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<td><strong>Authors(s)</strong></td>
<td>Lewis, Helen</td>
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Geoarchaeology at Snusgar, Orkney Mainland, 2007

Helen Lewis¹
August 17, 2007

Introduction
A brief visit was carried out for geoarchaeological assessment and continued soil micromorphology sampling of deposits revealed during University of Oxford excavations at Snusgar and the Bay of Skail, Mainland, Orkney, Scotland. Several additional samples were taken from Trenches 5 and 7 on the South-east mound at Snusgar, and an auger assessment of the upper mound was conducted.

East mound 2007
Continued excavations of a Norse period structure on the East mound at Snusgar were the focus of this year’s project. There appear to be at least two phases of the structure (a probable house), with evidence of remodelling apparent in the later phase. Near the end of the excavation a further intriguing structural component was revealed: a deep wall with apparent corbelling, underlying the later structures. Soil micromorphology sampling focused primarily on a series of clay layers, apparently laid floors or structural deposits, associated with both this deep wall and with the later structures.

Trench 5
In 2006, excavation of the central ‘room’ of the main house structure had revealed a series of occupation layers that included an apparent laid clay floor layer (context 2071). This was sampled by Jane Harisson in two block samples for the soil micromorphology programme, covering contexts 2040-2053-2071-2072 (Sample 140). In 2007 this layer was not visible (having been fully excavated), but several other, similar deposits were found in different parts of the exposed structural remains.

Next to and apparently associated with the deep, possibly corbelled, wall structure mentioned above, was a series of at least three 2-4cm thick yellow clay layers separated by sand deposits. Some of these layers were only intermittently seen in plan on excavation, but were extremely clear in profile, where they seem to be laid deposits, possibly floors or clay linings of yet-to-be-revealed features (see Trench 7). The upper two of these were sampled, primarily for examination for indicators of trampling: context 2080 (unit of clay-sand layers) in samples 167, 177 and 178.

Sample 168 was taken from context 2087, a 10cm thick unit comprising several fine deposits (at least 10 were counted on site), including <1cm thick layers of dark grey clay, reddish brown sand, and grey clay. The thin section analysis will focus on the

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depositional history and meaning of these layers, which are underneath and separated by a later structural wall by intervening midden and windblown sand (context 2086) deposits.

Finally, a sample of a possible buried soil was taken (sample 169, context 2104); this is a 25cm thick dark greyish brown sand layer underlying the uppermost layer of windblown sand (context 2001), over context 2084. Only one sample was taken, of the uppermost boundary where this meets the overlying sand deposit.

Figure 1 Main structural remains in Trench 5. Sample 140, from a yellow clay layer interpreted as a possible floor, was taken in 2006 from the central area, seen here as an excavated square to the right of the upstanding stones (centre). No trace of this layer was visible in the sections in 2007. A series of alternating yellow clay and sand layers, possibly a series of laid floors or feature fills, was found in a sondage, seen here to the left of the upstanding stones (in front of bucket), apparently underlying the main structural remains exposed on the surface here. Samples 167, 177 and 178 were taken from this sondage. (H. Lewis)
Clay layer 2080 is marked by the white tag (mislabelled as 2077, which is the overlying sand), and ran across the excavated area and into sections underlying structural remains. This is the upper of a series of alternating clay-sand layers, which may be floors in an earlier structure; 2080 and two further clay layers were sampled (samples 167, 177 and 178). (H. Lewis)

Sample 168 location (left) and unit 2087 in more detail (above), showing thin layers of grey clay and brown sand. Kubiena tin and sample impression are 5 x 8cm. (H. Lewis)

Trench 7
Trench 7 was a new excavation of an area with a large, orthostatic, curved wall footing (contexts 4002-4010-4009-4018). Nothing was directly associated with this wall at the time of the visit, except wall packing deposits on its outsides. There was a possible
relationship seen with the uppermost of a series of middening layers, with the wall appearing to be quite late in the overall mound sequence. In Trench 7 mounded midden deposits were cut through by a large linear feature, caught both in section and, at least the very base, in plan in the trench. This feature was lined with a 3-4cm thick deposit of yellow clay.

The layers of packing sediment were similar to midden deposits identified elsewhere on this site and on Snusgar (reddish-pink, clay-rich, with charcoal and fine clay fragments). In one location, such packing deposits (context 4012), overlay a <1cm thick layer of yellow sand (no context number), over a greyish-brown soil-rich layer - also apparently a packing layer around the base of the wall footing, but possibly representing contemporaneous soils. This layer (context 4011) was sampled for soil micromorphological study (sample 416). When the sample was taken it was possible to see a very thin (<1cm) layer of yellow clay separating 4011 from underlying sand layer 4013; this is presumably also a structural component of the wall footing, and is included in sample 416.
The Trench 7 archaeological deposits are much deeper from the surface than those in other parts of the site, owing to c. 1m of wind-blown sand being deposited at this location. This fits the picture predicted in 2006 of the pattern of sand accumulation up against the structural remains, with most deposition and retention being seen on the north-eastern side of the East mound (Lewis 2006). Since this appears to be the current direction of prevailing winds, pushing aeolian sand against the now-buried structural deposits, this build up is hardly surprising. The general (physical) sequence of the deposits exposed is as follows:

- 0-10cm  Topsoil
- 10-32cm  Brown sand
- 32-60cm  Yellow sand
- 60-65cm  Greyish-brown sand, highly leached
- 65-85cm  Yellow sand
- 85-95cm  Pink sand/midden deposit (this appears to underlie large wall)
- 95-110cm Yellow sand/fill of large feature
- 110-135cm Yellow clay/basal fill & cut of large feature
- 135-140cm Pink middening deposit & black-grey middening deposit (cut through by large feature)
- 135-160cm Yellow sand
- 160cm+  Grey midden deposit (base of excavation at time of visit)

**Auger transect**

A short auger transect was extended from the North-east corner of Trench 5 on the East Mound, out along the 12m grid line, to just past the North-west corner of Trench 7. This transect is best thought of as the beginning of a detailed gridded survey of the top of the East Mound, and represents sediments lying between Trenches 5 & 7. The transect was established to address the interest of the site directors in surficial deposits and their relationship to mound topography and development; however, there is currently no detailed gridded topographic plan of the mound, which would be the first step in such a study, followed by detailed (at least 5m interval or smaller) augering on the same grid. This will be a large undertaking, which would provide information on the uppermost archaeological deposits. Auger cores can be sampled for some environmental studies (e.g. pollen, soil chemistry), but are not appropriate for other approaches (soil micromorphology, archaeozoology, archaeobotany); it is recommended that the directors plan for a team of 2-3 people spending several days to gather information in this way on the upper mound, in addition to the required topographic survey.

The transect was augered by the author at c. 5m intervals (except where restricted by spoil heaps), and the most relevant exposed profiles in Trenches 5 and 7 were included as points (Figure 6) Some general sequencing is postulated, but with the known variation in mound archaeological and wind-blown sand deposits, this can only be tentative and should be confirmed through excavation.
Table 1 Levels from augering transect (surface of recorded profiles)

<table>
<thead>
<tr>
<th>mOD</th>
<th>Backsight</th>
<th>Instrument Level</th>
<th>Foresight</th>
<th>Corrected level (mOD)</th>
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<td>10.55</td>
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<td>1.21</td>
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<td>0.83</td>
<td>10.18</td>
<td>6</td>
<td>0.83</td>
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Figure 6: Schematic plan of Trenches 5 & 7 on the East Mound at Snusgar, showing locations of recorded sections and auger transect. (H. Lewis)

1. TR 5 grid 12, 21
2. TR 5 grid 12, 26
3. TR 5 grid 12, 31
4. TR 5 grid 12, 38
5. TR 5 grid 12, 43
6. TR 5 grid 14.20, 38.30
   (10,10 on TR 7 grid)
Figure 7  Schematic auger profiles between Trenches 5 and 7; see figure 6 for locations & Table 2 for descriptions

Table 2 Auger profile descriptions

<table>
<thead>
<tr>
<th>Depth (cm)</th>
<th>Profile 1</th>
<th>Profile 2</th>
<th>Profile 3</th>
<th>Profile 4</th>
<th>Profile 5</th>
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Future work
Soil micromorphology samples remaining to be processed this year are presented in Table 2.

Table 3 Soil micromorphology samples from the Bay of Skaill & Snusgar project

<table>
<thead>
<tr>
<th>Samples</th>
<th>Contexts</th>
<th>Descriptions</th>
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<td>[501] &amp; soil at base &amp; upper [509] (Ea/bA) (15/1), base of</td>
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<tr>
<td></td>
<td>506-507-508-510</td>
<td>Base of spademarks [506]; top of [507] pit fill (14/1), base of</td>
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<tr>
<td></td>
<td></td>
<td>[507] &amp; top of [508] (Bt horizon) (14/2), layer [510] (black</td>
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<tr>
<td></td>
<td></td>
<td>deposit) (14/3); Snusgar, TR2</td>
</tr>
<tr>
<td>2004 15/1-2</td>
<td>500-507</td>
<td>[500] &amp; soil at upper [507] (Ea/bA) (15/1), base of</td>
</tr>
</tbody>
</table>
Yellow sand [1015], greyish brown sand, possible buried
topsoil [1016], midden [1017]; Snusgar

Midden [1017], greyish brown with iron panning, brown sand,
possible midden or amended soil [1045], yellow sand [1035];
Snusgar

Buried grey silty sand in field uphill inland

Soil layer under structural remains Birsay Bay (John Cluett)

Buried soil in upper East Mound, TR 5

Buried soil horizons under base of Snusgar, TR 4

Possible buried soil in upper East Mound

Buried soil layers (grey 1570; pink 1576) under & cut through
by pit 1568, Snusgar, TR 4

Plough marks, Snusgar, TR 4

Hearth rake-out [2040], yellow-brown sand [2053], clay layer
[2071], yellow sand [2072]; East Mound, TR 5

Yellow sand [2077], clay layer [2080], yellow sand; East
Mound, TR 5

Series of clay and sand layers in 10cm unit [2087]; East
Mound, TR 5

Yellow sand [2001], possible buried soil [2104]; East Mound,
TR 5

Clay layer, sand, clay layer; South-east Mound, TR 5

Grey-brown soil wall footing packing [4011], and fine clay
layer (no number); South-east Mound, TR 7

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