

Conclusion: White Chalk Subgroup, New Pit Chalk Formation; Turonian, *T. lata* Zone.

(27) One of a series of old chalk pits on Garson's Hill, c. 600 m NNW of Itchens Farm, Braziers Common, Oxfordshire.

Specimen nos: WMD 16802 – 16803 1:10 000 SU68SW

NGR: SU 64617 84356

The fauna comprises the brachiopod *Orbirhynchia?* and the inoceramid bivalve *Inoceramus cuvieri*. The specimens were collected from a c. 1.5 m thick section of soft, marly chalk, capped by 0.7 m of nodular chalk overlain by soil brash of chalkstone including fragments of mineralised hardground.

Interpretation: *Inoceramus cuvieri* spans the upper *T. lata* Zone and lower *P. (S.) plana* Zone. The observed lithological variation in the section suggests that it straddles the boundary of the New Pit and Lewes Nodular Chalk formations, in the upper *T. lata* Zone. The fragments of mineralised hardground in the soil brash almost certainly represent the Chalk Rock Member, but are probably not in situ.

Conclusion: White Chalk Subgroup, junction of New Pit and Lewes Nodular Chalk formations; Turonian, upper *T. lata* Zone.

(28) One of a series of old chalk pit on Garson's Hill, c. 600 m NNW of Itchens Farm, Braziers Common, Oxfordshire.

Specimen nos: WMD 16804 – 16807 1:10 000 SU68SW

NGR: SU 64549 84402

The fauna includes the bivalve *Inoceramus cuvieri*.

Interpretation: *Inoceramus cuvieri* spans the upper *T. lata* Zone and lower *P. (S.) plana* Zone. The lithology (soft, non-nodular chalk), and field relation with (27) (above) suggest assignment to the upper New Pit Chalk Formation and the upper *T. lata* Zone.

Conclusion: White Chalk Subgroup, upper New Pit Chalk Formation; Turonian, upper *T. lata* Zone.

(29) One of a series of old chalk pit on Garson's Hill, c. 600 m NNW of Itchens Farm, Braziers Common, Oxfordshire.

Specimen nos: WMD 16808 – 16810 1:10 000 SU68SW

NGR: SU 64525 84426

The fauna includes the bivalve *Inoceramus cuvieri*.

Interpretation: As (28) above

Conclusion: White Chalk Subgroup, upper New Pit Chalk Formation; Turonian, upper *T. lata* Zone.

(30) One of a series of old chalk pit on Garson's Hill, c. 600 m NNW of Itchens Farm, Braziers Common, Oxfordshire.

Specimen nos: WMD 16811 – 16814 1:10 000 SU68SW

NGR: SU 64519 84447

The fauna includes the brachiopod *Terebratulina striatula* and the inoceramid bivalve *Inoceramus cuvieri*.

Interpretation: As (28) above.

Conclusion: White Chalk Subgroup, upper New Pit Chalk Formation; Turonian, upper *T. lata* Zone.

- (31) One of a series of old chalk pit on Garson's Hill, c. 600 m NNW of Itchens Farm, Braziers Common, Oxfordshire.

Specimen nos: WMD 16815 – 16819 1:10 000 SU68SW

NGR: SU 64511 84464

The fauna includes the inoceramid bivalve *Inoceramus cuvieri*.

Interpretation: As (28) above.

Conclusion: White Chalk Subgroup, upper New Pit Chalk Formation; Turonian, upper *T. lata* Zone.

- (32) One of a series of old chalk pit on Garson's Hill, c. 600 m NNW of Itchens Farm, Braziers Common, Oxfordshire.

Specimen nos: WMD 16820 – 16821 1:10 000 SU68SW

NGR: SU 64502 84509

The material comprises indeterminate inoceramid shell fragments.

Interpretation: Lithology, and field relations with (27) (above), suggest assignment to the upper New Pit Chalk Formation.

Conclusion: White Chalk Subgroup, upper New Pit Chalk Formation.

- (33) Lower part of cutting on Berins Hill, near Well Place, Oxfordshire.

Specimen nos: WMD 16822 – 16825 1:10 000 SU68SE

NGR: SU 65087 84910

The fauna includes the bivalve *Inoceramus cuvieri*, collected from soft, blocky chalk with occasional nodular flints forming the lower part of the section. Up-section there is a rapid transition into very hard, sponge-rich chalk.

Interpretation: *Inoceramus cuvieri* spans the upper *T. lata* Zone and lower *P. (S.) plana* Zone. The strong lithological variation shown in the section suggests that it spans the junction of the New Pit Chalk and Lewes Nodular Chalk formations, and the upper *T. lata* Zone can be inferred.

Conclusion: White Chalk Subgroup, junction of New Pit and Lewes Nodular Chalk formations; Turonian, upper *T. lata* Zone.

- (34) In ditch by track at south-west corner of Bixmoor Wood, 1.81 km ENE of Ipsden Church, near Wallingford, Oxfordshire.

Specimen no.: ARF 2688 1:10 000 SU68NE

NGR: SU 65160 86120

The specimen comprises shell fragments of the bivalve *Platyceramus*.

Interpretation: *Platyceramus* is most typical of the *M. coranguinum* Zone, but also occurs at younger horizons. In the absence of evidence to the contrary, assignment to the *M. coranguinum* Zone and the Seaford Chalk Formation is questionably inferred.

Conclusion: White Chalk Subgroup, ?Seaford Chalk Formation; ?Coniacian or Santonian, ?*M. coranguinum* Zone.

(39) Old pit in woods, Stockings Plantation, on north side of spur, 1.57 km NE of Nettlebed Church.

Specimen no.: ARF 2693 1:10 000 SU78NW

NGR: SU 70980 87810

The specimen comprises shell fragments of the bivalves *Platyceramus*?

Interpretation: As for (34) above.

Conclusion: White Chalk Subgroup, ?Seaford Chalk Formation; ?Coniacian or Santonian, ?*M. coranguinum* Zone.

(40) Badger pits on fence line at top of steep slope, Little Cookley Hill, Upper Maidensgrove, 2.46 km NE of Nettlebed Church.

Specimen no.: ARF 2694 1:10 000 SU78NW

NGR: SU 71000 88900

The specimen comprises shell fragments of the bivalves *Platyceramus* and ?*Volviceramus involutus* (left valve fragment).

Conclusion: White Chalk Subgroup, ?lower Seaford Chalk Formation; ?Coniacian, ?lower *M. coranguinum* Zone.

(41) North side of old pit in Stockings plantation, on north side of valley, 1.56 km NE of Nettlebed Church.

Specimen no.: ARF 2695 1:10 000 SU78NW

NGR: SU 71050 87730

The specimen comprises shell fragments of the bivalve *Platyceramus*.

Interpretation: As for (34) above.

Conclusion: White Chalk Subgroup, ?Seaford Chalk Formation; ?Coniacian or Santonian, ?*M. coranguinum* Zone.

(42) Fallen trees near base of steep slope in woods 65 m SW south of valley bottom track, Kitesgrove Wood, 1.80 km NE of Nettlebed Church.

Specimen no.: ARF 2696 1:10 000 SU78NW

NGR: SU 71170 87930

The material is indeterminate.

Conclusion: None possible

(43) Badger scrapes on crest of ridge, Big Ashes Plantation, 2.01 km NE of Nettlebed Church.

Specimen no.: ARF 2697 1:10 000 SU78NW

NGR: SU 71260 88150

The material comprises indeterminate inoceramid shell fragments.

Conclusion: None possible

Interpretation: *C. ex gr. waltersdorfensis* is indicative of the uppermost *P. (S.) plana* Zone, from which the middle part of the Lewes Nodular Chalk Formation might be inferred.

Conclusion: White Chalk Subgroup, middle Lewes Nodular Chalk Formation; latest Turonian; uppermost *P. (S.) plana* Zone.

(49) Drainage ditch by side of road to Hollandridge Farm, 670 m NE of Pishill Church, near Stonor.

Specimen nos: ARF 2704 – 2712

1:10 000 SU79SW

NGR: SU 73000 90420

The fauna includes a terebratulid brachiopod, the bivalve *Plagiostoma hoperi* and thin-tested echinoids probably representing *Plesiocorys (Sternotaxis) plana*.

Interpretation: *P. (S.) plana* is most common and characteristic of the uppermost *T. lata* Zone and *P. (S.) plana* Zone, corresponding with the lower part of the Lewes Nodular Chalk Formation. However, the lithology containing the material is rather smooth-textured and clean-splitting when hammered, which is uncharacteristic of the lower Lewes Nodular Chalk.

Conclusion: White Chalk Subgroup, ?lower Lewes Nodular Chalk Formation; ?Turonian, ?*P. (S.) plana* Zone.

Appendix 1 – author citations for fossil species

Cremonoceras crassus (Petrascheck, 1903)

Cremonoceras deformis erectus (Meek, 1877)

Cremonoceras denselamellatus (Kotsyubinsky, 1965)

Cremonoceras waltersdorfensis (Andert, 1911)

Cremonoceras waltersdorfensis hannoverensis (Heinz, 1932)

Inoceramus cuvieri J Sowerby, 1814

Inoceramus lusatie Andert, 1911

Micraster leskei (Desmoulins, 1837)

Mytiloides ex gr. *hercynicus* (Petrascheck, 1903) – *subhercynicus* (Seitz, 1934)

Mytiloides mytiloides (Mantell, 1822)

Plagiostoma hoperi (Mantell, 1822)

Plesiocorys (Sternotaxis) plana (Mantell, 1822)

Plesiocorys (Plesiocorys) placenta (Agassiz, 1840)

Pycnodonte vesiculare (Lamarck, 1806)

Spondylus spinosus (J Sowerby, 1814)

Terebratulina lata Etheridge, 1881

Terebratulina striatula (Mantell, 1822)

Volviceras involutus (J de C Sowerby, 1828)

References

British Geological Survey holds most of the references listed below, and copies may be obtained via the library service subject to copyright legislation (contact libuser@bgs.ac.uk for details). The library catalogue is available at: <http://geolib.bgs.ac.uk>.

GALE, A S. 1996. Turonian correlation and sequence stratigraphy of the Chalk in southern England. 177 – 195 in HESSELBO, S P, and PARKINSON, D N (editors), Sequence Stratigraphy in British Geology, *Geological Society Special Publication*, No. 103.

MORTIMORE, R N. 1986. Stratigraphy of the Upper Cretaceous White Chalk of Sussex. *Proceedings of the Geologists' Association*, Vol. 97, 97 – 139.

STAGE	BIOZONATION	Traditional Subdivisions	Subgroup	Formations/ Members
SANTONIAN	<i>M. coranguinum</i>	Upper Chalk	White Chalk	Seaford Chalk
CONIACIAN	<i>M. cortestudinarium</i>			Lewes Nodular Chalk
TURONIAN	<i>P. (S.) plana</i>	(Chalk Rock)		
	<i>T. lata</i>	New Pit Chalk		
CEN. (pars)	<i>Mytiloides</i> spp.	Holywell Nodular Chalk		
	<i>N. juddii</i>	(Plenus Marls)		
	<i>M. geslinianum</i>			
		L.Ck. (pars)		

Table 1. The stratigraphy of the Chalk Group referred to in this report (not to scale).

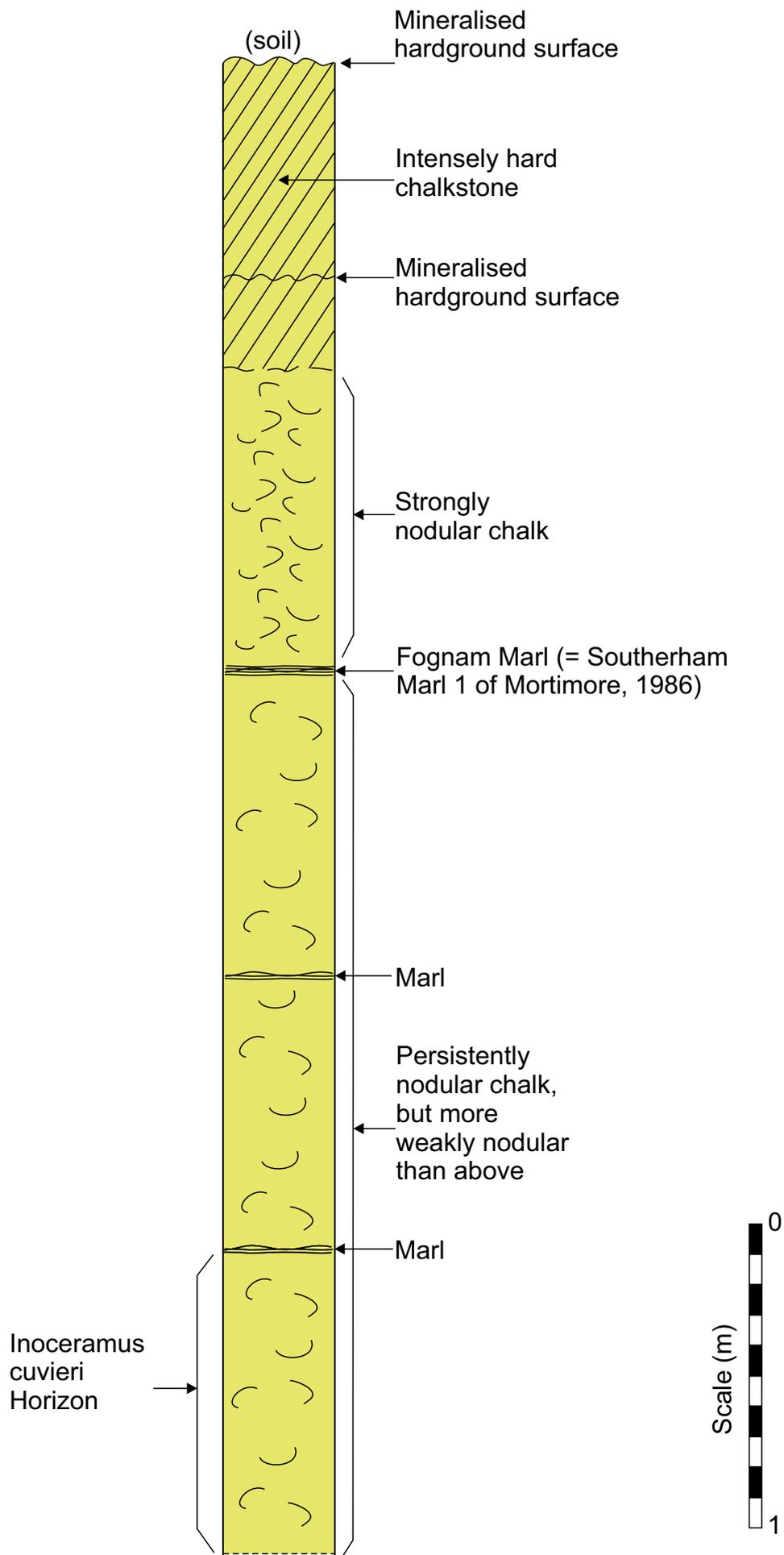


Figure 1. The Chalk succession at (7) of report [SU 65600 89175], showing horizon details of collected material