

Land molluscs from the Iron Age enclosure ditches at Barnham, Suffolk (BNH 009)

Snails were recovered from the ditches at this site, and also from small features in the interior of the enclosure. The snails from the internal features have not been examined in detail, since these features are very shallow and their fills may have included intrusive modern molluscs.

Information about the ecology and distribution of the snails, used in the discussion below, is taken from Evans (1972) and Cameron and Redfern (1976).

The ditches

The two enclosure ditches were cut through the chalk-sand drift (Corbett 1973, 8). Their primary fills were of chalk, with lenses of sand, whilst the secondary fills were predominantly sandy. The secondary fill of the Outer ditch contained an isolated pocket of darker, slightly more humic, soil (0046), probably a fallen turf or patch of topsoil. The sandy soil horizons formed over the secondary fills contained very little organic matter, and were consequently not clearly defined. The upper parts of these horizons merged into tertiary fills of sand and loamy sand with chalk fragments.

Methods

(Column samples were taken from the centres of both ditches. The column through the outer ditch included the modern Ap horizon. Snails were extracted from 1 kg. samples by the method described by Evans (1972, 44). Counts of apices were then made, though a few taxa were represented only by whorl fragments. The shells are listed in Tables 1 and 2. Charcoal fragments, cereal grains and small vertebrate remains were extracted with the snails.

Preservation

The shells from the lower, predominantly chalky, fills are very well-preserved; the banding patterns of specimens of Cepaea and Helicella are clear. In the upper, mainly sandy layers, particularly in the tertiary fill, many of the snails are eroded and pitted, though sufficiently well-preserved to be identified.

Discussion

The soil horizon and the lower part of the tertiary fill in the Outer Ditch produced relatively large numbers of snails. These are almost entirely of taxa characteristic of dry open-country conditions: Truncatellina, Vertigo, Pupilla, Vallonia spp. and Helicella. The remaining taxa are able to tolerate a relatively wide range of environmental conditions, being found in both shaded and open habitats. Punctum pygmaeum and Vitrina, though more typically woodland species are also able to colonise poorer habitats of a dryer, more unstable, character. Other deposits from this ditch produced relatively few shells, but again these are mainly of open-country types.

The deposits of the Inner Ditch contained similar assemblages in most cases. However, the assemblages from the lower part of the soil horizon in this ditch include a significant proportion of snails characteristic of shaded conditions: Carychium tridentatum, Ena obscura and the Zonitidae. This can be interpreted as representing a phase of scrub development in the ditch once the sides had reached stable angles, though since the shade-loving snails make up only 13.1% of the total assemblage at 160-170cm this scrub cover was apparently patchy in character. Shade-loving molluscs also occurred at lower frequencies in samples from the upper part of the soil horizon and the secondary fill.

The most likely explanation for this difference between the snail faunas of the two ditches, if we can assume they are contemporary, is that the inner ditch, partly protected by the outer ditch on one side and by the internal bank on the other, was less accessible to grazing animals, and scrub development could therefore take place once a stable profile was established.

The snail faunas from Barnham can be compared with those from two Bronze Age sites in the area: a barrow at Little Cressingham, Norfolk also on the chalk-sand drift of the Breckland, and a second barrow at Risby, Suffolk, outside the Breckland proper but on a brown calcareous soil over chalky drift. (Murphy, 1977, and forthcoming). Land snail assemblages from selected contexts at these three sites are listed in Table 3.

All samples from these three sites, with the exception of those from the lower part of the Inner Ditch soil horizon at Barnham, have produced faunas consisting almost entirely of open-country taxa, with high levels of Pupilla muscorum. This snail is common in grassland with a large proportion of bare ground, and on sand dunes. The abundance of this species is thought to reflect the inherent instability of the sandy fills and soils at these sites; the sides of the ditches, cut into the chalk-sand drift would have been extremely susceptible to collapse

and to erosion by rain and by wind. It is also likely that wind-blown sand, transported over short distances by saltation, would have accumulated in the ditches. Particle size analyses of samples from the ditches at Little Cressingham suggest that the ditch deposits at that site included an aeolian component. A further factor possibly encouraging high levels of Pupilla may have been the development on the chalky earthworks adjacent to the ditches of calcareous grassland resembling the modern Breck Grassland A (Watt 1940) which consists mainly of Festuca ovina with much bare ground.

This picture of patchy vegetation cover and unstable broken soil surfaces is supported by the fairly consistent association of Truncatellina cylindrica with Pupilla and by the fact that Vertigo pygmaea, an open-country snail preferring stable soil surfaces and complete vegetation cover, is present only sporadically and then at low frequencies.

The open-country faunas from these three sites characteristically show low species diversity, when compared with many prehistoric grassland faunas from chalk downland. Obviously many of the deposits produced few individual snails, but even the larger assemblages from the more slowly-formed sediments have produced relatively short species lists. Certain taxa, common in faunas from the Southern English chalklands, are entirely absent. A notable example is Hygromaria hispida var. nana. The impoverished character of these assemblages is thought to reflect the extreme environmental conditions prevailing nowadays and, by inference, in prehistory in the Breckland: the wide diurnal temperature variations, low mean winter temperatures, low rainfall and free-draining sandy soils. Such conditions are inimicable to most molluscan species, and it is therefore scarcely surprising that a restricted number of xerophile species predominates.

It is significant that the only ditch at these three sites to produce evidence for a phase of scrub development, the Inner Ditch at Barnham, was partly isolated by physical barriers. The implication appears to be that in all other cases heavy grazing pressure, presumably by sheep or goats, maintained an open grassland vegetation in the immediate area.

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Pollen analyses of lake sediments at Old Buckenham Mere and Hockham Mere have been interpreted as indicating that early prehistoric economies within the pollen catchment areas of these two sites were predominantly pastoral. Not until the Iron Age (after 2750 b.p.) is there any evidence for an increased reliance on cereal cultivation as part of a mixed economy (Godwin, 1968; Sims, 1978). However, cereal yields may have been restricted by droughts in early summer resulting from a significant soil moisture deficit and low soil water capacity.

(Limbrey, 1978), so the maintenance of sheep and goats would have remained an important component of the agrarian economy throughout prehistory in the Breckland. The molluscan assemblages from the three sites discussed in this report are thought to reflect, ~~on a local level~~ on a local level, the intensity of grazing.

Interpretation of sediments		Tertiary fill				Soil horizon				Secondary fill				Primary fill				
Depth (cms) below top of section		0-10	60-70	90-100	130-140	140-150	150-160	160-170	170-185	185-195	205-215	222-235	235-245	245-247	247-254	258-268	268-270	279-284
Provisional context number on drawn section		16	16	16	16	12	12	12	11	8	8	8	7	6	5	3/4	2/3	1
Open-country	<u>Truncatellina cylindrica</u> (Férussac)	-	-	-	2	11	31	6	-	-	-	-	-	-	-	-	-	-
molluscs	<u>Pupilla muscorum</u> (Linné)	2	-	4	155	109	79	35	6	18	1	-	-	-	-	-	-	-
	<u>Vallonia costata</u> (Müller)	-	-	-	-	1	8	-	-	-	-	-	-	-	-	-	-	-
	<u>Vallonia excentrica</u> Sterki	-	-	2	16	19	44	4	-	-	-	1	-	-	-	-	-	-
	<u>Vallonia</u> sp. (juvenile)	-	1	4	25	26	64	28	-	-	-	-	-	-	-	-	-	-
	<u>Helicella itala</u> (Linné)	9	1	5	56	30	38	22	4	10	4	1	2	2	-	2	-	-
Catholic	<u>Cochlicopa</u> sp.	-	-	-	11	16	25	6	-	-	1	-	-	-	-	-	-	-
molluscs	<u>Cepaea nemoralis</u> Linné	-	-	-	-	-	-	-	-	-	-	1 ⁽¹⁾	-	-	-	-	-	-
	<u>Cepaea</u> sp.	-	-	-	-	-	-	-	-	1 ⁽²⁾	-	-	-	-	-	-	-	-
	<u>Cepaea/Arianta</u> sp.	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-
	<u>Punctum pygmaeum</u> (Draparnaud)	-	-	-	2	6	33	1	-	-	-	-	-	-	-	-	-	-
	<u>Vitrina</u> cf. <u>pellucida</u> (Müller)	-	-	-	-	-	-	2	2	8	-	1	7	-	-	-	-	-
Shade-loving	<u>Pomatias elegans</u> (Müller)	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
molluscs	<u>Carychium tridentatum</u> (Risso)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
	<u>Ena obscura</u> (Müller)	-	-	-	-	-	-	6	-	2	-	-	-	-	-	-	-	-
	<u>Zonitidae</u>	-	-	-	-	1	4	10	2	4	2	-	-	-	-	-	-	-
Others	<u>Cecilioides acicula</u> (Müller)	7	2	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-
	Unidentified	-	-	-	4	2	17	8	1	-	-	-	-	-	-	-	-	-

Table 1 : Land molluscs from the Inner Ditch

+ - eroded scrap of whorl

(1) - five-banded form

(2) - one-banded form.

Interpretation of sediments		Ap horizon		B horizon	Tertiary fill of ditch							Soil horizon
Depth (cms) below modern soil surface		0-10	10-20	20-30	30-40	65-75	95-105	105-115	115-125	125-135	135-145	155-16
Provisional context number on drawn section		17	17	17	16	14/15	13	13	13	13	13	12
Open-country molluscs	<u>Truncatellina cylindrica</u> (Férussac)	-	-	-	-	-	-	-	-	1	-	R1
	<u>Vertigo pygmaea</u> (Draparnaud)	-	-	-	-	-	-	-	-	1	-	2
	<u>Pupilla muscorum</u> (Linné)	3	4	2	2	1	-	2	26	54	113	165
	<u>Vallonia costata</u> (Müller)	-	-	-	-	-	-	-	-	-	-	1
	<u>Vallonia excentrica</u> Sterki	1	-	-	-	-	-	-	9	10	13	19
	<u>Vallonia</u> sp. (juvenile)	1	-	-	-	-	-	-	7	13	16	64
	<u>Helicella itala</u> (Linné)	2	3	2	6	1	1	5	17	21	38	46
	<u>Helicella caperata</u> (Montagu)	2	(1)	(1)	-	-	-	-	-	-	-	-
	<u>Cochlicopa</u> sp.	-	-	-	-	-	-	-	2	1	6	36
Catholic molluscs	<u>Cepaea</u> sp.	-	-	-	-	-	-	-	-	1	-	1
	<u>Punctum pygmaeum</u> (Draparnaud)	-	-	-	-	-	-	-	1	-	-	11
	<u>Vitrina</u> cf. <u>pellucida</u> (Müller)	-	-	-	-	-	-	-	-	-	-	4
Others	<u>Cecilioides acicula</u> (Müller)	-	4	6	-	8	2	6	4	-	-	1
	<u>Helicidae</u> indet.	-	-	-	-	-	-	-	-	-	-	-
	Unidentified	-	-	-	-	-	-	-	-	4	-	7

Table 2 : Land molluscs from the Outer Ditch

(1) - whorl fragment

Primary fill of ditch

[illegible]

Type of deposit	Soil horizons in ditches				Tertiary fill		Buried B horizon
Site	Barnham		Risby	Cressingham	Barnham	Barnham	Risby
Context	Outer ditch 155-165 cm.	Inner ditch 160-170 cm.	Ditch 50-60cm.	Outer ditch 85-90 cm.	Outer ditch 135-145 cm.	Inner ditch 130-140 cm.	
<u>Truncatellina cylindrica</u>	2.9	4.6	2.4	-	-	0.7	3.4
<u>Vertigo pygmaea</u>	0.5	-	-	2.5	-	-	-
<u>Pupilla muscorum</u>	44.8	26.9	56.1	45.8	60.8	56.9	58.7
<u>Vallonia costata</u>	0.3	-	4.8	1.9	-	-	2.4
<u>Vallonia excentrica</u>	5.2	3.1	6.7	15.8	7.0	5.9	2.4
<u>Vallonia sp.</u>	17.4	21.5	9.7	16.8	8.6	9.2	8.2
<u>Helicella itala</u>	12.5	16.9	8.8	3.5	20.4	20.6	9.6
<u>Cepaea/Arianta</u>	0.3	-	0.3	1.9	-	-	-
<u>Punctum pygmaeum</u>	3.0	0.8	1.2	1.0	-	0.7	-
<u>Vitrina sp.</u>	1.1	1.5	-	-	-	-	-
<u>Cochlicopa sp.</u>	9.8	4.6	6.1	2.9	3.2	4.0	15.0
Shade species (total)	-	13.1	0.3	-	-	-	0.3
Others	3.0	6.2	3.6	7.9	-	1.8	-
Total number of shells	368	130	330	203	186	272	293

Table 3 : Land mollusc assemblages (percentage figures) .
from selected contexts at Barnham, Risby and Cressingham

References

- Cameron, R.A.D., and Redfern, M., (1976) British Land Snails Linnaean Society Synopses of the British Fauna No. 6. London.
- Corbett, W.M., (1973) Breckland Forest Soils. Soil Survey, Special Survey. No. 6. Harpenden.
- Evans, J.G., (1972) Land Snails in Archaeology. London.
- Godwin, H., (1968) 'Studies of the postglacial history of British Vegetation XV : Organic deposits of Old Buckenham Mere, Norfolk'. New Phytologist 67, 95.
- Limbrey, S., (1978) 'Changes in quality and distribution of the soils of lowland Britain', in Limbrey, S. and Evans, J.G., (eds.) The Effect of Man on the Landscape : The Lowland Zone C.B.A. Research Report No. 21. London.
- Murphy, P., (1977) Little Cressingham, Norfolk : Land Snails Ancient Monuments Laboratory Report Series.
- Sims, R.E., (1978) 'Man and vegetation in Norfolk', in Limbrey, S., and Evans, J.G., (eds.)
- Watt, A.S., (1940) 'Studies in the Ecology of Breckland, IV. The Grass-Heath' Journal of Ecology, 28, 42-70.

Botanical remains from Barnham, Suffolk (BNH 009)

Carbonised plant remains were recovered from 1 kg soil samples from the enclosure ditches, (taken principally for the extraction of land molluscs), and also from 5 kg samples of fill from the internal features. Specimens identified are listed in Table

The upper parts of the column samples taken from the ditches were in fact the Ap and B horizons of the modern soil. Samples from these upper layers produced carbonised barley (Hordeum sp.) grains and rachis fragments in an excellent state of preservation. These must be products of recent stubble-burning. Samples from the internal features contained very poorly-preserved carbonised grains and grain fragments of wheat (Triticum sp.) and barley (Hordeum sp.) and fragments of hazel-nut shells (Corylus avellana). The wheat grains are elongate with near-parallel sides and blunt apices, possibly spelt or emmer. The poor state of preservation and the absence of spikelet parts make identification to species impossible. However, these few grains do provide evidence for cereal consumption at the site.

Charcoal occurred in very small quantities, mostly badly fragmented. It has not been identified.

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Context	Outer ditch column			0054 Burnt area	0053 Humic soil	0062 Pit	0063 Pit	0025
	Inner ditch 0-10cm	Ap horizon 10-20 cm	Ap horizon 20-30 cm					
Sample No.	2	4	4	5	6	7	7	12
Sample wt. (kg)	1	1	1	5	5	5	5	5
<u>Hordeum</u> sp. ca.	-	1	1	-	-	1	-	-
<u>Hordeum</u> sp. ri	2	2	-	-	-	-	-	-
<u>Triticum</u> sp. ca	-	-	-	-	3	2	-	1
Cereal indet. fr	-	-	-	+	+	+	-	-
<u>Corylus avellana</u> n.fr	-	-	-	-	-	-	+	-

Table : Cereals and hazel-nut from Barnham

Abbreviations : ca - caryopsis
fr - fragment
n - nutshell
ri - rachis internode