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LAND MOLLUSCA FROM THE MULTIPERIOD SITE AT EASTON LANE

and

A CURSORY REVIEW OF THE PREHISTORIC ENVIRONMENT OF A DOWNLAND BLOCK IN CENTRAL HAMPSHIRE

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PART I

LAND MOLLUSCA OF MIDDLE BRONZE AGE TO EARLY IRON AGE CONTEXTS FROM THE MULTIPERIOD SITE AT EASTON LANE, HAMPSHIRE

(A.M.L. sample no. 840111)

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LAND MOLLUSCA FROM EASTON LANE

By M.J. Allen, B.Sc.

INTRODUCTION

The large multiperiod site of Easton Lane (SU 496 304), adjacent to Winnal Down, is situated on the Middle Chalk downland block to the east of Winchester and is flanked to the north by the River Itchen. The site was threatened by road works (an interchange of the Winchester by-pass) and thus was investigated during 1982 by P. Fasham and D. Whinney for the Wessex Archaeological Trust.

The site (fig. 1) consisted of a number of linear ditches which were sampled at several points. Molluscan samples of specific contexts were taken by the excavators from cleaned sections of the ditch fills, and care was taken not to cross horizon boundaries. Here two complete columns (F 1810B, samples 520 - 524 and F 176A, samples 68 - 73) and the lower primary ditch fills of two other sections (F 990A, samples 509 & 510, F 971A sample 517) are examined.

METHODOLOGY

The methods of mollusc analysis employed basically those outlined by Evans (1972; 40-45): 1000g of soil being soaked and dissagregated in water and hydrogen peroxide (H_2O_2) and then washed through a nest of sieves of 5.6mm, 2mm, 1mm and 0.5mm mesh aperture. The molluscs were extracted under a x10 binocular microscope and apices identified and counted under x10 to x30 magnifications. The residues were then weighed and the fraction calculated as a percentage of the initial sample weight (see table 1 and fig. 4).

The nomenclature for the molluscsa follows Waldén (1976). The sediment descriptions were provided by the excavator and augmented by the authors quantitative descriptions which follow Hodgson (1976). The tripartite classification of ditch sediment (primary, secondary and tertiary) is that outlined by Evans (1972; 321-328) and Limbrey (1975; 290-300).

The results of the mollusc analysis are shown in table 1 and as histograms of relative abundance (fig. 3) in which each species is plotted as a percentage of the total individuals, excluding the burrowing, and thus palaeoecologically insignificant, species

Cecilioides acicula, which is recorded as a percentage over and above the rest of the assemblage. The sieved fractions mentioned above are grouped into particles larger than 5.6mm, those between 5.6mm and 0.5mm and finally particles smaller than 0.5mm and then plotted graphically in figure 4. This, when compared with mollusc numbers per kilogram, enables a crude index of the extent of weathering and the speed of sedimentation and thus some evaluation of the suitability of conditions to mollusc life at the time.

DITCH SECTIONS F1810B and F176A

The columns examined here are not only separated spacially (fig 1.); at opposite ends of ditches cut on the same alignment, but also may be subtley temporally separated too. The southern section (F1810B) is attributed to the Middle Bronze Age whilst the northern section (F176A) may be early Iron Age. They are however considered together.

Section F1810B

0-41 cm (context 1822)	Mid brown silty loam with common medium and small rounded and subrounded chalk pieces. Samples 524 & 523.
41-56 cm (context 1823)	Highly calcareous silty loam with abundant medium sub-rounded and sub-angular chalk pieces. Samples 522.
56-66 cm (context 1824)	Large and medium chalk lumps within a fine silty loam calcareous matrix. Sample 521.
66-69 cm (context 1825)	Mid brown silty clay loam with common small chalk pieces. Sample 520.

The burrownig species, *Cecilioides acicula*, is present in relatively large numbers throughout the profile with the exception of the basal silty clay loam deposit of the primary silt. Mollusc numbers are very low so inferrences must necessarily be cautious. The assemblage shows little ecological variation up profile and represents a typical open-country assemblage dominated throughout by *Helicella itala*, *Vallonia excentrica* and *Pupilla muscorum*. The ditch certainly shows no evidence of ever containing water, nor has it produced any evidence of Evans' (1972; 331) 'Punctum group', (Punctum pygmaeum, Euconulus fulvus, Nesovitrea hammonis and Vitrina pellucida) which he suggests are typical in early stages of ditch colonization by plants. The lower portion of the primary fill contains some shade-loving species; Aegopinella nitidula, Discus rotundatus and Cochlodina laminata, perhaps representing a remnant relic fauna, as all these apices show a deal of wear. The mixed secondary fill overlying the primary fill displays very low mollusc numbers possibly due the rapid incorporation of this horizon into the ditch from the east (inferred from section -fig. 2) which may be directly anthropogenic. Such a horizon would not be conducive to mollusc life. The occurance of Candidula intersecta in the tertiary fill suggests the onset of Kerneys (1977) mollusc zone 'f' i.e. medieval. None of the more rubbly fills display evidence of a troglophile mollusc fauna, characterised by Oxychilus, Vitrea and Discus and typical of rock-rubble habitats (Evans and Jones 1973).

Section F176A

0-29 cm (context 352)	Mid brown silty loam with common medium and small rounded chalk pieces and rare medium flints, some of which are burnt. Samples 73 & 72.
29-45 cm (context 411)	Mid brown calcareous silty loam with common medium rounded chalk pieces and rare medium flints. Sample 71.
45-67 cm (context 427)	Medium sub-angular chalk lumps in a calcareous silty loam matrix. Samples 70 & 69.
67-73 cm (context 808)	Mid brown calcareous silty clay loam with common small and very small chalk fragments. Sample 68.

This early Iron Age profile contained slightly higher mollusc numbers and displays a typical tripartite ditch fill which is graphically summerised in the particle size histograms (fig. 4). The mollusc numbers fluctuate in accordance to the presence of coarse (>5.6mm) particular material, thus reflecting fluctuations in the speed of sedimentation and conditions favourable for mollusc existence. The low mollusc numbers in the primary fill, however, are partially an artifact of the lack of soil less than 0.5mm within the sample. To compensate for this mollusc numbers per kilogram are calculated for both the total sediment <u>and</u> the portion of sediment less than 0.5mm. The latter portion is represented on the right of the stippled histograms (fig. 4).

The mollusc assemblage is similar to F1801B being a dry open-country one dominated by <u>Vallonia excentrica</u>, <u>Pupilla muscorum</u>, <u>Helicella itala</u> and <u>Trichia hispida</u>. Again there is very little ecological variation up profile and virtually no shade-loving species are present

DISCUSSION

The two land snail assemblages described here are characteristic of very dry open calcareous habitats. <u>Pupilla muscorum</u> is commonly recorded in short grass turfland, prefering patches bare of vegetation. <u>Vallonia</u> are also open country species and often occur in short grassland. However it does appear that <u>Vallonia excentrica</u>, the strongest xerophile of the genus, is common on arable land (Thomas 1977), whereas such a habitat is shunned by <u>Vallonia costata</u> (Evans 1972). This was strongly reflected in plough-wash colluvium examined by Thomas (1977) and Bell (1983). <u>Trichia hispida</u> is not a good environmental indicator as it occurs in a wide variety of habitats, however is commonly recorded in plough-wash and associated sediments, e.g. the lynchets of Fyfield Down, Overton Down (Fowler and Evans 1967) and Bishopstone (Thomas 1977), the colluvial deposits at Kiln Combe, Itford Bottom and Chalton (Bell 1983) and the Bourne Valley (Allen 1983) and also in field-boundary ditches at Cuckoo Bottom (Allen and Fennemore 1984) and Wharram Percy (Allen 1984). At both Badbury and Fyfield (Evans 1972) <u>Trichia hispida</u> showed greater abundance during grassland and arable phases although at Durrington Walls (Evans and Jones 1979) it was more abundant during an apparent woodland phase. <u>Trichia hispida</u>, though, when recorded with <u>Vallonia</u> in large numbers has been taken as an indicator of plough-wash (Bell 1981 and Evans 1972).

<u>Helicella itala</u>, a xerophile, is probably our most characteristic open country species (Evans 1972). It thrives in grass cropped short by grazing animals (including rabbits), but if this activity terminates and the grass is allowed to grow taller, the <u>Helicella itala</u> population is likely to be greatly reduced or even locally exterminated due to the

increased humidity this micro-habitat offers (Cameron and Morgan-Huws 1975). H. itala has also been suggested as indicative of ancient arable habitats, whose parallels no longer exist due to the different methods of tillage practised.

The low mollusc numbers and restricted taxonomic range suggest conditions were not altogether favourable and the assemblage is a fairly specialised one, and could suggest that limited grassland episodes were interupted by arable activity. The horizons discussed may have been mixed by tillage or constantly accumulating as there is no hint of stabalisation zones from either sediment or molluscan evidence.

It is obvious therefore, that these land snail assemblages represent continuous stable dry open downland in either a pastural or arable regime, or more probably a rotating combination of both, throughout at least the middle Bronze Age to early Iron Age.

Section F990A and F971A

Only the lower portions of these sections which were examined for land snails are discribed below.

F990A

70-90 cm (context 2120)	Loosely packed small and medium rounded, sub-rounded and sub-angular chalk pieces in a calcareous loam matrix. Samples510 & 509.

F971A

30-40 cm (context 2121)	Large to medium sub-rounded chalk fragments in a light brown chalky loam. Sample 517.

Only the primary fills of these two features have been examined. Two samples from the coarse primary fill of the late Bronze Age ditch were examined and one sample from the minor ditch F971A.

These land snail assemblages (table 1 and fig. 5) also contain few mollusc individuals and are characterised by open-country and xerophilous species; Helicella itala, Pupilla muscorum and Vallonia. These are again typical of short grazed grassland or arable conditions.

CONCLUSIONS

All of the ditches have provided mollusc assemblages with resrticted taxonomic ranges and which can be compared with similar features at Cuckoo Bottom, Lewes (Allen and Fennemore 1984) and Wharram Percy (Allen 1984) which have been interpretated as field boundaries ditches on the basis of the molluscan assemblages.

The series of ditch fills covering a span from middle Bronze Age early Iron Age all show continuous stable open conditions typical of pastural or arable environments. The primary and secondary fills examined would probably have silted up within the first 20 years (Crabtree 1971) and thus the environmental data is contemporary with the features construction. Moreover the consistently open environs also prevail throughout the medieval tertiary fills.

Unfortunately no earlier contexts have been examined to enable the author to provide evidence for the onset of large scale clearance and operation of the field boundary ditches.

It is evident however that large-scale clearance occurred well before the middle Bronze Age due to the lack of quantities of relic shade-loving species in the primary fills. This suggests that the ditches were cut into a pre-existing long standing open environment.

This data compares well with the molluscan evidence produced by Mason (1982) from the ring ditches at Winnal Down (SU 498 303) and Easton Down itself (SU 495 313). The Bronze Age assemblages she examined are primarily open-country short turfed grassland ones, with the exception of shade-loving assemblages which belong to the late Neolithic (a context not examined in this report). The late Neolithic assemblages are suggestive of ditch micro-habitats and also an open woodland environment. The molluscan data compliments Watons (1982) pollen data from Winnal Moors (SU 486 799) which shows a large scale clearance at 3680 $\pm$ 90 bc after which there is marked increase in herbaceous (especially Plantago spp.) and cereal pollen, which itself correlates with the statements above.

In conclusion it can be seen that the Downs at Easton Lane have been continually heavily agriculturally exploited from at least middle Bronze Age, with clearance probably occuring in the Neolithic (inferred from Mason and Waton). Further details of the landscape development are given in a more regional summary (Allen 1985 -attached-)

ACKNOWLEDGEMENTS

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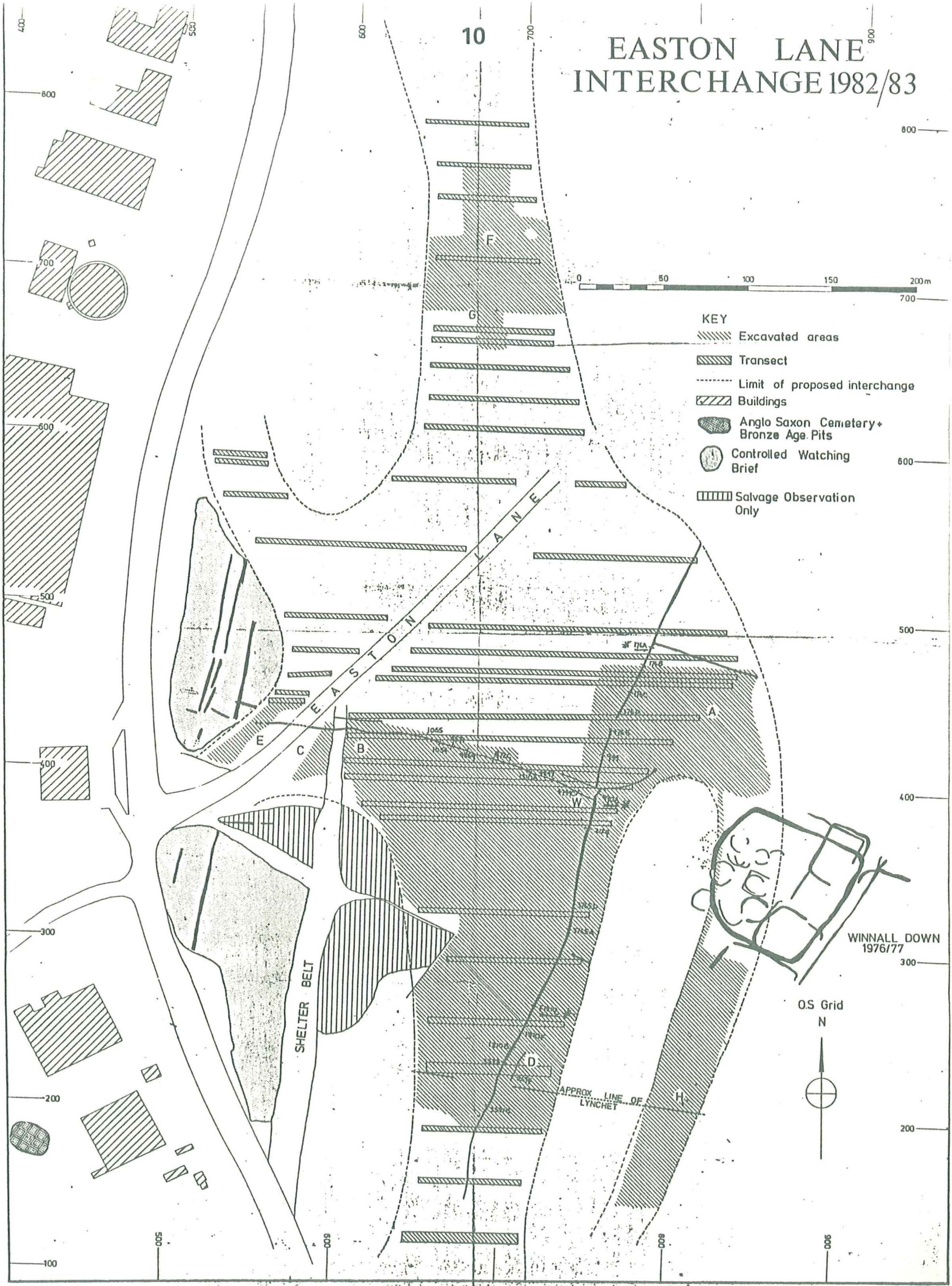

Figure 1. Site plan showing location of ditch sections.

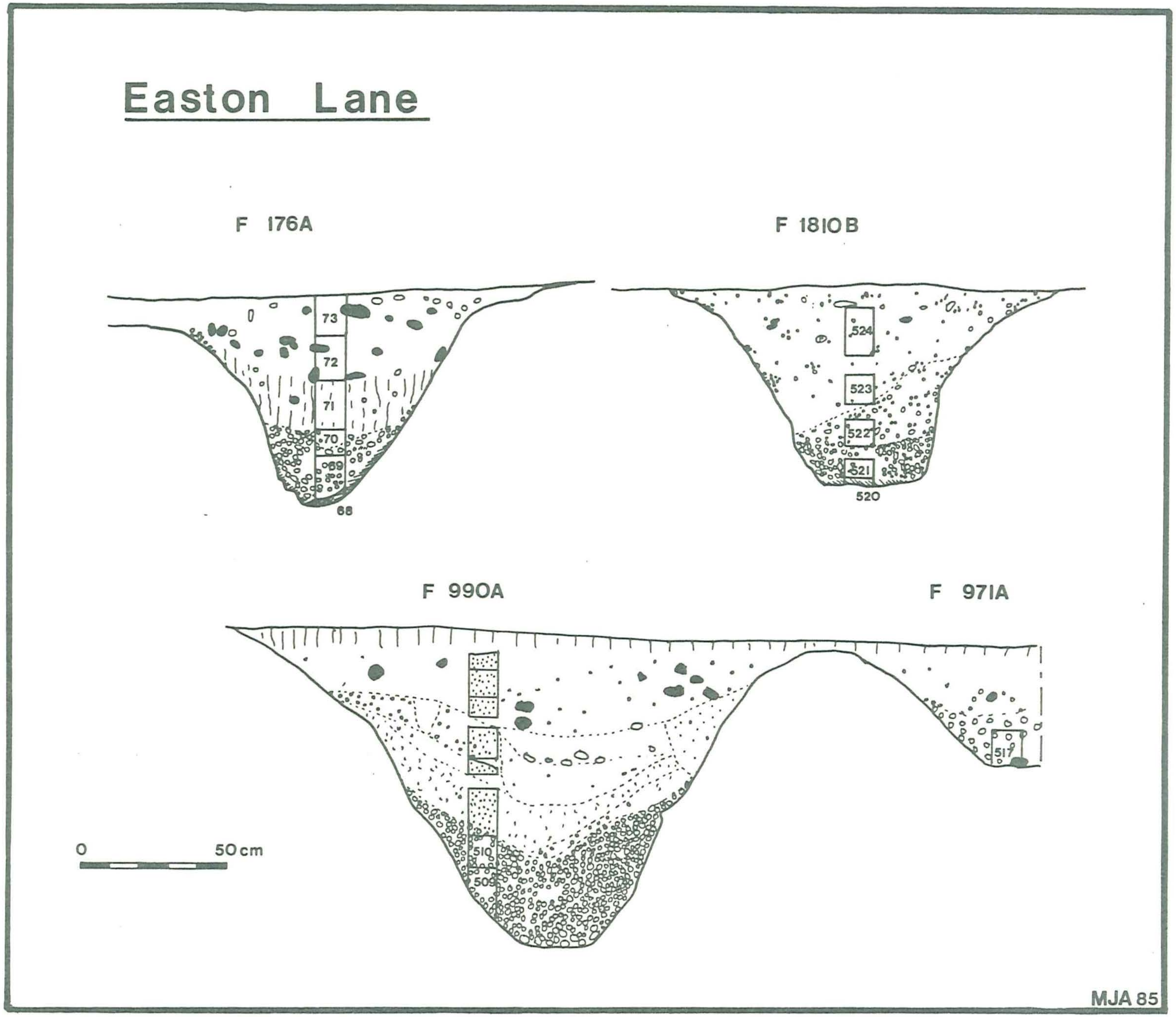

Figure 2. Ditch sections showing location of mollusc samples

Easton Lane

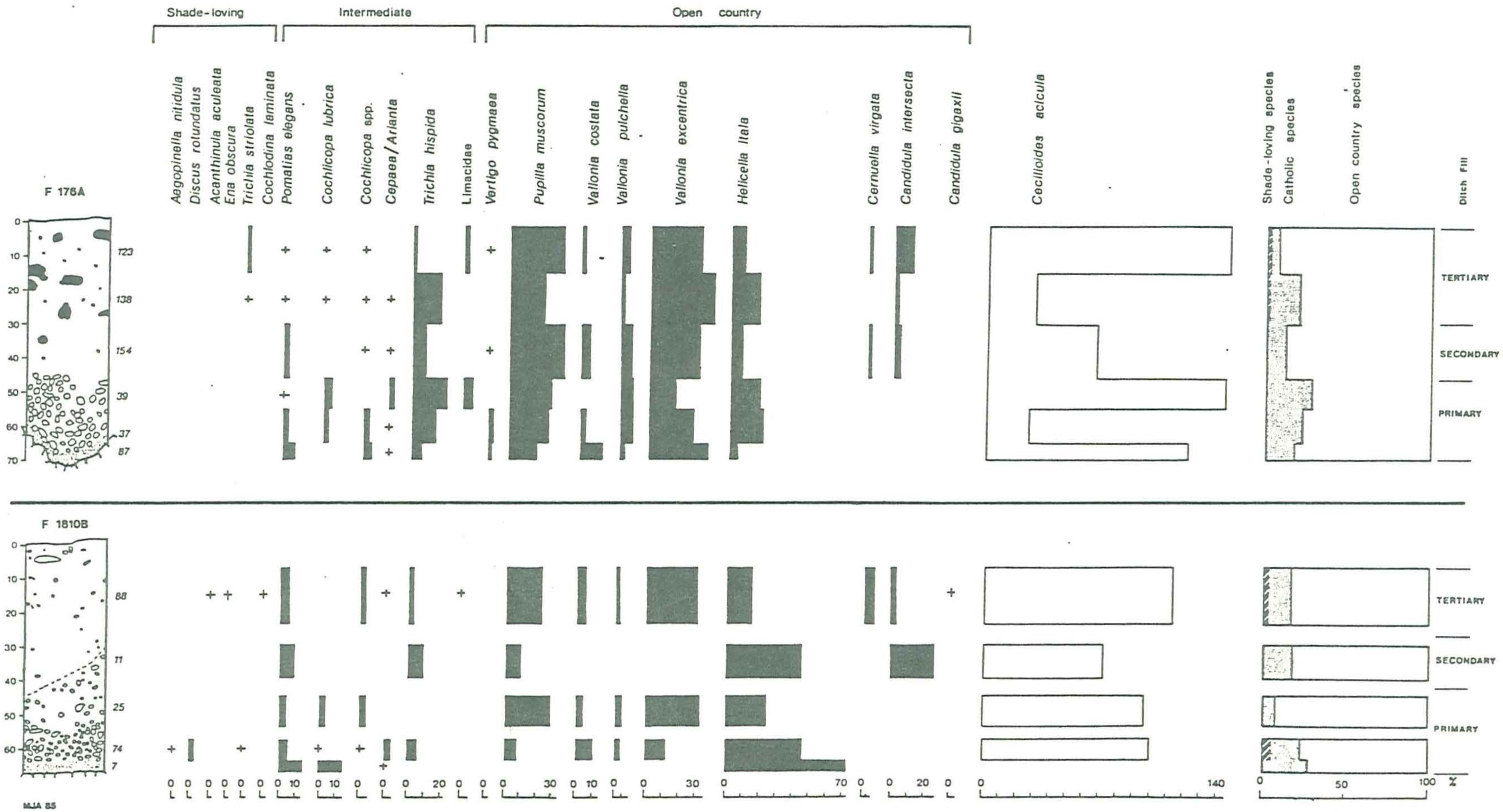

Figure 3. Histograms of relative mollusc abundance

Easton Lane

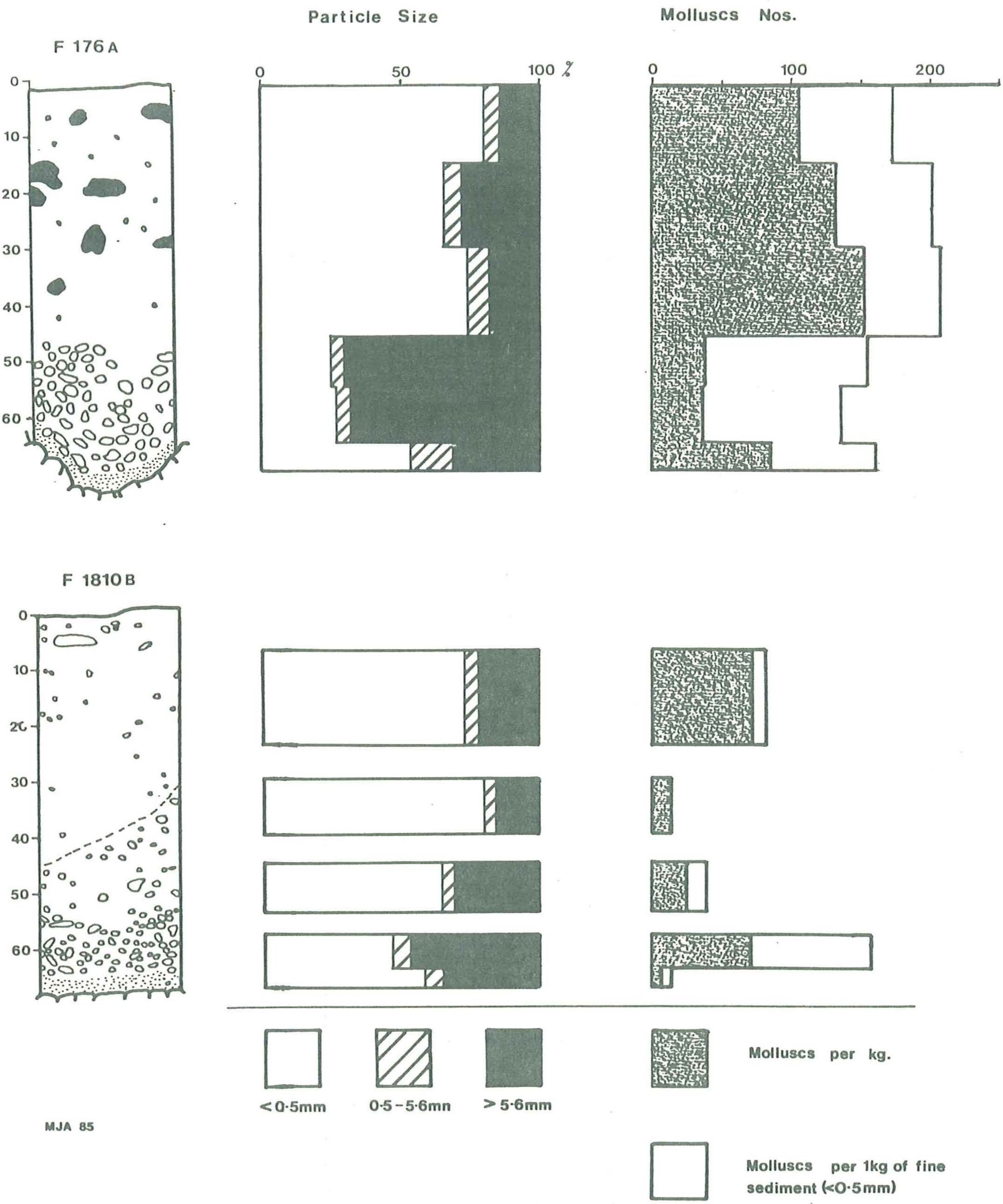

Figure 4. Particle size and mollusc abundance histograms

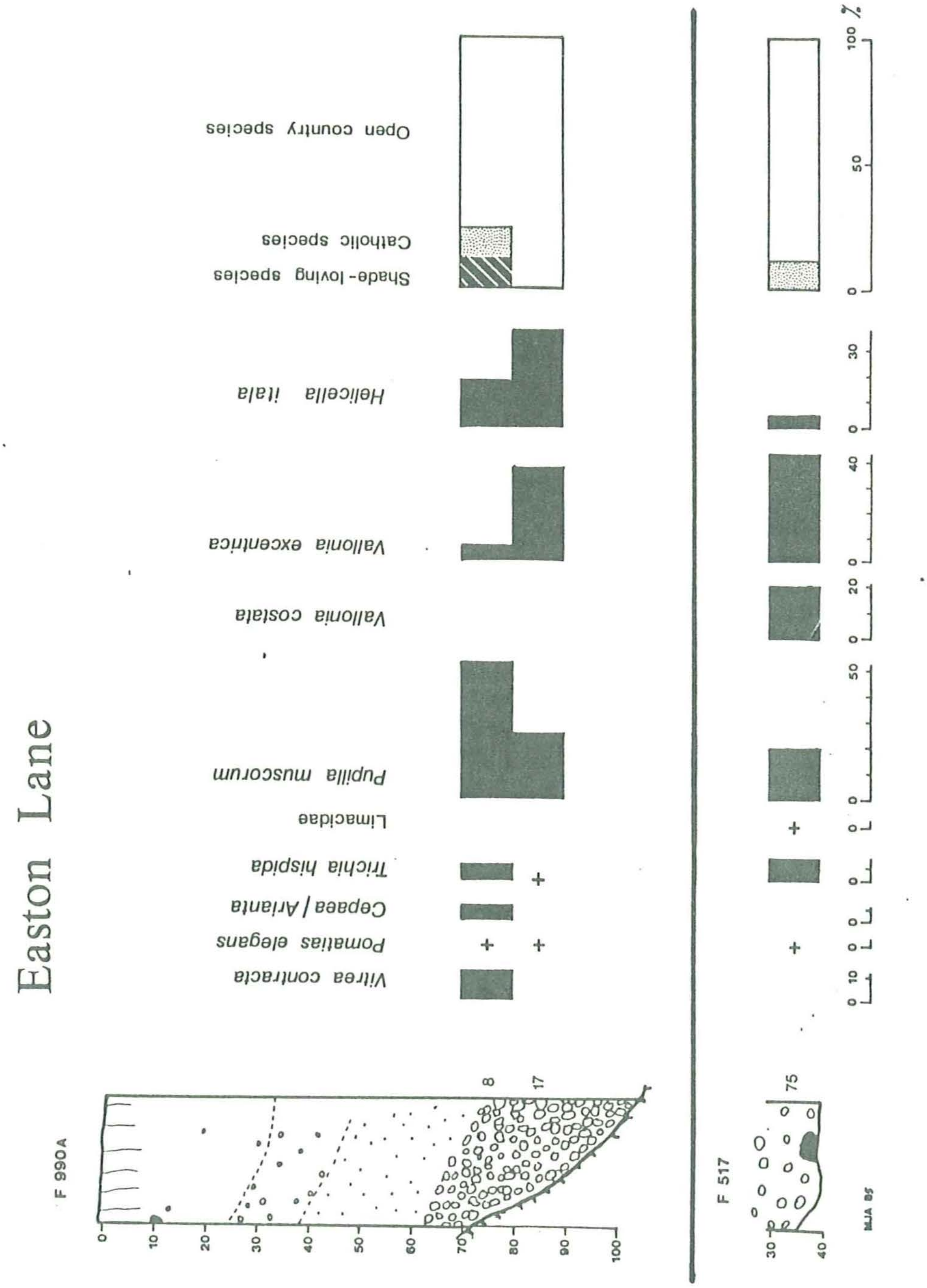

Figure 5. Histogram of relative mollusc abundance

Easton Lane

Feature	176 A						1808 B					990 A		971
Context	352		411	427		808	1822		1823	1824	1825	2116		2121
Sample wt in gms	1150	1035	1000	1000	1000	1000	1200	1000	1000	1000	1000	1000	1000	1000
Species / Sample	73	72	71	70	69	68	526	523	522	521	520	509	510	517
Pomatias elegans (Müller)	+	+	4	+	1	6	4	1	1	4	1	+	+	1
Cochlicopa lubrica (Müller)	1	2		2	1				1	1	1			
Cochlicopa spp.	1	1	1		1	4	3			1				
Vertigo pygmaea (Draparnaud)	1		1		1	2								
Pupilla muscorum (Linneaus)	41	29	52	10	9	15	19	1	7	5		9	2	15
Vallonia costata (Müller)	3		7		1	11	4		1	7				15
Vallonia pulchella (Müller)	6	3	11	3	3	3	2		1	2				
Vallonia excentrica Sterki	37	52	45	6	13	23	26		8	9		1	3	32
Acanthinula aculeata (Müller)							1							
Ena obscura (Müller)							1							
Discus rotundatus (Miller)										2				
Vitrea contracta (Westerlund)												2		
Aegopinella nitudula (Draparnaud)										1				
LIMICIDAE	2			2			1							1
Cecilioides acicula (Müller)	178	40	101	56	45	22	99	8	24	81		61	25	85
Cochlodina laminata (Monotagu)							1							
Candidula intersecta (Poiret)	13	3	6				3	3						
Candidula gigaxii (L. Pfeiffer)							1							
Cernuella virgata (Da Costa)	3		3				5							
Helicella itala (Linneaus)	10	23	11	7	2	17	13	5	6	34	5	3	3	4
Trichia striolata (C. Pfeiffer)	2	1								1				
Trichia hispida (Linneaus)	3	23	12	8	5	5	3	1		4		1	+	7
Cepaea / Arianta spp		1	1	1	+	1	1			3		1		
Ostrea edulis	+	+					+							
TOTAL	123	138	154	39	37	87	88	11	25	74	7	17	8	75

Table 1. Mollusc data

	Sample No.	>5.6mm	>2mm	>0.5mm	<0.5mm	Total	Molls per Kg.
F 176A	73	100	60	70	920	1150	107
	72	220	70	65	680	1035	133
	71	90	90	80	740	1000	154
	70	590	115	45	250	1000	39
	69	585	90	55	270	1000	37
	68	280	125	60	535	1000	87
F 1810B	524	225	40	65	870	1200	73
	523	110	50	45	795	1000	11
	522	210	100	45	645	1000	25
	521	355	115	65	465	1000	74
	520	200	150	70	580	1000	7

Table 2. Residue weights recorded in grams.

PART II

A CURSORY REVIEW OF THE PREHISTORIC ENVIRONMENT OF A DOWNLAND BLOCK IN CENTRAL HAMPSHIRE

Michael J. Allen

June 1985

PREHISTORIC ENVIRONMENT OF CENTRAL HAMPSHIRE

By M.J. Allen, B.Sc.

INTRODUCTION

There is now a wealth of environmental data for a block of chalk Downland to the east and north-east of Winchester, encompassing East Stratton (SU 542 400) to the north and Winnal Down (SU 505 300) to the south. Moreover much of the molluscan, palynological and some pedological evidence is directly associated with well documented and dated archaeological sites. This situation will allow a landscape, rather than a site specific, environmental reconstruction. Furthermore, due to recent large scale and comprehensive archaeological investigations (Fasham 1979, 1980, 1981 and 1982) such a reconstruction can be placed into a strict chronological and archaeological framework. What follows is a cursory attempt of that.

The text here considers a small block of Downland of c. 65 km^2 Fig. 6) in which are situated the archaeological sites at Easton Lane, Easton Down, Winnal Down, Abbotts Worthy, Itchen Abbas Road, Burntwood Farm, Bridgets Farm, East Stratton, Graces Wood and sites in Micheldever Wood from which much of the environmental evidence is extracted. Palynological work undertaken on Winnal Moors (Waton 1982) and pedological work on the Hampshire chalklands centred around Micheldever are also considered (Moffat and Cope 1984).

The archaeological sites listed here have all been investigated within the last twelve years by the M3 Archaeological Rescue Committee and show an increasing awareness of archaeologists to undertake palaeoenvironmental work, and it is from these sites that the raw data has been obtained. Only after reviewing this evidence can we consider any of the archaeological monuments investigated prior to the MARC 3 project.

GEOLOGY AND TOPOGRAPHY

Upper and Middle Chalk forms the bedrock of most of this area which is dissected by a network of deeply incised, relatively unbranching dry valleys. The area is dominated by plateaux which rise to c 200 m O.D. and through the centre of which is the broad alluvial valley of the River Itchen, which here runs east-west just to the north of Winchester. The river valley forms a gap in the Downs in which Winchester, a medieval market town, is situated.

The chalk of the northern area is overlain by extensive superficial Plateau Drift deposits especially around the Candovers and Micheldevers Forest (Moffat and Cope 1984), whilst the chalk areas to the south of the River Itchen contain small isolated patches of Clay-with-Flints.

The River Itchen, which runs north through Winchester, flows in a relatively wide flood plain and has at present a typical chalk stream ecosystem. The floodplain is comprised of Quaternary laminates of gravel, loamy alluvium and peat (Tubbs 1978, Waton 1982).

The soils on the chalkland are essentially thin dry rendzinas, but become more complex on the Plateau Drifts and dry valleys (see Moffat and Cope 1984).

MESOLITHIC

There is a paucity of both archaeological sites and environmental data for the Mesolithic period in Central Hampshire, however Waton's palynological evidence from Winnal Moors (SU 486 299) does extend into the later Mesolithic (1982, 77-82). The pollen shows that during the Boreal and early Atlantic periods this area did not differ greatly from non-calcareous regions elsewhere in Britain. That is to say a mixed deciduous woodlands with high proportions of *Ulmus*, *Quercus* and *Tilia* flourished.

NEOLITHIC

The Neolithic period displays evidence of clearance, the most significant coming from Waton's palynological evidence from Winnal Moor and unlike the Mesolithic there is some archaeological data.

The pollen from Winnal Moor provides evidence of large scale dramatic clearance during the early Neolithic at 3680 $\pm$ 90 bc. This clearance was complimented by a corresponding decrease in *Corylus* and an increase in herbs (Waton 1982, fig. 2). It is from this period onwards that cultivars are detected in the pollen record. Open country environments are maintained thoughout the Neolihtic and the area remains open during the rest of the prehistoric and Roman periods to the present day. The clearance phase at Winnal Moors is certainly early but not incompatible with the construction of and therefore date of 3415 ± 180 bc at Lambourn, Berkshire (Smith 1974, 124). Waton (1982, 77) does however record the possibility that the dates from both Winnal Moors and Lambourn may suffer from hard-water error (Shotton 1972).

Only one archaeological site, non barrow nor house, is reliably dated to the early Neolthic in Hampshire (Fasham 1982); that is the the ring-ditch on Winnal Down, R17 (SU 498 303). The radiocarbon dates of 2850 ± 80 bc, 2730 ± 90 bc and 2700 ± 110 bc date the construction of the monument within Smith's (1974) Earlier Neolithic. Unfortunately Mason (1982) states that there were inadequate numbers of snails for interpretation of the Neolithic environment. However she does show open, possibly cultivated, environments after monument abandonment and before the Iron Age occupation of the site.

At Easton Down Bronze Age ring-ditch, R7 (SU 495 313), several Late Neolithic features were discovered (Fasham 1982) from which the molluscs were analysed (Mason 1982). The features conatined Mortlake ware and the primary fill of the Bronze Age ditch contained a residual sherd of Late Neolithic Peterborough ware. A radiocarbon determination from the primary fill of the ring-ditch provides a Late Neolithic/Early Bronze Age date of 1020 ± 120 bc. A burial (F24) produced a date of 1180 ± 70 bc, however niether the primary fill nor the burial produced suitable molluscan assemblages. One other small feature (F33) contained Late Neolithic Mortlake ware and produced a typically open dry grassland mollusc assemblage dominated by <u>Vallonia excentrica</u> and <u>Helicella itala</u>. Another feature (F13) was ascribed to the Late Neolithic by the excavator (Fasham 1982) and produced a similar molluscan assembalge suggesting a grassland habitat with some ground bare of vegetation (Mason 1982). An adjacent feature (F12) was thought to be contemporaneous however produced an assemblage suggesting damp and more shadey conditions. This assemblage was akin to those exhibited by the primary fills of the Middle Bronze Age ditch.

The sites so far considered show open dry grassland which was possibly grazed and are all situated on the block of downland immediately to the east of Winchester. During the Early Neolithic there is evidence of cereals from the palynological core. However from <u>c</u>. 2575 bc cereal pollen ceases to be recorded and is totaly abscent from the Late Neolithic and does not reapper untill <u>c</u>. 2000 bc i.e. Early Bronze Age.

Molluscan assemblages recorded from the Late Neolithic/Early

Bronze Age contexts (Mason 1980) from the ritual site on Burntwood Farm, R6 (SU 511 411)(Fasham 1980) to the north of the River Itchen show more shadey conditions. A few features were tenatively ascribed as Late Neolithic on the basis of single sherds of Mortlake ware. Several other features were also ascribed to this period on the basis of the molluscan sequences. Mason argues that the features were dug shortly after local small scale forest clearance which is followed by regeneration producing very shadey and stable reforested conditions. This reforestation is followed by wide scale clearance and arable activity. It is possible that this late extensive clearance may be Bronze Age, as discussed below.

BRONZE AGE

As suggested above it is possible that the latter stages of the 'pre Iron Age' sequence at Burntwood Farm may belong to the Bronze Age period. This is suggested because of the tentative Late Neolithic/ Early Bronze Age date ascribed to the feature and the widespread open conditions seen throughout much of this area in the Bronze Age.

At Easton Lane (SU 496 304) the molluscan evidence show very open conditions (Allen 1985) indicative of pastural and arable activities throughout the Bronze Age and extending into the Iron Age. This is also reflected in the pollen sequence from Winnal Moors which Waton suggests is representative of local plant communities on the chalk Downland. His evidence records the reintroduction of cultivars at c. 2000 bc, i.e. begining of the Bronze Age. At Easton Down although open conditions are present in the Neolithic, some regeneration of either open woodland or very rank vegetation with tall grasses etc., is shown by the Late Neolithic/Early Bronze Age. This however is followed by clearance and short grassland, possibly grazed (Mason 1982). Meanwhile north of the River Itchen the ring-ditch at Graces Farm, R30 (SU 508 335) which Fasham (1982) tentatively suggests as belonging to the Middle Bronze Age, produced only a few mollusca, but Mason (1982) suggests that they are broadly representative of open short grassland. The ring-ditch at Micheldever Wood, R363 (Su 525 365) unfortunately did not produce any mollusca, probably due to the local Clay-with-Flint deposits. However the multi-tumped oval barrow on the south edge of Micheldever Wood, R3 (SU 526 365) (Fasham 1979) although covered with superficial non-calcareous deposits which are far from conducive to shell preservation and are not ideal for molluscan life, did produce ten samples which contained mollusca. Evans (19) tentatively suggests from evidence of shadey conditions and open country contexts some form of vegetation clearance...either directly or through the influence of grazing stock.

At Burntwood Farm Mason shows significant amounts of woodland in the Bronze Age with some clearance for minor localised activity rapidly becoming more shadey as vegetation recovers, reaching a local optimum of woodland (78% woodland species according to Evan's (1972) ecological groups) Woodland was totaly cleared in the Iron Age

IRON AGE

The Bronze Age shows large scale and quite extensive clearance and evidence for intensive agricultural activity. This can be seen to prevail in the Iron Age on most of the sites where evidence exists. This is certainly the case at Easton Lane, Easton Down and Winnal Down, however at Burntwood Farm Mason (1980) does show some localised shade rapidly giving way to open conditions in later periods.

Monk and Fasham (1980) show the arable component from two sites; at Winnal Down and the Micheldever Wood banjo enclosure, R27 (SU 527 370). Both produced Hordeum spp. (barleys) and Triticum spp. (wheats) and the difference between proportions of Hordeum/Tritcum from each site was suggested as a difference in economic basis, but also may be an artifact of the natural soil conditions (Monk and Fasham 1980, 341).

ROMAN PERIOD

The limited environmental evidence again shows open Downland conditions. A gulley on Itchen Abbas Road site produced molluscan evidence that it contained water, however the extrusive terrestrial land snail component displayed a similar species array to that produced from Easton Lane (Allen 1985) and Easton Down (Mason 1982) and thus suggests open grassland in the vicinity, although some Oxychilus and Aegopinella were also present perhaps indicative of the taller, more lush vegetation at the gulley edge (Meddens pers comm.) The feature discussed above was later engulfed by dark sediments, which further upslope adjoin a a colluvial sequence (Keeley 1985). Burntwood Farm also provides evidence of open conditions similar to those from Easton Lane.

Investigations by Fasham (1981) at East Stratton, R1 and R3 (SU 547 423) produced physical evidence of ploughing and some ditches associated with a Roman Road. The molluscan sequence (Mason 1981) again confirmed open country conditions, only being confused with some highly anthropogenic deposits containing high numbers of the synanthropic species Trichia striolata.

ANGLO-SAXON

In general open conditions seem to have continued during the Anglo-Saxon period. Mollusca from East Stratton (Mason 1981) and Abbots Worthy (Allen 1984a) provide some evidence for this.

In some areas e.g. Micheldever Wood a Itchen Wood, predominently to the north of the River Itchen, reforestation was either naturally or artificially generated, in presumably medieval or post medieval periods. The sites of Micheldever banjo, ring-ditch and oval barrow are all in the wood and on superficial Clay-with-Flint deposits.

DISCUSSION

Time has prevented a full intergration of the data given above with the strictly archaeological data; true chronological and spatial analysis of the latter are somewhat lacking from this discussion. Nevertheless the data presented is itself quite satisfactory and allows a regional pattern (discussed below) of landscape evolution to be postulated.

The pre Neolithic Atlantic and Boreal mixed deciduous forest seem to have been first extensively cleared in the early Neolithic, though the radiocarbon date for this episode (from the Winnal Moors pollen core) may be biased towards the earlier period due to hard-water error (Shotton 1972). Its credence, however, as a Neolithic date is not in doubt. Large scale clearance of much of this area of Central Hampshire seems to have been completed by the Early to Mid Bronze Age. This is in marked contrast with the Neolithic in south-east England. In Surrey, for instance, evidence of dense primary woodland was recovered in association with the primary ditch fills from the Bronze Age Wen Barrow (Allen 1984b), and also the Bronze Age date for erosional episodes on the heaths (Macphail *pers. comm.*) suggest perhaps only limited activity in Neolithic Surrey.

More convincingly, in Sussex, Thomas (1982) has postulated only very locallised clearance around Neolithic monuments, rapidly followed by regeneration. This localised clearance regime is also true of Kent wher mollusc sequences from Devils Kneadingtrough, Rifle Butts section, Brook (Kerney *et al.* 1964) show early clearance and subsequent regeneration. Such small scale clearance can only be seen at Burntwood Farm in Central Hampshire and to a lesser extent Easton Down where the regenerated vegetation is quite open. In south-east England the large scale primary clearance episode seen here in the Neolithic seems to occur in the Early to Mid Bronze Age (Thorley 1981, Allen 1984c and forthcoming). Whilst in Wiltshire the pattern of early wholesale clearance (Evans 1971, Smith 1984) has greater affinities to the early Neolithic regimes seen in Central Hampshire. There seems therefore to be some disparity between south-east England (Kent, Surrey and Sussex) and Wessex (Hampshire, Wiltshire and Dorset) in both archaeological and environmental data. This is discussed further by Allen (forthcoming and in prep.).

One must however be cautious with such wide interpretations as the resolution of the molluscan data (upon which much of it is based) is such that small scale regeneration, rapidly followed by clearance may not be detected, or even detectable (Thomas in press).

Although we have no evidence for Mesolithic activity Smith (1970) has suggested that areas of Neolithic woodland, such as those discussed above, might themselves represent regeneration from Mesolithic clearance; and it has been shown that such clearance is often underestimated (Radley and Mellars 1964). Indeed it has been suggested that the Boreal *Corylus* maxima (seen at Winnal Down) might be attributed directly, or indirectly, to anthrogeny (Scaife 1982).

By, or during the Bronze Age, Central Hampshire for the most part seems to have been open Downland with evidence of both pastural and arable activity, perhaps typified by the 'farming' settlement at Winnal Down (Whinney *pers. comm.*).

Tilled and grazed open downland conditions prevailed untill the Anglo-Saxon period and were essentially the downland conditions that we see at present. We can however see slight variations in the landuse history between the two Downland blocks separated by the River Itchen valley. Although the southern chalkland plateau (Easton Down, Winnal Down and Easton Lane) seem to have been almost continuously open since the Neolithic, evidence from the plateau to the north of the Itchen from Micheldever Wood and Burntwood Farm suggest more localised clearance and regeneration. This latter pattern may be in part due to the greater, and more extensive, deposits of non-calcareous drifts and Clay-with-Flints producing heavier soils and thus hindering arable activity. However by the Iron Age enhanced tillage techniques and with the arrival of metal tipped ards (e.g. Slonk Hill -Hartridge 1978-) the potential of coping with the more clay rich soils on a long term basis was greater.

Large scale tillage from the Bronze Age onwards caused large scale erosion of Downlands as can be seen by the dry valley colluvial sequences examined by Moffat and Cope (1984) which are probably at least Bronze Age in origin (Moffat pers comm.), and the local colluvia at Abbots Worthy (Whinney pers. comm) and Itchen Abbas Road (Keeley 1985) suggest continual degredation of the Downland soils. More detailed studies of such deposits by Thomas (1977), Bell (1982, 1983 and in press) and Allen (1983, 1984c, and 1984d) have shown them to be essentially anthropogenically induced erosion accentuated by tillage, (rather than climatic) and they have indicated the nature and extent of ploughwash erosion.

John Catt (1979) shows a loessic distribution within Central Hampshire and Moffat and Cope (1984) have detected its presence in valley fills and other soil profiles. Allen (forthcoming and in prep.) suggests greater soil depth on the South Downs and of a more acidic nature in prehistory perhaps due to this loessic input. Thus we can see extensive agricultural activity on the Downland of Central Hampshire facilitated by subtley different soil regimes, greater soil depth and aided by manuring. This proposition is in contrast to Evans (1975, 153) who suggests little soil degredation occurred due to the natural equilibrium which exists between soil genesis and erosion.

Romans and Robertson (1983) have shown that British Neolithic soils have low organic and biological activity (earthworms) and this is confirmed by magnetic susceptibility results (Allen and Macphail 1985 and forthcoming). However this low biological activity may be due to slighlty more acidic conditions afforded by the reworked loessic deposits as argued by Allen (forthcoming and in prep.).

Whilst discussing the vegetational history of the Downland I have somewhat overlooked the River Itchen and its valley which provides a separate ecological unit from which unfortunately both archaeological and environmental evidence is scarce. Watons (1982) pollen evidence does perhaps show open conditions within the valley. Most of the Itchen floodplain was floated watermeadow untill the 1930's and is of particular value today for its fenn, carr and herb-rich meadows. It is likely that such conditions existed in the medieval period by comparison with the Sussex valleys and medieval settlement (Ballard 1910, Holden and Hudson 1981 and Brandon 1971). Conditions in the Itchen valley prior to the medieval period are unknown, though this area would have provided a niche of ecological resources unavailable on the Downland areas and therefore would probably have been exploited from earliest times.

CONCLUSIONS

This review and discussion of the environmental literature from sites in Central Hampshire provides evidence of the landscape history.

There is little evidence for Mesolithic activity or modification of the vegetation, however in the Neolithic large scale primary clearance is seen. There is limited evidence for local regeneration but wholesale clearance is evident by the Early to Mid Bronze Age, whereupon the chalkland took up typical short grass downland characteristics which were a product of heavy grazing and arable activity. Such agricultural practices depleted soil depth and changed its nature by large scale erosion resulting in valley colluviation. Intensive agricultural practices are evident throughout the Iron Age, Roman and and Anglo-Saxon periods. The Downland probably existed with local copses and shrubs amid extensive agriculture and settlement. In the medieval period some woodland is seen to have regenerated possibly for hunting, parks and as pressure was removed from the Downscape by a combination soil degredation, improved agricultural technology and an increased transport and communication network.

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Mike Allen
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APPENDIX ONE

List of Archaeological sites and other relevant locations

Winnal Moors	SU 486 299	
Winnal Down	SU 498 303	R17
Easton Down	SU 595 313	R7
Easton Lane	SU 496 304	
Burntwood Farm	SU 511 411	R6
Graces Farm	SU 508 335	R30
East Stratton	SU 547 423	R1 & R3
Abbots Worthy	SU 501 325	
Itchen Abbas Rd.	SU 532 333	
<u>Micheldever Wood sites</u>		
banjo enclosure	SU 527 370	R27
Oval Barrow	SU 526 365	R3
ring-ditch	SU 525 365	R363

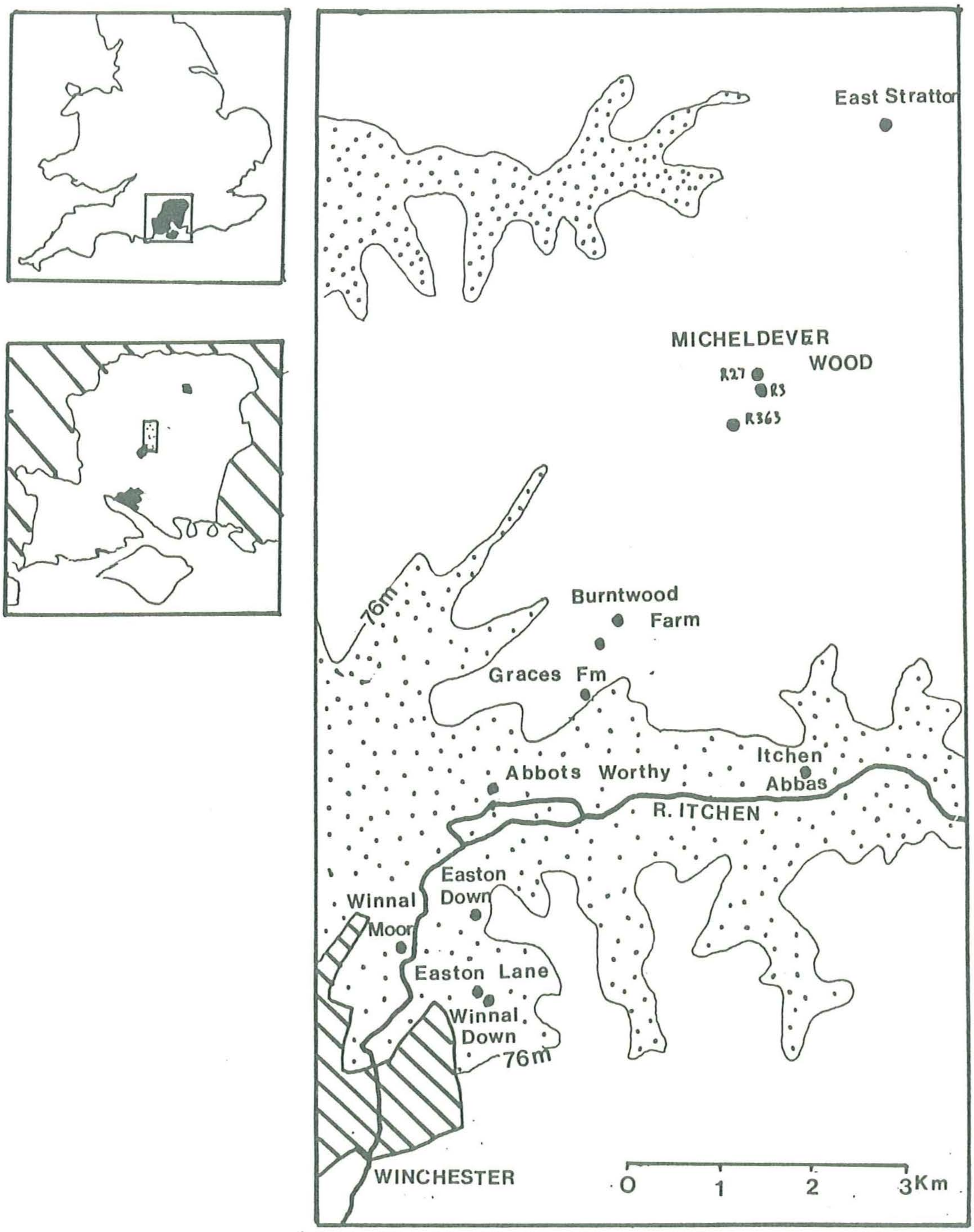

Fig. 6. Location of sites mentioned in text.