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Chalk Group macrofossils from the Basingstoke (Sheet 284) and Aldershot (Sheet 285) districts

Geology & Landscape, Southern Britain Programme

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OPEN REPORT OR/07/007

Chalk Group macrofossils from the Basingstoke (Sheet 284) and Aldershot (Sheet 285) districts

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Foreword

This report gives brief details of stratigraphical conclusions for Chalk Group macrofossils collected from localities in the Basingstoke and Aldershot districts during fieldwork in May 2007.

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Summary

This report provides brief stratigraphical conclusions for Chalk Group macrofossils collected from 68 sites on sheets 284 (Basingstoke) and 285 (Aldershot) during fieldwork in May 2007.

1 Stratigraphy

Material collected from the Chalk Group during fieldwork in May 2007 ranges from the Turonian (*T. lata* Zone) to Campanian (*O. pilula* Zone). The stratigraphy referred to in this report is shown in Table 1.

Stratigraphical conclusions for individual localities are detailed below.

(1) Old chalk pit c. 525 m south of Manor Farm, Well, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7618 4591

Specimen nos: WMD 12718-12742

The fauna includes the brachiopod *Gibbithyris ellipsoidalis* and the inoceramid bivalve *Cladoceramus undulatoplicatus*.

Conclusion: White Chalk Subgroup, middle Seaford Chalk Formation; basal Santonian, upper *M. coranguinum* Zone.

(2) Chalk pit c. 730 m NE of Tile Barn Farm, near South Warnborough, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 71536 48377

Specimen nos: WMD 12743-12756

The pit exposes 9.5 m of Chalk Group strata (Fig.1). *Uintacrinus socialis* and *Bourgueticrinus* occur in the uppermost 1.25 m of the succession. The underlying 8 m of chalk contains orange-stained, sponge-rich chalk, with horizons of *Platyceramus* and a flint horizon associated with several specimens of the echinoid *Conulus*, including *C. albogalerus* and possibly *C. subrotundus*.

Conclusion: White Chalk Subgroup, upper Seaford Chalk Formation and basal Newhaven Chalk Formation; Santonian, upper *M. coranguinum* Zone and basal *U. socialis* Zone.

(3) Old chalk pit near Little Hoddington, 770 m ENE of church at Upton Grey, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7050 4856

Specimen nos: WMD 12757-12761

The pit exposes 4.25 m of Chalk Group strata (Fig. 2). Thick-shelled *Platyceramus* occurs near the bottom of the succession, and thin-shelled *Platyceramus* and *Conulus* occur around the middle of the succession. There are locally developed horizons of iron-stained, sponge-rich chalk.

Conclusion: White Chalk Subgroup, upper Seaford Chalk Formation; Santonian, upper *M. coranguinum* Zone.

(4) Old chalk pit c. 230 m SE of Swanthorpe House, near Well, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7866 4656

Specimen nos: WMD 12762-12784

The fauna comprises very common and fragmentary echinoids in sponge-rich chalk, including *Conulus*, *Micraster* and a cidarid (spine). No evidence of *Uintacrinus* or *Marsupites* was found, favouring assignment of the fauna to the upper *M. coranguinum* Zone, and possibly a level close to the top of that zone where echinoids are sometimes very common.

Conclusion: White Chalk Subgroup, upper Seaford Chalk Formation; Santonian, upper *M. coranguinum* Zone.

(5) Old chalk pit c. 230 m N of Roke Farm, north of Well, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 76190 49389

Specimen nos: WMD 12785; ARF 1699 to 1700

The pit exposes c. 3.75 m of chalk with rounded flint nodules and a possible thin marl horizon 2.7 m below the top of the section (Fig. 3). The specimens include strongly ornamented calyx plates of *Marsupites testudinarius*, suggesting a level at or above the middle of the zone. The brachiopod *Cretirhynchia exsculpta* also occurs.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Santonian, *M. testudinarius* Zone.

(6) Excavations for new barn, c. 770 m SSW of cross roads in South Warnborough, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 71877 46667

Specimen nos: WMD 12793-12820

The fauna includes the following:

Bivalvia:	<i>Neitheia sexcostata</i>
	oyster?
	<i>Plagiostoma hoperi</i>
	<i>Platyceramus</i> (shell fragments)
Echinoidea:	<i>Conulus?</i> (test fragment)
	<i>Hirudocidaris hirudo</i> (spine)

The above fauna is associated with locally sponge-bearing chalk.

No evidence of *Uintacrinus* or *Marsupites* was found, or of the oyster-rich fauna that usually accompanies these crinoids.

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

- (7) Old chalk pit, c. 400 m SW of Little Rye Farm, NW of Crondall, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 76999 50040

Specimen nos: WMD 12821-12824; ARF 1802-1808

The fauna includes the echinoids *Offaster pilula*, *Echinocorys tectiformis?* and *E. aff. cincta*, the crinoid *Bourgueticrinus fritillus*, the oyster *Pseudoperna boucheroni* and an asteroid plate.

Conclusion: White Chalk Subgroup, Newhaven Chalk Formation; Campanian, *O. pilula* Zone.

- (8) Old chalk pit, 313 m NE of church at Long Sutton, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 74159 47568

Specimen no.: WMD 12825

The specimen is a calyx plate of the crinoid *Marsupites testudinarius*. The morphotype is characteristic of the lower part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Santonian, lower *M. testudinarius* Zone.

- (9) Old chalk pit at Wassels Copse, 650 m SSW of Hill Side Farm, near Odiham, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 75152 49994

Specimen nos: WMD 12826-12831

The pit exposes c. 1.4 m of chalk with nodular flints (Fig. 4). The fauna comprises oysters (including *Acutostrea incurva*), a small crinoid brachial and a calyx plate of *Uintacrinus socialis*.

Conclusions: White Chalk Subgroup, basal Newhaven Chalk Formation; Santonian, *U. socialis* Zone.

- (10) Excavation adjacent to footpath, c. 190 m N of Thorns Farm, SW of Crondall, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 77315 47723

Specimen nos: WMD 12836; ARF 1710 to 1711

The specimens include calyx plates of the crinoid *Marsupites testudinarius*. The morphology of the calyx plates suggests a level at or above the middle of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Santonian, *M. testudinarius* Zone.

- (11) Chalk pit 370 m SSE of Little Rye Farm, NW of Crondall, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 77366 49890

Specimen no.: WMD 12837

The pit exposes about 5.5 m of chalk with nodular flints and three thin marls(?) (Fig. 5). The chalk seen in the western part of the quarry is locally quite steeply eastward dipping, and a fault (cutting the southern margin of the quarry) separates this chalk from the virtually flat lying succession seen in the eastern part of the quarry. The specimen is a medium-sized, weakly ornamented calyx plate of the crinoid *Marsupites testudinarius*. The morphology suggests a level at or above the middle of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Santonian, *M. testudinarius* Zone.

(12) Old chalk pit c. 1 km SE of church at Up Nately, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 70829 51246

Specimen nos: WMD 12841-12856

The pit exposes c. 3.75 m of flinty and locally sponge-rich chalk on its northern side (Fig. 6). The chalk is very coarse-textured, and corresponds to the typical Grobkreide facies that occurs in the *U. socialis*, *M. testudinarius*, *U. anglicus* and basal *O. pilula* zones, and lateral equivalents in Germany (Wood & Mortimore, 1988). The fauna includes the echinoid *Echinocorys scutata* aff. *elevata*, suggesting the *M. testudinarius* Zone, but no evidence of this was found. The locality was described by Brydone (1912; locality no. 579), and his fauna from this pit includes both *Uintacrinus socialis* and *Marsupites testudinarius* (Woods, 2000).

Conclusion: White Chalk Subgroup, Newhaven Chalk Formation; Santonian, ? *M. testudinarius* Zone.

(13) Exposure below west side of footpath at Little Tunnel Bridge, c. 950 m west of church at Up Nately, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 69132 51926

Specimen nos: WMD 12857-12876

Relatively common oysters, including several specimens of *Pseudoperna boucheroni*, and test fragments of the echinoid *Echinocorys*, dominate the fauna. A bryozoan, the brachiopod *Orbirhynchia* and the crinoid *Bourgueticrinus* also occur. This fauna is biozonally undiagnostic, but the relative frequency of *P. boucheroni* favours either the *U. socialis* Zone, the *M. testudinarius* Zone or the basal *O. pilula* Zone. No evidence of either the *U. socialis* or *M. testudinarius* Zone was seen, despite extensive collecting.

Conclusion: White Chalk Subgroup, ? Newhaven Chalk Formation; Santonian or basal Campanian.

(14) Scree bank adjacent to road passing along west side of Basing Lime Pits, Basingstoke, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 65437 52118 to 65550 52273

Specimen nos: WMD 12877-12892

The fauna comprises relatively common specimens of *Platyceramus* (including thick-shelled fragments) and the crinoid *Bourgueticrinus*, suggesting a level at or above the middle part of the *M. coranguinum* Zone. The fauna is most typical of the upper *M. coranguinum* Zone (implying upper Seaford Chalk), but could be younger.

Conclusion: White Chalk Subgroup, ? upper Seaford Chalk Formation (or younger);
Santonian, ? upper *M. coranguinum* Zone (or younger).

(15) Section on east side of Gresley Road, under foot bridge, Basingstoke, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 64900 52966

Specimen nos: WMD 12893-12898

The fauna includes an oyster, the crinoid *Bourgueticrinus*, a cidarid echinoid spine and a possible crushed and fragmentary *Offaster pilula*.

Conclusion: White Chalk Subgroup, ?Newhaven Chalk Formation; ?Campanian, ?*O. pilula* Zone.

(16) Section on south side of road, immediately east of bridge, c. 330 m east of Home Farm, near Hackwood House, Basingstoke, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 65528 50489

Specimen nos: WMD 12899-12902

The section exposes 3.5 m of flinty chalk, with some sponge-rich chalk occurring towards the middle of the succession (Fig. 7). The fauna comprises the oysters *Pycnodonte vesiculare*, *Acutostrea incurva* and *Pseudoperna boucheroni*. This oyster association is characteristic of the *U. socialis* Zone, *M. testudinarius* Zone, *U. anglicus* Zone and basal *O. pilula* Zone. This is locality no. 201 of Brydone (1912), from which he collected small crinoid brachials (Woods, 2000), suggesting the *U. socialis*, *M. testudinarius* or *U. anglicus* zones.

Conclusion: White Chalk Subgroup, Newhaven Chalk Formation.

(17) Cutting near electrical supply station, c. 170 m ESE of where A339 crosses southern branch of railway, and 725 m NE of Basing Lime Pits, Basingstoke, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 65169 52789

Specimen nos: WMD 12903-12917

The section shows four or five metres of poorly exposed chalk with some large, flattened nodular flints. The fauna exclusively comprises shell fragments of *Platyceramus*, including thick-shelled examples. The fauna is associated with sponge-rich chalk horizons. The fauna and lithology might suggest the upper part of the *M. coranguinum* Zone, and by inference the upper part of the Seaford Chalk Formation, but a younger age cannot be excluded.

Conclusion: White Chalk Subgroup, ?upper Seaford Chalk Formation (or younger);
Santonian.

(18) Odiham chalk pit, on east side of B3349, c. 400 m SW of church (with tower), Odiham, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 73731 50622

Specimen nos: WMD 12918-12926

The pit exposes c. 24.5 m of flinty and locally sponge-rich chalk (Figs 8 & 9). *Uintacrinus socialis* was found up to 9 m below the top of the succession. Sponge-rich chalk with *Echinocorys* and *Platyceramus* towards the base of the exposed succession and probably represents the upper part of the *M. coranguinum* Zone. This quarry was described by Brydone (1912; locality 173). Brydone's fauna also includes *M. testudinarius* (Woods, 2000).

The quarry exposes a shear surface (with minor displacement) that was apparently the site of a major collapse in the quarry c. 16 years ago (Fig. 9). A fault just NE of this shear surface shows a c. 5 m southerly downthrow (Fig. 9).

Conclusion: White Chalk Subgroup, upper Seaford Chalk Formation and lower Newhaven Chalk Formation; Santonian, ? upper *M. coranguinum* Zone, *U. socialis* Zone and *M. testudinarius* Zone.

(19) Old chalk pit in garden of house, Dippenhall, Surrey, c. 200 m SSE of Burles Farm.

1:50 000 285 (Aldershot)

NGR: SU 81814 46947

Specimen nos: WMD 12786-12788

The fauna comprises specimens of the inoceramid bivalve *Inoceramus cuvieri* in soft to moderately hard chalk.

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

(20) Bed of stream (dry) 200 m N of Burles Farm, Dippenhall, Surrey (immediately S of where track crosses stream).

1:50 000 285 (Aldershot)

NGR: SU 81697 47360

Specimen nos: WMD 12789-12790

The fauna comprises calyx plates of the crinoid *Marsupites testudinarius*. The morphotype suggests the lower part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Santonian, *M. testudinarius* Zone.

(21) Bed of stream (dry), c. 130 m NNE of Burles Farm, Dippenhall, Surrey.

1:50 000 285 (Aldershot)

NGR: SU 81712 47303

Specimen no.: WMD 12791

The specimen is of the oyster *Pseudoperna boucheroni*. Although in itself biozonally undiagnostic, this oyster is common in the *U. socialis*, *M. testudinarius* and basal *O. pilula* zones. A nearby locality ((20) above) belongs to the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, ?lower Newhaven Chalk Formation; Santonian.

(22) Bed of stream (dry), c. 90 m NE of Burles Farm, Dippenhall, Surrey.

1:50 000 285 (Aldershot)

NGR: SU 81718 47229

Specimen no.: WMD 12792

The specimen comprises asteroid plates.

Conclusion: None possible.

(23) Stream section (dry) c. 980 m ENE of Burles Farm, Dippenhall, Surrey.

1:50 000 285 (Aldershot)

NGR: SU 82632 47421

Specimen nos: WMD 12832-12835

The fauna comprises an oyster, the crinoid *Bourgueticrinus*, the belemnite *Actinocamax verus* and echinoid test fragments.

Conclusion: White Chalk Subgroup, upper Seaford Chalk Formation or Newhaven Chalk Formation; Santonian or Campanian, upper *M. coranguinum* Zone to lower *O. pilula* Zone.

(24) Old quarry, 650 m W of Farnham Castle, Farnham, Surrey.

1:50 000 285 (Aldershot)

NGR: SU 83096 47309

Specimen nos: WMD 12838-12840

Only small, isolated exposures remain at this largely overgrown locality. The fauna comprises the inoceramid bivalves *Mytiloides labiatoidiformis* (lower part of succession) and *Cremnoceramus deformis erectus?* (higher part of the succession). The lithology is hard to relatively soft, grainy-textured chalk.

Conclusion: White Chalk Subgroup, Lewes Nodular Chalk Formation; upper Turonian and basal Coniacian, *P. (S.) plana* Zone and lower *M. cortestudinarium* Zone.

(25) Old pit 120 m E of Glade farm, 2.6 km SE of Horsedown Common Triangulation Point [SU 766 481], Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7826 4605

Specimen no.: ARF 1689

The specimen is a crushed and indeterminate rhynchonellid brachiopod.

Conclusion: None possible.

(26) Brash in track on N side of Sheephouse Copse, 1.82 km SE of Long Sutton church [SU 739 474], Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7479 4579

Specimen no.: ARF 1690

The specimen includes the oyster *Pseudoperna boucheroni* and small crinoid brachials.

Conclusion: White Chalk Subgroup, ?lower Newhaven Chalk Formation; Late Santonian or Early Campanian, *U. socialis* Zone, *M. testudinarius* Zone or *U. anglicus* Zone.

(27) Exposure in track in Higham Copse, 2.5 km SE of Long Sutton church [SU 739 474], Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7496 4509

Specimen no.: ARF 1691

The specimen is the inoceramid bivalve *Inoceramus cuvieri* in patchily hard, sponge-bearing chalk.

Conclusion: White Chalk Subgroup, ? basal Lewes Nodular Chalk Formation (but possibility of this being sponge-bearing unit in the New Pit Chalk Formation); Late Turonian, uppermost *T. lata* Zone.

(28) Brash in field, 1km SW of Well Pond, 2.4 km SSW of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7550 4659

Specimen no.: ARF 1692

The specimen includes a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the lower part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, lower *M. testudinarius* Zone.

(29) Brash in field, 750 m SW of Well Pond, 2.2km SSW of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7572 4605

Specimen no.: ARF 1693

The specimen includes a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(30) Old pit by track in Sheephouse Copse, 2.6 km SSW of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7544 4577

Specimen no.: ARF 1694

The fauna comprises asteroid plates, oyster shell fragments and the serpulid *Cycloserpula gordialis*.

Conclusion: White Chalk Subgroup, ? Newhaven Chalk Formation.

(31) Old pit in Sheephouse Copse, Well, 2.3 km SSW of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7559 4589

Specimen no.: ARF 1695

The fauna comprises small crinoid brachial plates and a calyx plate of *Uintacrinus socialis*.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, *U. socialis* Zone.

(32) Field brash in footpath 1km SE of Hillside Farm, 2 km NW of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7581 4988

Specimen no.: ARF 1696

The specimen includes a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(33) Field brash, 1 km SSW Hillside Farm, Odiham, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7515 4965

Specimen no.: ARF 1697

The fauna comprises the sponge *Porosphaera patelliformis* and columnals of the crinoid *Bourgueticrinus*.

Conclusion: None possible.

(34) Old pit at top of White Hill, Well, 1.7 km SSW of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7560 4680

Specimen no.: ARF 1698

The fauna consists of small crinoid brachial plates, columnal plates of the crinoid *Bourgueticrinus*, and asteroid skeletal plates.

Conclusion: White Chalk Subgroup, ? Newhaven Chalk Formation.

(35) Field brash by road, 600 m SSW of Well Pond, 2.5 km SSE of Long Sutton church, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7600 4603

Specimen no.: ARF 1701

The specimen includes a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(36) Old pit NE of Lord Wandsworth College, Long Sutton, 1.2 km NE of Well Pond, 1.9 km SW of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7501 4689

Specimen nos: ARF 1702 to 1703

The specimen includes a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone. Crinoid brachial plates and an asteroid skeletal plate also form part of the fauna.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(37) Old pit 120 m SE of Crest Hill Farm, Lower Froyle, 1.6 km SSW of Well Pond [SU 762 466], Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7576 4508

Specimen nos: ARF 1704 to 1706

The fauna includes the echinoid *Plesiocorys (Sternotaxis) plana*, in patchily hard chalk.

Conclusion: White Chalk Subgroup, Lewes Nodular Chalk Formation; Late Turonian, upper *T. lata* Zone or basal *P. (S.) plana* Zone.

(38) Old pit 500 m S of Roke Farm, Odiham, 800 m NW of Horsedown Common, Hants.

NGR: SU 7618 4862

Specimen nos: ARF 1707 to 1709

The fauna includes the rhynchonellid brachiopods *Orbirhynchia* and *Cretirhynchia*?

Conclusion: None possible.

(39) Old pit, 350 m SSW of Great Rye Farm, 2.1 km NNE of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7760 4986

Specimen no.: ARF 1712

The specimen includes a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(40) Old pit 600 m E of Park Corner farm, 1.2 km NE of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7762 4869

Specimen no.: ARF 1713

The fauna includes a calyx plate of the crinoid *Uintacrinus socialis*.

Conclusion: White Chalk Subgroup, basal Newhaven Chalk Formation; Santonian, *U. socialis* Zone.

(41) Old pit 400 m NE of Isnage Farm, 1.6 km SE of Well Pond, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7743 4569

Specimen no.: ARF 1714

The specimen is the rhynchonellid brachiopod *Orbirhynchia*.

Conclusion: None possible.

(42) Old pit 900 m ESE of Roke Farm, Odiham, 810 m NNE of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7692 4881

Specimen nos: ARF 1715 to 1719

The fauna includes the oyster *Pseudoperna boucheroni*, a test fragment of the echinoid *Echinocorys*, and the crinoids *Bourgueticrinus* (columnal plate) and *Marsupites testudinarius* (calyx plates). The morphology of the *M. testudinarius* calyx plates suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(43) Field brash, 1.3 km ENE of Glade Farm, 1.9 km NNE of Bentley church, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7940 4623

Specimen nos: ARF 1720-1724

The fauna comprises Early Turonian forms of the inoceramid bivalve *Mytiloides*, in hard, iron-stained chalk.

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

(44) Badger scrape, 1.4 km ENE of Glade Farm, 1.9 km NNE of Bentley church, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7944 4627

Specimen nos: ARF 1725-1726

The fauna comprises fragments of large terebratulid brachiopods in soft, non-gritty chalk. The field assignment of Holywell Nodular Chalk seems unlikely, but basal *T. lata* Zone (= basal New Pit Chalk), in which large terebratulids are locally common, is a possibility.

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

(45) Field brash by path, 1.3 km S of Crondall church, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7963 4714

Specimen no.: ARF 1727

The fauna comprises the oyster *Pseudoperna boucheroni* and small crinoid brachial plates.

Conclusion: White Chalk Subgroup, ? lower Newhaven Chalk Formation.

(46) Old pit in SW corner of The Beeches Copse, 300 m N of Isnage Farm, 1.25 km SE of Well Pond, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7711 4586

Specimen nos: ARF 1728 to 1739

The material includes the bivalve *Inoceramus cuvieri*? and the brachiopod *Orbirhynchia*.

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

(47) Old pit at road corner, 1.65 km SE of Horsedown Common, 1.5 km ENE of Well Pond, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7779 4679

Specimen nos.: ARF 1740-1743

The fauna includes a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone. Oysters also occur in the fauna, including *Pseudoperna boucheroni* and *Pycnodonte*?

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(48) Old pit 1.05 km ESE of Well Pond, 1 km N of Isnage Farm, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7722 4643

Specimen nos: ARF 1744-1747

The specimen fauna includes calyx plates of the crinoid *Marsupites testudinarius*. The morphology of the plates suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(49) Old pit / badger scrape 1 km ENE of Well Pond, 1.3 km SSE of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7714 4691

Specimen no.: ARF 1748

The specimen is a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(50) Brash at base of pylon, 1.8 km NE of Well Pond, 1.75 km SE of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7800 4700

Specimen nos: ARF 1749-1751

The specimens include a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone. Crinoid brachial plates and the echinoid *Micraster* ex. gr. *coranguinum* also occur in the fauna.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(51) Old pit 800 m WNW of Crondall church, 300 m ESE of Penn Croft Farm, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7871 4875

Specimen no.: ARF 1752

The specimen is a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

- (52) Brash 900 m NE of Glade farm, 2.5 km E of Well Pond, 2 km SW of Crondall church, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7865 4680

Specimen no.: ARF 1753

The specimen is a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

- (53) Field brash, 1.2 km SSE of Crondall church, 800 m N of Kinbers Farm, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7992 4735

Specimen no.: ARF 1754

The fauna consists of small crinoid brachial plates.

Conclusion: White Chalk Subgroup, ? Newhaven Chalk Formation.

- (54) Field brash N of road, 1.1 km SE of New Farm, 1.9 km due S of Long Sutton church, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7377 4543

Specimen no.: ARF 1755

The specimen is the echinoid *Micraster* ex gr. *coranguinum*.

Conclusion: White Chalk Subgroup, upper Seaford Chalk or lower Newhaven Chalk Formation; Santonian, upper *M. coranguinum* Zone, *U. socialis* Zone or *M. testudinarius* Zone.

- (55) Brash outside old pit, 700 m WSW of Isnage Farm, 1.3 km SSE of Well Pond, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7650 4537

Specimen nos: ARF 1756-1759

The fauna comprises Early Turonian *Mytiloides* (including *M. mytiloides*) in hard, nodular Chalk.

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

- (56) Badger scrape on southern edge of The Beeches, 300 m NNE of Isnage Farm, 1.25 km SE of Well Farm, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7717 4585

Specimen nos: ARF 1760-1768

The fauna includes the inoceramid bivalve *Inoceramus cuvieri*, and possibly also the brachiopod *Terebratulina lata*.

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

(57) Field brash, 500 m WNW of Crondall church, 2.15 km ENE of Horsedown Common, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7901 4862

Specimen no.: ARF 1769

The specimen includes a calyx plate of the crinoid *Uintacrinus anglicus*.

Conclusion: White Chalk Subgroup, Newhaven Chalk Formation; basal Campanian, *U. anglicus* Zone.

(58) Brash by telegraph pole, 330 m SW of Crondall church, 1 km SE of Penn Croft farm, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7924 4822

Specimen no.: ARF 1770

The specimen includes a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone. The sponge *Porosphaera pileolus*, a fragment of the bivalve *Platyceramus*, and an asteroid skeletal plate also occur in the fauna.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(59) Old pit in field, 1.1 km SSE of Crondall church, 700 m N of Barley Pound hill fort, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7972 4742

Specimen no.: ARF 1771

The specimen is a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(60) Field brash in NE corner of field by track, 300 m SE of Isnage Farm, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7680 4535

Specimen nos: ARF 1772-1775

The fauna includes Early Turonian *Mytiloides* (including *Mytiloides* ex gr. *labiatus*) in hard chalk, and the ammonite *Lewesiceras peramplum*.

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

(61) Old pit (E face) 600 m NE of Clare Park Hospital, 700 m E of Crondall church, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 8021 4842

Specimen nos: ARF 1776-1782

The specimens includes calyx plates of the crinoid *Marsupites testudinarius*. The morphology of the plates suggests a level in the middle to upper part of the *M. testudinarius* Zone. Oysters, including *?Acutostrea incurva*, also occur.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(62) Badger scrape, 320 m S of Powderham Castle, 700 m W of Dippenhall House, Farnham, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 8030 4654

Specimen nos: ARF 1783-1786.

The fauna comprises a sponge, inoceramid shell fragment and the brachiopod *Orbirhynchia* sp. The field assignment is ?Zig Zag Chalk or ?New Pit Chalk. Although the fauna is biozonally undiagnostic, the morphology of the inoceramid shell and *Orbirhynchia* favours New Pit Chalk rather than Zig Zag Chalk.

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

(63) Old pit by road junction, 500 m SW of Powderham Castle, 1 km W of Dippenhall House, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 8005 4655

Specimen nos: ARF 1787-1788

The fauna includes the bivalve *?Inoceramus cuvieri* (shell fragment) and the brachiopod *Terebratulina lata*.

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

(64) Brash in field, 900 m ENE of Dippenhall House, 700 m SE of Lower Old Park Farm, Hants.

1:50 000 285 (Aldershot)

NGR: SU 8185 4690

Specimen no.: ARF 1789

The specimen is the inoceramid bivalve *Mytiloides mytiloides*, in hard chalk.

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

(65) In stream bed by Burles Farm, 400 m N of road, 980 m NE of Dippenhall House, Hants.

1:50 000 285 (Aldershot)

NGR: SU 8172 4720

Specimen no.: ARF 1790

The specimen is the echinoid *Echinocorys*. The morphology is similar to forms found near the top of the *M. coranguinum* Zone, and by inference, near the top of the Seaford Chalk Formation.

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

(66) In stream bed, 510 m ENE of Ranger's House, Farnham Park, 470 m SE of the church, Hants.

1:50 000 285 (Aldershot)

NGR: SU 8465 4795

Specimen no.: ARF 1791

The specimen is a calyx plate of the crinoid *Marsupites testudinarius*. The morphology of the plate suggests a level in the middle to upper part of the *M. testudinarius* Zone.

Conclusion: White Chalk Subgroup, lower Newhaven Chalk Formation; Late Santonian, middle to upper *M. testudinarius* Zone.

(67) Old pit 200 m E of Old Park Farm, 950 m NE of Dippenhall House, Farnham, Hants.

1:50 000 285 (Aldershot)

NGR: SU 8153 4731

Specimen nos: ARF 1792-1794

The fauna comprises columnal plates of the crinoid *Bourgueticrinus*, oyster fragments, and the terebratulid brachiopod *Kingena*?

Conclusion: White Chalk Subgroup, ? Newhaven Chalk Formation.

(68) Old pit / badger scrape in bank, 1.3 km E of Glade Farm, 1.5 km NE of Bury Court, Hants.

1:50 000 284 (Basingstoke)

NGR: SU 7946 4623

Specimen nos: ARF 1795-1801

The fauna comprises shell fragments of Early Turonian *Mytiloides*.

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

References

Most of the references listed below are held in the Library of the British Geological Survey at Keyworth, Nottingham. Copies of the references may be purchased from the Library subject to the current copyright legislation.

BRYDONE, R M. 1912. The stratigraphy of the Chalk of Hants. (London: Dulau & Co. Ltd.), 116 pp., 3 pls., col. map.

WOOD, C J & MORTIMORE, R N. 1988. Biostratigraphy of the Newhaven and Culver members. 58-64 in Geology of the country around Brighton and Worthing, YOUNG, B & LAKE, R D. *Memoir of the British Geological Survey*, Sheet 318 and 333 (England & Wales).

WOODS, M A. 2000. Review of the BGS fossil collections from the Chalk Group of the Basingstoke district, Hampshire. *British Geological Survey Internal Report*, IR/00/33.

S T A G E	S U B G R O U P	FORMATION	BIOZONATION		KEY MARKER HORIZONS
CAMPAN- IAN (pars)	WHITE CHALK	Newhaven Chalk (pars)	<i>O. pilula</i>	<i>E. depressula</i> Subzone	← Rows Echinoid Band
SANTONIAN			<i>U. anglicus</i>		
			<i>M. testudinarius</i>		
			<i>U. socialis</i>		
CONIACIAN		Seaford Chalk	<i>M. coranguinum</i>		
		Lewes Nodular Chalk	<i>M. cortestudinarium</i>		
TURONIAN			New Pit Chalk	<i>S. plana</i>	
		<i>T. lata</i>			
		Holywell Nodular Chalk	<i>Mytiloides</i> spp. (pars)		

TABLE 1. The stratigraphy referred to in this report

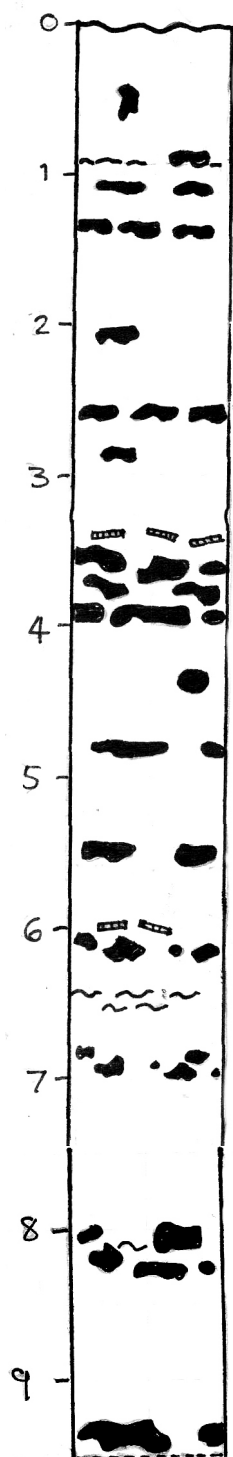


Figure 1. The Chalk succession near
Tile Barn Farm [SU
71536 48377] ((2) of report).

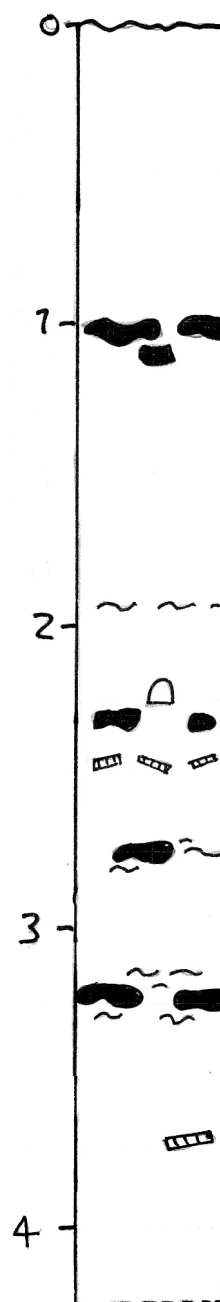


Figure 2. The Chalk succession near
Little Hoddington [SU
7050 4856] ((3) of report).

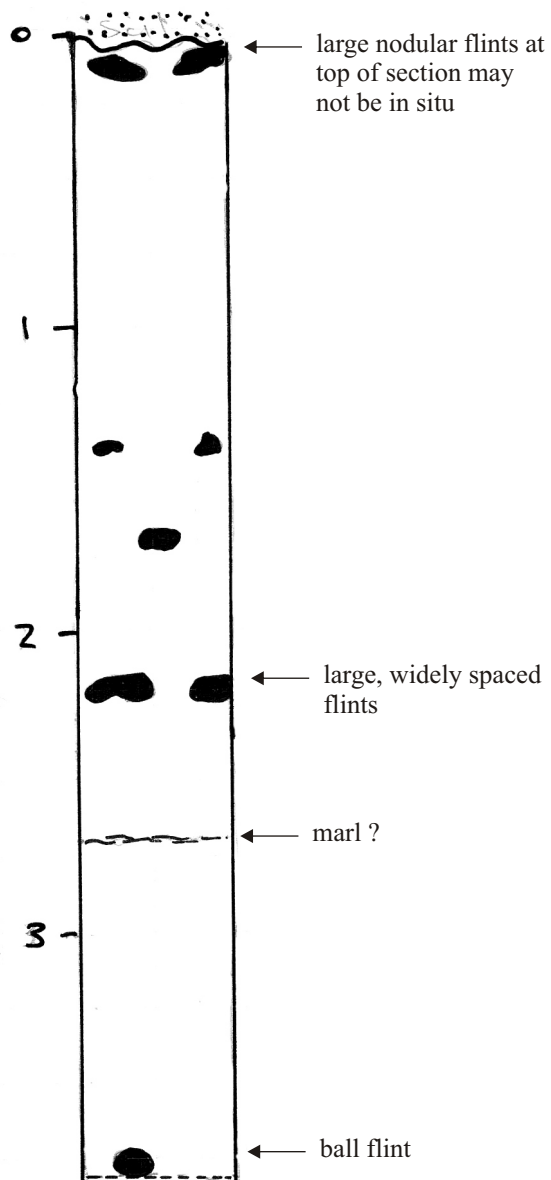


Figure 3. The Chalk succession near Roke Farm [SU 76190 49389] ((5) of notes).

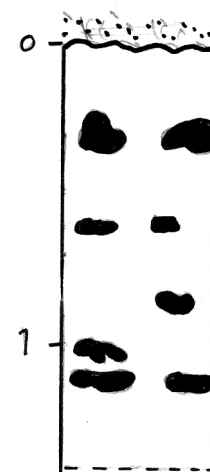


Figure 4. The Chalk succession at Wassels Copse [SU 75152 49994] ((9) of report).

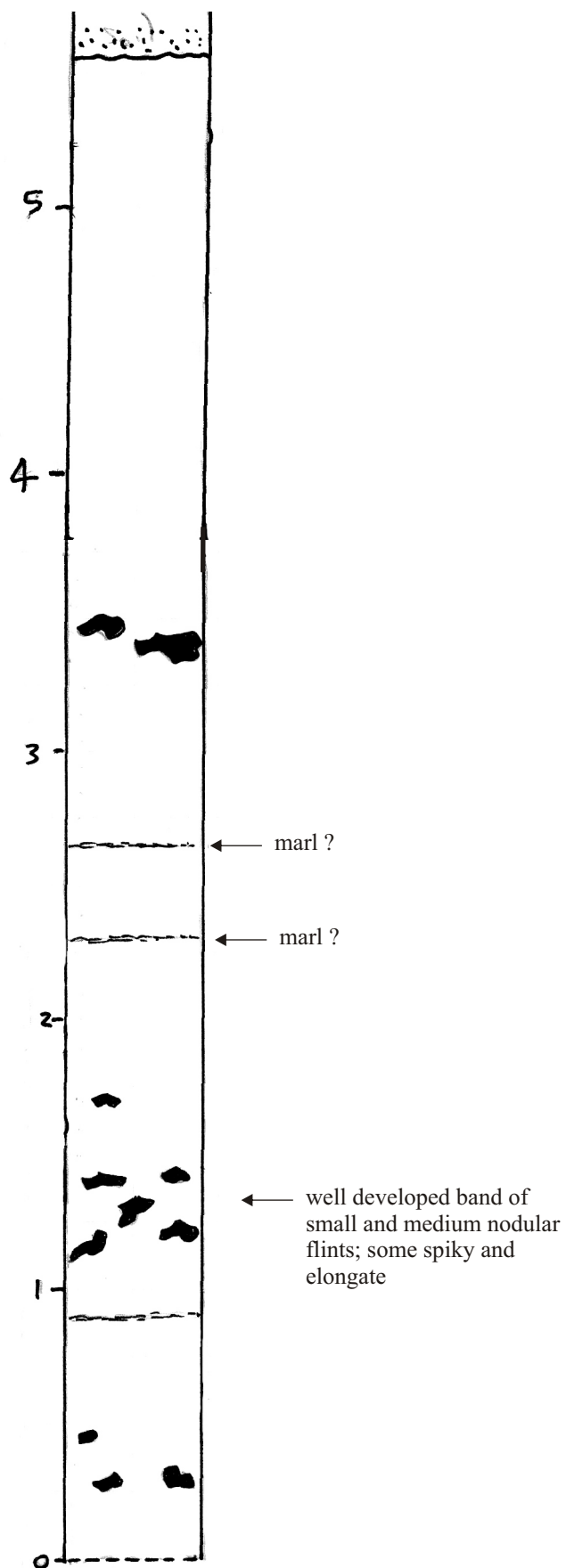


Figure 5. The Chalk succession near Little Rye Farm [SU 77366 49890] (11) of report).

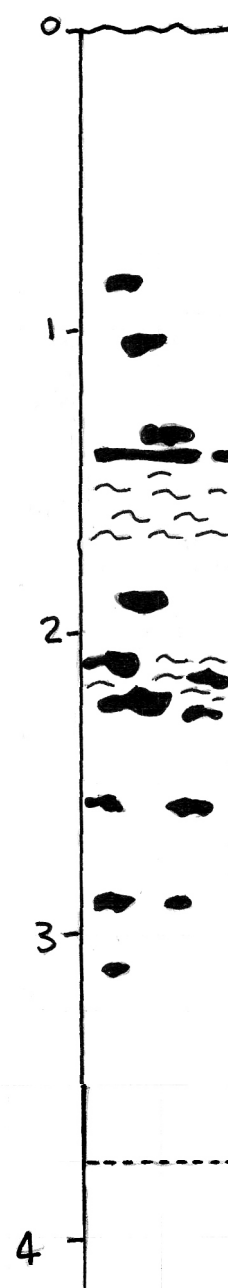


Figure 6. The Chalk succession near Up Nately [SU 70829 51246] ((12) of report).

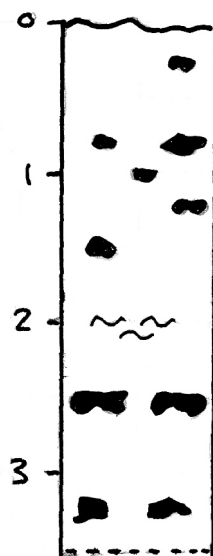
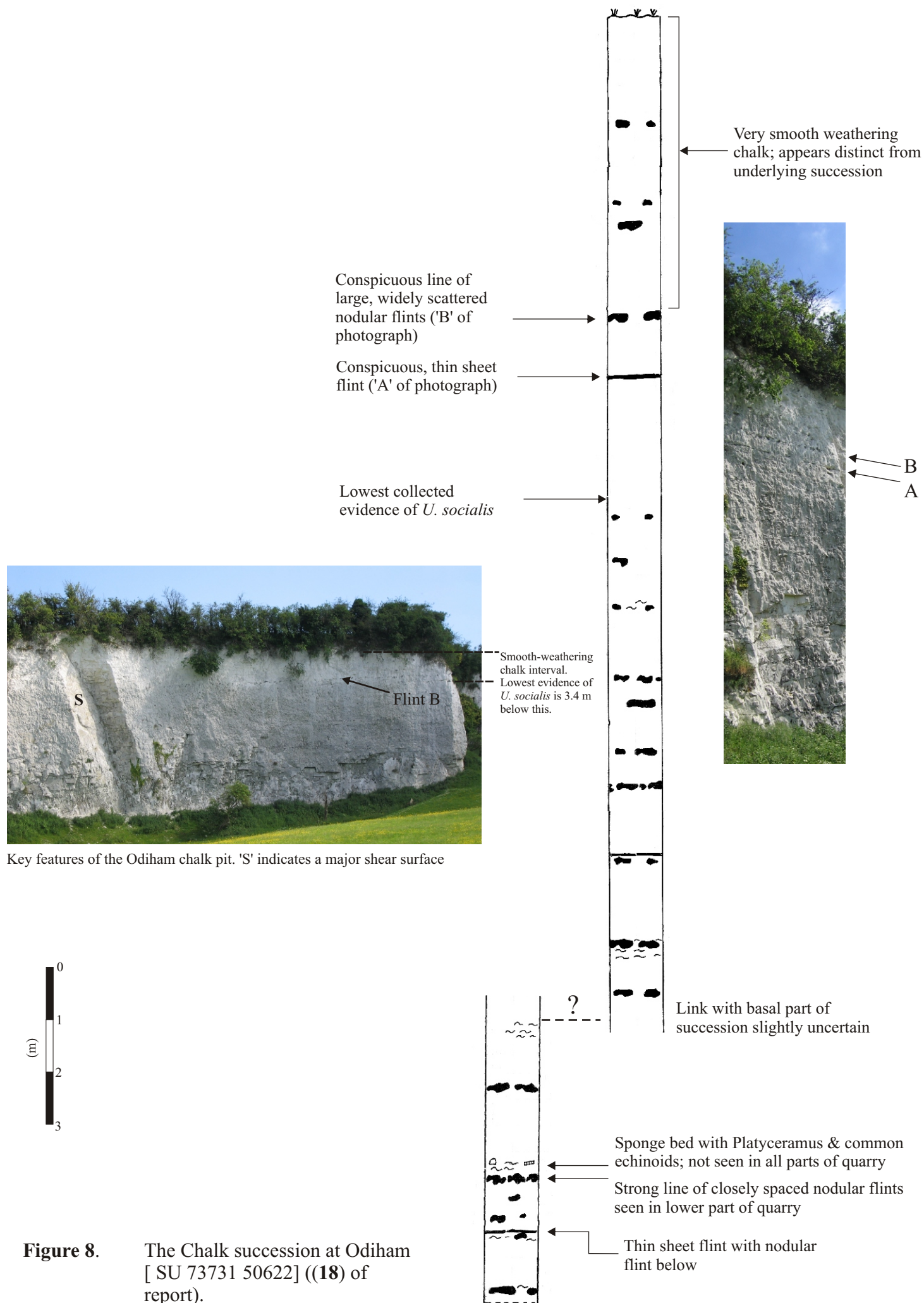


Figure 7. The Chalk succession near Home Farm, Basingstoke [SU 65528 50489] ((16) of report).



NE

SW

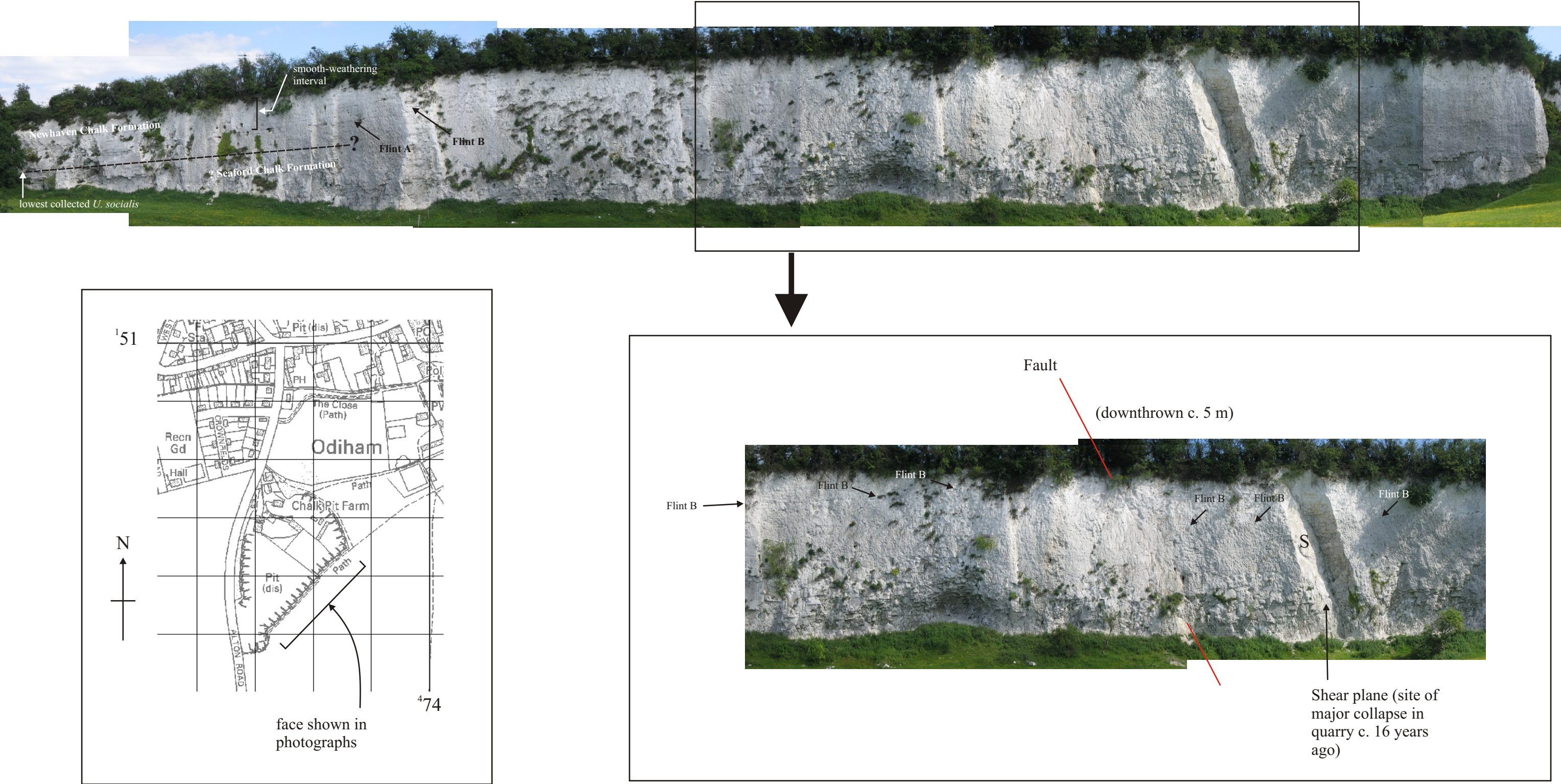


Figure 9. Key features of the Chalk succession at Odiham [SU 73731 50622] ((18) of report). See Fig. 8 for indication of scale.