4022

Site: Fengate Farm
Parish: Weeting
County: Norfolk
Reference No: 5636 WWB
Type of site: Masonry building with associated well
Period: Roman
Geology: Complex small-scale variation; peats developing in hollows on terrace gravels and sands.
Director: A K Gregory
Type of material: Charred and uncharred macroscopic plant remains; mollusca.

Fengate Farm, Weeting (5636 WWB): Plant remains.

Location and general description

The site at Fengate Farm lies at the margin of the floodplain of the Little Ouse in an area of hummock-and-hollow micro-relief. It is situated outside the area mapped in detail by the Soil Survey, but in adjacent comparable areas well-drained gravel soils, groundwater gley soils, peaty gley soils and soils of the Adventurer's Series, developed on fen peat, have been described. These form a small-scale drainage catena between the hummocks and hollows (Corbett 1973). The chalky deposits at the site include imported material from the chalk/sand drift further upslope.

Methods

Several transects of auger holes were made in the vicinity to determine whether undisturbed peat deposits survived at the bases of the hollows. The peats were, however, found to be humified and disturbed by ploughing. Consequently the only surviving anaerobic sediments containing plant remains were in the lower levels of the well; and in the absence of refuse pits the well also produced the only carbonised plant remains from the site. A central column sample was taken, and botanical remains were subsequently extracted from 2 kg. sub-samples from each layer at regular intervals. Plant remains were recovered by flotation in the laboratory, collecting the flot in a 250 micron mesh sieve. The non-floating residue was washed through a 500 micron mesh for the recovery of mollusca, bone and the small proportion of plant remains which had failed to float.

The carbonised plant remains - mainly cereals - are listed in Table 1, and the non-carbonised material in Table 2.

Context No.		180	180	18
Depth (cm) from top of well filling		0-10	20-30	(25 40-
Unidentified cereal	caryopsis frags.	+	+	
	rachis frags.	-	-	
Triticum sp.	caryopses	6(g)	4	
	plumule & primary root frags.	-	-	
	lemma frags.	-	-	
	awn frags.	-	-	
Triticum sp.(free-threshing)	rachis nodes	-	-	
Triticum spelta/dicoccum	rachis internodes	1	4	
	glume bases (damaged/frags.)	4	5	1
	spikelet bases	-	-	
	apical spikelet forks	-	-	
	basal rachis internodes	-	-	
Triticum spelta	glume bases	9	9	2
	spikelet forks	-	1	
Triticum dicoccum	glume bases	-	1	
	spikelet forks	-	-	
Hordeum sp.	rachis internodes	-	-	
Silene alba	seeds	-	-	
Polygonum cf. aviculare	nutlets	-	-	
Polygonum convolvulus	nutlets	-	-	
Rumex sp.	nutlets	-	-	
Plantago lanceolata	seed	-	-	
Corylus avellana	nutshell frags.	-	-	
Bromus mollis/secalinus	caryopses	-	-	
Avena sp.	caryopses	-	-	
Gramineae indet.	caryopses	-	-	

Table 1: Carbonised plant remains from the well.

The cereal internodes are generally fragmentary.

180 (252) 40-50	180 (224) 60-70	180 (224) 80-92	251 92-103	275 110-116	278 116-123	278 146-153	280 153-166	No. of samples in which present
–	+	–	+	+	+	+	–	7
3	–	–	–	–	–	–	–	1
5	1	2	6	5	8	6	5	10
+	–	+	–	+	+	+	+	6
+	–	–	–	–	–	–	–	1
–	–	–	–	+	+	–	–	2
–	–	–	4	4	–	c.f.1	1	4
9	9	11	16	22	40	43	15	10
19	14	32	49	50	66	46	23	10
3	2	6	3	4	10	5	6	8
–	–	–	1	–	–	–	–	1
–	–	–	–	–	1	–	–	1
23	20	43	44	50	78	79	41	10
–	1	5	5	–	4	1	–	6
2	c.f.1	–	1+c.f.2	2	5+c.f.2	1+c.f.2	–	7
–	–	–	c.f.1	–	–	–	–	1
–	1	5	–	3	2	4	1	6
1	1	–	–	–	–	–	–	2
–	–	–	–	–	1	–	–	1
–	1	–	–	–	–	–	–	1
–	–	1	–	–	–	–	–	1
–	–	–	1	–	–	–	–	1
–	+	–	–	–	–	–	–	1
1	–	1	1	–	2	3	–	5
1	–	–	–	–	–	–	–	1
–	–	–	–	–	–	1	–	1

Context No.		180 (224)	251	275	278	278	280
Depth (cm) from top of well fill		80-92	92-103	110-116	116-123	146-153	153-16
Ranunculus sp.		-	-	-	-	1	-
Papaver rhoeas L.		1	11	-	-	-	-
Papaver argemone L.		-	48	2	6	3	8
Papaver sp.		-	24	-	-	-	-
Brassica sp.		-	-	-	-	1	1
Reseda c.f. luteola L.		-	-	-	-	2	7
Silene alba (Miller) Krause		2	11	6	7	13	4
Silene sp.		-	-	-	-	-	2
Stellaria media (L) Vill.		-	-	8	12	511	612
Arenaria serpyllifolia L.		-	9	-	-	-	-
Caryophyllaceae indet.		-	-	-	-	-	1
Chenopodium album L.		-	1	-	3	17	3
Atriplex sp.		-	4	2	1	14	29
Chenopodiaceae indet.	(a)	-	6	1	1	6	2
Malva sylvestris L.		-	-	1	-	1	-
Linum catharticum L.		-	-	-	-	1	-
Aphanes arvensis L.		-	-	-	-	-	2
Torilis/Anthriscus sp.		-	-	-	-	2	2
Conium maculatum L.		2	16	9	77	35	15
Aethusa cynapium L.		-	2	-	-	2	-
Heracleum sphondylium L.		-	-	-	-	-	1
Umbelliferae indet.		-	1	-	-	-	-
Polygonum aviculare agg.		-	1	-	-	2	-
Polygonum convolvulus L.		-	-	-	-	-	1
Rumex acetosella agg.		-	2	-	-	-	3
Rumex sp.		-	17	13	33	38	69
Rumex sp.(with perianths)	(b)	-	-	-	-	33	44
Polygonaceae indet.		-	7	-	-	1	-
Urtica urens L.		-	1	-	2	19	42
Urtica dioica L.		4	57	40	43	226	167
Quercus sp. (wood)	(c)	-	-	-	-	-	+
c.f. Anagallis arvensis L.		-	7	-	-	1	-
Hyoscyamus niger L.		-	2	1	4	3	-
Solanum c.f. dulcamara L.		-	-	-	-	1	-
Solanum nigrum L.		-	c.f.3	-	c.f.2	8	2
Solanum sp.		-	-	-	-	-	3
Euphrasia/Odontites sp.		-	2	-	-	-	1
Lycopus europaeus L.		-	-	-	1	-	-
Ballota nigra L.		2	5	9	9	11	10
Lamium c.f. amplexicaule L.		-	-	-	-	-	1

Solanum sp.	-	-	-	-	-	3
Euphrasia/Odontites sp.	-	2	-	-	-	1
Lycopus europaeus L.	-	-	-	1	-	-
Ballota nigra L.	2	5	9	9	11	10
Lamium c.f. amplexicaule L.	-	-	-	-	-	1
Galeopsis tetrahit/speciosa (d)	-	1	1	2	53	9
c.f. Ajuga reptans L.	-	-	-	-	-	1
Labiatae indet.	-	-	1	-	-	-
Sambucus nigra L.	3	2	1	5	6	2
Sambucus c.f. ebulus L.	-	-	-	-	1	2
Valerianella locusta (L) Betcke	-	-	-	-	1	-
Arctium c.f. lappa L.	-	17	5	8	10	-
Cirsium sp.	-	-	-	-	-	1
Cirsium/Carduus sp.	-	1	-	-	3	-
Onopordum acanthium L.	-	-	1	1	1	-
Sonchus oleraceus L.	-	-	-	-	1	3
Sonchus sp.	-	-	-	-	1	1
Compositae indet.	-	-	-	-	2	1
Juncus sp.	-	+	+	+	-	+
Lemna sp.	-	-	-	1	3	1
Typha sp.	-	1	-	-	-	-
Eleocharis sp.	-	1	-	-	2	1
Carex sp.	-	1	-	1	9	7
Gramineae indet.	-	-	-	1	-	1
Indet.	-	11	5	10	17	20
Total (excluding Juncus)	14	272	106	230	1062	1082

Table 2: Non-carbonised plant remains.

All taxa represented by fruits or seeds unless otherwise indicated.

Notes (a) Specimens lacking testas or with testas obscured
(b) Perianths damaged
(c) Axed or adzed chips
(d) On size criteria both species appear to be represented.

Sediments in the well

180	Dry greyish-brown (10YR 5/2) loamy sand; stony, gravel to small stones (chalk and flint). Becoming slightly paler (252) with depth.
180 (224)	Moist greyish-brown (10YR 5/2; 4/2) loamy sand; slightly stony, gravel to small stones (chalk and flint).
251	Moist very dark grey (10YR 3/1.5) humose loamy sand; slightly stony, gravel to small stones (chalk and flint).
275	Moist very dark grey (10YR 3.5/1) humose loamy sand; slightly stony, gravel to medium stones (chalk and flint).
278	Wet very dark grey (10YR 3.5/1) humose loamy sand; some pale sandy pockets; slightly stony, gravel to small stones (chalk and flint).
280	Waterlogged very dark greyish brown (10YR 3.5/2) humose sandy loam; very rare gravel (flint and chalk); large wood fragments. (Water level at 161cm. when excavated).

Carbonised plant remains, mollusca and amphibian bone present at all levels. Uncharred plant remains, Cladocera and Insects present from depth 80-92cm. at base of 180(224). The organic content of the lower sediments was not high, but conditions were suitable for the preservation of most botanical remains with the exception of the more delicate structures (eg. grass pericarps, of which only two poorly-preserved examples were recovered).

Discussion

The plant remains from this well are interpreted as representing agricultural rather than domestic activities. There are clear differences between the seed assemblages from this site and those from the Roman wells at Scole, the only comparable contemporary seed assemblages so far studied in Norfolk. (Jones 1977). The Scole assemblages are distinctively 'domestic' in character. At Scole, remains of a wide range of wild and cultivated fruits and nuts consumed by the occupants of the site were recovered; at Weeting there are only a few elder seeds in all probability derived from the surrounding vegetation by natural means. Moreover at Scole cereals were represented only by carbonised grains, thought to be waste from domestic hearths, whilst at Weeting cereal chaff predominates.

The composition of the cereal assemblages from Weeting indicates that crops were being processed - threshed, winnowed, cleaned and roasted - in the vicinity. The samples contain a large proportion of chaff from spelt (Triticum spelta) along with some remains of emmer (Triticum dicoccum) and small quantities of a non-brittle rachis free-threshing wheat. Due to poor preservation this cannot be determined to species but does not appear to have formed an important part of the crop. A few wheat grains are also present, mostly showing signs of having germinated before carbonisation. Barley is represented by fragmentary rachis internodes. Carbonised weed seeds are rare in these samples, and the species present provide no specific information about soil conditions in the fields.

Although deposits of this type are interpreted as waste material from crop processing the particular stage of processing represented is less easily determined. Such deposits could represent either of

two stages. The initial roasting process necessary with spelt and emmer to remove the glumes (the outer 'husks' of the ear) prior to threshing would have provided one opportunity for accidental overheating with consequent charring. This would have affected the glumes in particular and would explain the disproportionately high frequency of glume bases in the deposits. Alternatively the cereal remains may have been charred after threshing and winnowing when the waste by-products were being used for fuel or burnt as refuse. In this case the over-representation of glumes compared to rachis internodes could result from the greater fragility and higher incidence of fragmentation of the latter. Nevertheless, whatever the detailed interpretation of these cereal assemblages they do provide evidence for cereal processing at this site and for cereal production based on spelt in the immediate area.

The uncharred seeds of wild plants from the site are of restricted value for the reconstruction of the local environment beyond the immediate area around the well. Ruderal plants, (characteristic of waste ground) and segetals (crop weeds) predominate and are discussed below. Some of the wild species do, however, have particular habitat preferences or requirements. Four main habitats are represented:

(1) Dry, sandy soils. Species indicating soils of this type include Papaver argemone, Arenaria serpyllifolia, Aphanes arvensis, Rumex acetosella, Hyoscyamus niger, and Lamium amplexicaule. Such soil conditions occur today on the crests of hummocks of the local micro-relief.

(2) Calcareous soils. Reseda luteola and Linum catharticum are both calcicoles. The sand soils of the immediate area are naturally acid to neutral but quantities of chalk/sand drift were imported to the site and used, in part, for filling the well. This would have effectively raised the local pH.

(3) Peat soils. Arctium lappa is a common plant along the banks of Fenland drains (Petch and Swann 1968, 212) and Galeopsis speciosa is an arable weed nowadays particularly common on the black peat soils of South West Norfolk (ibid, 200). The specimens from the well may have come from plants growing in the peaty hollows adjacent to the site.

(4) Aquatic and river-bank habitats. It is possible that the seeds of Lemna come from plants growing in the well (the feature was shallow, and light levels may have been adequate) or in nearby fouled pools. The remaining wetland taxa - rushes, reedmace, spikerush, gipsywort and bugle - were more probably growing in the bases of the hollows or further out into the fen. Wetland plants are rare in these samples.

These four groups thus reflect the marked small-scale variations in soil type and drainage conditions found in the area today, though modified by recent artificial drainage: calcareous soils further upslope, dry sandy hummocks and damp peaty hollows.

The interpretation of the seeds of ruderals and segetals in terms of human activities in the area is not straightforward since many of these plants have wide habitat ranges on all types of disturbed soils. Some presumably were imported to the site with harvested crops, whilst others must be derived from the local flora. Species particularly common in nutrient-rich soils such as occur in farmyards and around dung-hills,

include Conium maculatum, Aethusa cynapium, Urtica urens, Urtica dioica, Hyscyamus niger, Solanum nigrum, Atriplex and Chenopodium album.

The percentages of seed assemblages made up by these eight species from both Weeting and Scole are given in Table 3. The interpretation of such percentages presents serious problems. For example, one plant may easily be over-represented simply by virtue of its proximity to accumulating sediments rather than its absolute abundance. However the higher percentages of these 'dunghill' species in the Weeting well are tentatively interpreted as indicating that animal dung was allowed to accumulate in the area, suggesting the presence of a stockyard. By contrast at Scole these species occur at lower frequencies, suggesting a 'cleaner' local environment. Definitive interpretations of such ruderal floras from archaeological sites will however only be possible when more precise information on the taphonomy of the assemblages and ecology of the plants is available.

	Weeting					Scole
	251	275	278	278	280	Wells
	92-103cm	110-116cm	116-123cm	146-153cm	153-166cm	1 and
Chenopodium album	0.4	-	1.3	1.6	0.3	7.8
Atriplex patula/hastata	1.5	1.9	0.4	1.3	2.7	0.1
Conium maculatum	5.9	8.5	33.5	3.3	1.4	-
Aethusa cynapium	0.7	-	-	0.2	-	-
Urtica urens	0.4	-	0.9	1.7	3.9	-
Urtica dioica	20.9	37.7	18.7	21.3	15.4	0.8
Hyoscyamus niger	0.7	0.9	1.7	0.3	-	-
Solanum nigrum	1.1	-	0.9	0.7	0.2	4.2
Total %	31.6	49.0	57.4	30.4	23.9	12.8
No. of seeds	272	106	230	1062	1082	2053

Table : Percentages of typical 'dung-hill' taxa as a proportion of total seed assemblages from Weeting and Scole.

In summary, the plant remains recovered indicate that arable farming at this site was probably based on spelt, with emmer, a free-threshing wheat and barley either as contaminants of the spelt, or possibly grown as crops in their own right. Cereal crops were being prepared for storage or consumption in the area around the well. The seeds of wild plants suggest that animal dung was allowed to accumulate around the well, and also reflect a diverse local environment including standing water, peaty areas, dry sandy soils and calcareous soils.

References

Corbett, W.M. (1973) 'Breckland Forest Soils' Soil Survey, Special Survey No. 7 Harpenden.

Jones, A. (1977) 'Plant Remains', in Rogerson, A. 'Excavations at Scole 1973'. East Anglian Archaeology Report No. 5, 218 Gressenhall.

Petch, C.P. and Swann, E.L. (1968) Flora of Norfolk Norwich.

Fengate Farm, Weeting (5636 WWB):

Land and freshwater mollusca.

Mollusca were present in all samples examined from the well, but only seven assemblages have been studied in detail. Shells were recovered from 2 kg. soil samples by washing the disaggregated samples through a 500 micron mesh sieve. Counts were normally made of apices, except where species were represented only by apertural fragments. Snails identified are listed in Table 1, and the results are summarised in Fig. 1. In the following discussion ecological information is taken from Evans (1972).

Discussion

These small snail assemblages are characterised consistently by very low species diversity, when compared with prehistoric assemblages from the fen-edge (eg. Murphy 1979). The environmental information provided by snails from the well relates principally to changes in the structure and density of local vegetation and to the degree of soil disturbance in the area.

An important species in these deposits is Vallonia costata. This indicates the existence of dry, open habitats in the vicinity, presumably on the sandy soils on the crests of hummocks. Vallonia spp. comprise 61.1% of the assemblage from the base of the well (280), declining to 33.7% in layer 251. In the same levels the Zonitidae rise from 11.1% to 29.3%. This is interpreted as indicating an initial fairly open environment around the well, subsequently becoming more overgrown with ruderal plants, though open areas persisted. Above layer 251 the Zonitidae decline progressively to 15.6% in the top 10 cm. of 180. Simultaneously there is a slight rise in the frequency of Vallonia spp. and Pupilla muscorum appears. This faunal change is thought to reflect a disturbance of the ground surface and destruction of vegetation associated with back-filling of the disused well. Pupilla is, however, a common sub-fossil species on the chalk/sand drift and it it possible therefore that the Pupilla shells may have been imported to the site with the chalky deposits. The group of catholic snails - Cepaea, Trichia and Cochlicopa - shows no marked changes in frequency overall.

Aquatic and marsh snails are rare. 280 produced a single shell of Planorbis leucostoma, a snail included in the 'freshwater slum' group of species, characteristic of small bodies of water subject to drying out, stagnation and wide temperature variations. It seems improbable that such conditions would have existed in the newly-dug well; a more typical habitat for this snail would have been in one of the peaty hollows adjacent to the site. A few very immature shells of a species of Lymnaea were recovered from the upper fill (180).

In summary, the mollusca reflect the diverse pattern of local habitats indicated also by the plant remains and by modern soil conditions. They also give information about the density of vegetation not supplied by the plant remains. Taking the two lines of evidence together, a change from a light cover of annual species, with Stellaria media apparently an important plant, to a denser growth of ruderal plants including large species such as Arctium lappa is indicated in the lower well filling. Subsequently this vegetation cover was disrupted and the soil surface disturbed, as the well was back-filled.

References

Evans, J.G. (1972) Land Snails in Archaeology London.

Murphy, P. (1979) West Row, Mildenhall, Suffolk (MNL124): A Bronze Age woodland clearance A.M. Lab. Report Series.

Context No.	180	180	180	251	275	278	280
Depth (cm)	0-10	40-50	80-90	92-103	110-116	130-137	153-166
Cochlicopa spp.	3	4	6	5	4	(1)	6
Pupilla muscorum (L)	6	1	1	-	-	-	-
Vallonia costata (Müller)	15	35	40	19	15	16	25
Vallonia excentrica Sterki	1	1	-	-	-	-	-
Vallonia sp. (abraded/ fragmentary)	8	10	8	12	8	14	8
Cepaea sp.	-	1	-	1	-	-	1
Trichia hispida (L)	20	33	37	27	9	18	7
Oxychilus sp.	10	23	29	27	7	16	6
Vitrina pellucida (Müller)	-	-	-	1	-	-	-
Limacidae*	-	-	-	-	-	-	-
Lymnaea sp.	1	2	-	-	-	-	-
Planorbis leucostoma Millet	-	-	-	-	-	-	1

Table 1: Mollusca from the well.

* Not recovered from these samples, but observed in 180 (60-70cm) and 278 (116-123cm).

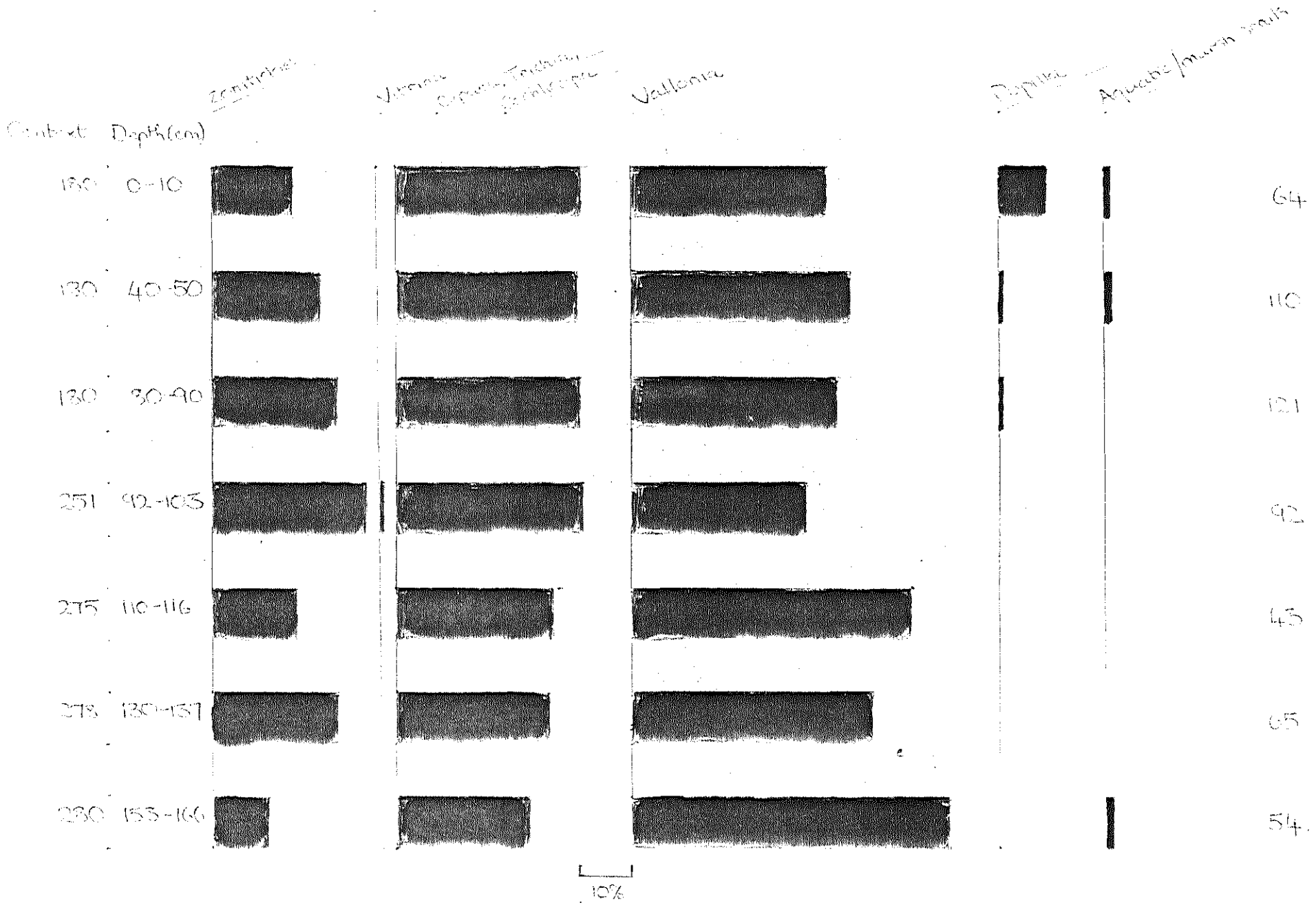

Fig 1: Summary of fossil assemblages from the well