Rescue Recording of an Eroding Inter-Tidal Peat Bed at Low Hauxley, Northumberland (6109)

February 2013

Staff from Archaeological Research Services Ltd undertaking recording work, February 2013.

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Archaeological Research Services Ltd

Prepared By:

Dr Gillian Eadie and Dr Clive Waddington
with contributions by Maisie Taylor and Dr Andy Hammon
Archaeological Research Services Ltd
Suite 27
Baltic Business Centre
Saltmeadows Road
Gateshead
NE8 3DA

Tel: 0191 4775111
Fax: 0191 4777687
Email: clive@archaeologicalresearchservices.com
Web: www.archaeologicalresearchservices.com

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1 Introduction

1.1 Staff from Archaeological Research Services Ltd (ARS Ltd) assisted by Jim Nesbitt (local volunteer archaeologist) undertook recording of an inter-tidal peat deposit at Low Hauxley, Northumberland, on 21st - 23rd December 2010 and 7th January 2013, and 11th - 12th February 2013. The work comprised a walk-over survey of the inter-tidal zone, survey of exposed areas of peat and submerged forest remains, cleaning and hand-drawn planning of the area of animal and human footprints, and rapid digital photography of the deposit and its context. Plaster casts of two hoof prints were also made.

1.2 The site lies in the inter-tidal zone (Figure 1) and work was limited due to tidal conditions to a period from first light until around midday, lasting 5 hours each day on average. The deposit was exposed for three days in December 2010 and five days in February 2013. An almost complete record was made on both occasions, prior to the peat bed being re-covered with sand. The site will only be revealed again during, or after, storm conditions and there was a period of two years between the two exposures recorded in this report. Storm conditions are likely to further damage or completely remove what is left of the site, so it is important to monitor the exposures and record newly exposed areas as soon as possible.

1.3 Three distinct areas of peat were recorded (Figure 2); the most southerly exposed section of the peat bed bearing human and animal footprints; a further section, likely to have been part of the same peat bed, exposed along the shoreline but not bearing footprints; and a substantial area of truncated peat bed/ancient land surface containing the remains of ancient woodland/forest. These deposits were surveyed using a Leica TC307 total station and mapping-grade GPS. The footprint exposures were planned at a scale of 1:20 making note of their length width and depth as well as a direction of travel where apparent.

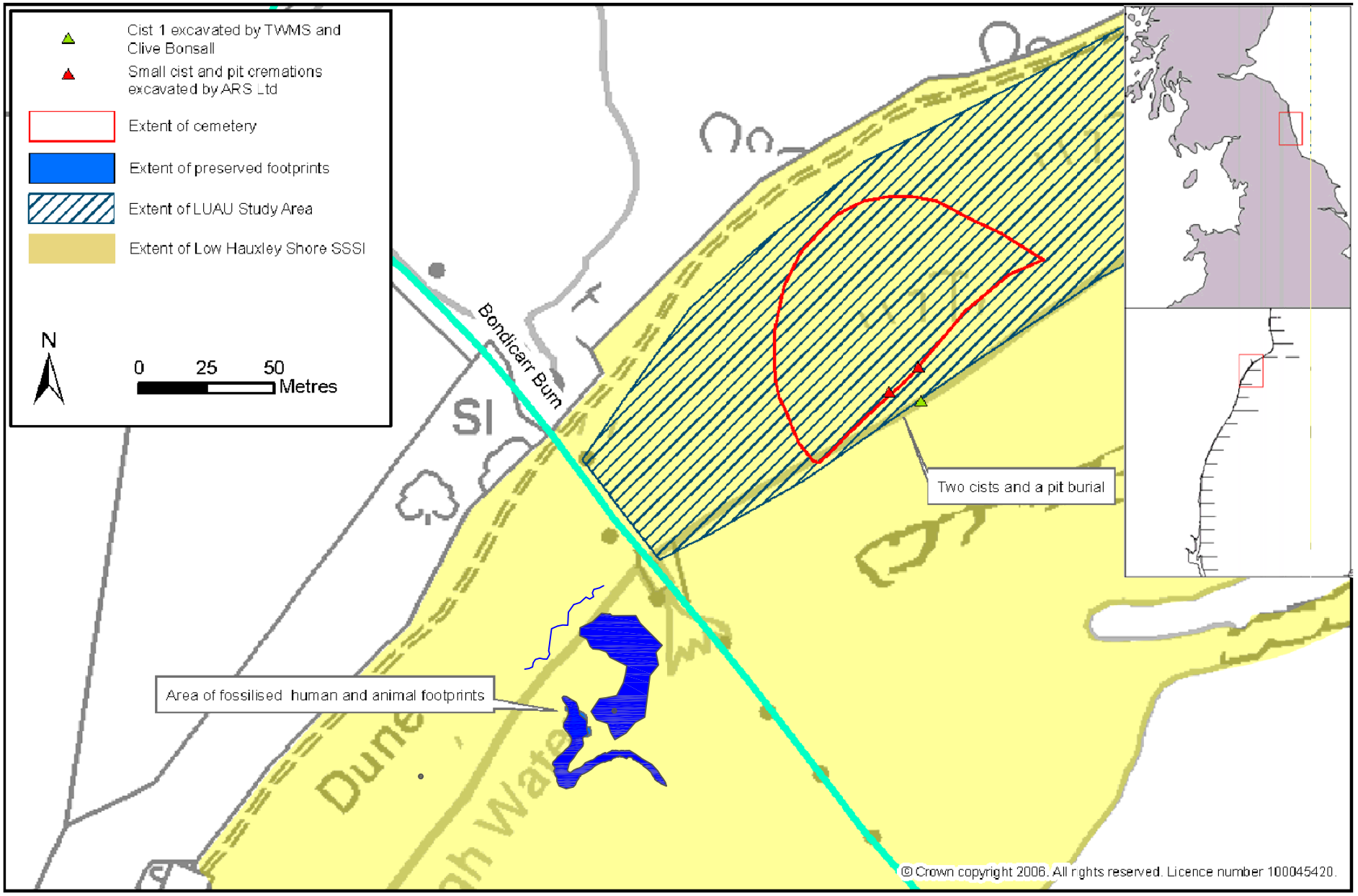

Figure 1 Location map of peat deposit at Low Hauxley with extent of cist cemetery to north outlined

Title:

Figure 2: Plan of peat showing animal and human footprints

Key:

N

Animal print

Human print

Unknown

Sand obscuring peat

Approximate direction of travel

2 Southerly section of peat bed containing preserved human and animal footprints

2.1 An area of 213m^2 of exposed peat bed was recorded in the inter-tidal zone at Low Hauxley. Clear indications of human footprints, as well as animals with cloven-feet were abundant across the deposit and a total of 269 potential footprint depressions were recorded (Figures 3-5). Where possible these have been interpreted as either human or animal and this reveals 90 human prints and 88 animal prints. It was unclear during the recording process how, exactly, most of the prints matched up to form potential tracks, although there were a small number of instances where fairly clear human and animal tracks were evident (Figures 6-8).

2.2. The dimensions (length, width and depth) of each hollow within the peat were recorded and are listed in Appendix 1 at the end of this report. The foot prints consist of human footprints of various sizes, although in none of them could individual toes be identified. This, together with their generally smoothed edge appearance suggests that the humans were wearing footwear of some sort. The human footprints vary in size from 80mm to an average of around 220mm (although some are longer than this but due to smudging and slipping or dragging of the foot) suggesting that both adults and children were present. The animal footprints were of two general types: cloven hoofed and large more circular-shaped prints. The cloven hoof prints may represent several different types of animals as there is variation in shape, size and form. The plaster cast of the cloven-hoof print is large and measures approximately 80mm long and together with its shape and form indicates a large *cervid* (Andy Hammon pers comm.) and the most likely candidate for this is red deer (Bang and Dahlstrøm 2011, 22 and 74). Red deer are an indigenous species that naturally inhabit forest and woodland. Their range has, therefore, decreased with the progressive de-forestation of Britain. Red deer can adapt to open environments, as evidenced by their presence on the moorlands of northern England and Scotland today, although this habitat change has resulted in a size decrease (Grant 1981, 206; Staines 1991, 497; Yalden 1999, 104).

Other cloven-hoof prints visible in the peat have a form indicating the presence of wild boar and the ones shown in Figure 8 compare closely in size and form with the walking wild boar prints recorded by Bang and Dahlstrøm (2011, 22 and 73). The second plaster cast, although less detailed, is from an even bigger animal. This print is much more rounded in shape and measure between 100mm and 110mm in diameter, The hoof was also much more deeply embedded indicating this was a much heavier animal. The print from which the plaster cast was taken clearly showed that the hoof had either slipped forward or was dragged backwards so as to leave a secondary area of print behind the main circular print. The shape and size of this print indicates that it is from a *bovid* (Andy Hammon pers comm.) and the shape compares with that for modern cattle (Bang and Dahlstrøm 2011, 22 and 74), although its larger size would suggest an earlier and larger form of wild cattle, namely aurochsen.

2.3 Eight pieces of substantial timber (in excess of 0.15m length) were noted in the surface of the deposit, although in most cases it was not clear from surface examination whether these had been worked or not (Figure 9). One sample of timber was recovered from the surface of the peat as part of the North East Rapid Coastal Zone Assessment and subsequent analysis by Maisie Taylor revealed that this had been worked, and probably with the use of stone tools.

Timber

By Maisie Taylor

2.4 The timber sample is 405mm long, 71mm wide and between 12 and 22mm thick. It is more or less parallel sided but tapers slightly in thickness (see Fig. 13). One face has bark at one end but a torn surface at the other. The other face is flat and smooth with slight parallel marks across the grain. One side is rounded with the bark wrapped round, the other is chamfered quite sharply. The transverse section of the piece suggests that it is roundwood which is either distorted or worked. The pith can clearly be seen, and the early wood is undistorted. The later growth is compressed, however, making it difficult to distinguish post depositional distortion from modificaton.

2.5 Using the scoring scale developed by the Humber Wetlands Project (Van de Noort, Ellis, Taylor and Weir 1995 Table 15.1) this piece scores 4. The condition scale is based primarily on examination of the surface of the wood and the data which was recorded from that examination. The condition score reflects whether each type of analysis might be profitably applied, it is not intended as a recommendation for various analyses or treatment. A score of 5 would mean that all or any of the processes detailed from museum conservation to species identifation might be worth applying to the material. A score of 0 would mean that it was unsuitable for the application of any of the listed analysis. A score of 4, therefore means that most forms of analysis might be suitable.

	MUSEUM CONSERVATION	TECHNLOGY ANALYSIS	WOODLAND MANAGEMENT	DENDRO-CHRONOLOGY	SPECIES IDENTIFICATION
5	+	+	+	+	+
4	-	+	+	+	+
3	-	+/-	+	+	+
2	-	+/-	+/-	+/-	+
1	-	-	-	-	+/-
0	-	-	-	-	-

Table 1. Table showing condition scores for the Low hauxley timber.

2.6 The wood is, therefore, very well preserved despite being compressed. It appears to be diffuse porous which, together with the compression, makes macro identification difficult. Compression (as indicated by diameter), can be an indicator of dessication (French and Taylor 1985, Taylor 1998), although it may not necessarily be recent. Desiccation might have occurred at any time (or times) since deposition of the wood with subsequent re-wetting.

2.7 An 'assemblage' of one piece of wood is bound to be problematic, especially where burial conditions have lead to compression and distortion. There are, however, enough features characteristic of working with stone tools to make it likely that it has been intentionally modified rather than distorted post-depositionally. The piece is parallel sided and debris from working with stone tools is often parallel sided (Jorgensen 1985 figs 35-7). It has one torn face, and controlled tearing of wood is a known technique in regular use (Jorgensen 1985 fig 41). The other face is flat and smooth with slight parallel marks across the grain. These are similar traces to those first recognised at Star Carr, where there were parallel, transverse cut marks between deeper grooves (Mellars, Schadla-Hall, Lane and Taylor 1998 Figs 4.8; 4.9). The clearest evidence for working,

however, lies with the chamfered edge which cuts sharply and evenly across the grain. Worked wood from both the Mesolithic and early Neolithic is very rare in this country, which means that there is virtually no data about stone axe techniques. Recent work on material from Star Carr suggests that the wood-working techniques are quite sophisticated by c 8,000 cal. BC, but there are clear indications that the techniques associated with stone tools were quite different to those employed for metal. It is also seems that many of these techniques were rapidly lost once metal tools arrived. A study of the woodworking from the Early Bronze Age timber circle at Holme (Brennand and Taylor 2003) shows that, as early as 2049BC, there is no trace of the distinctive debris generated by working wood with stone tools.

2.8 The piece of wood assessed here displays several indications of working. It has been photographed and recorded in detail and no further work on it is required. A single piece of worked wood, however, of whatever date or context, is only of limited value. If more wood can be retrieved from the same deposit or its environs, and if a proportion of it is worked, then the assemblage will be of national importance. Although this wood is in good condition (as far as surface detail is concerned), it is also very vulnerable to physical damage and erosion. If further wood is exposed, a wood specialist should inspect the material *in situ* as soon as possible. A sampling strategy specific to the site must be designed at an early stage so that the maximum amount of data can be retrieved as quickly as possible. A reasonable sized assemblage of wood from such an early context must advance research into the techniques for using stone tools.

Dating

2.9 A sample of twigs was taken from immediately below the surface of the deposit for radiocarbon dating and these are presented in Table 2 below. This peat has provided the earliest dating evidence so far for an inter-tidal peat in the Low Hauxley inter-tidal peat 'complex' and this is in line with expectations given that the sediment unit is at a lower elevation than the other observed peat layers observable in the cliff-face section. The dates of 5330–5210 cal BC and 5220–4990 cal BC (see Table 1 below), show that this peat formed during the late Mesolithic period in the final centuries of the 6th millennium cal BC. Although the sample only provided dates for the basal deposit, the deposit is very shallow, being only 6cm thick, and so was probably only short-lived as a wet peaty deposit. In order for the footprint impressions to have survived the peat must have been soft and damp when they were made and then dried out rapidly, and perhaps covered in sand, very shortly afterwards. Therefore, it is difficult to entertain a scenario whereby the footprints could be much later than the *terminus post quem* provided by the Late Mesolithic dates from the base of the deposit. This makes both the peat, the footprints and the substantial quantity of worked wood surviving in this deposit highly significant historic assets, and extremely rare ones, particularly as this is a section of coastline under continuous and severe erosion due to rising sea levels.

Sample	**laboratory code**	**$\delta^{13}C$ (‰)**	**radiocarbon age (BP)**	**calibrated date range (95% confidence)**
750 (Low Hauxley E)	OxA-22735	-25.5	6296 ±34 BP	5330–5210 cal BC
750 (Low Hauxley E)	SUERC-30015	-28.1	6160 ±35 BP	5220–4990 cal BC

Table 2. Radiocarbon dates from the Low Hauxley peat.

Figure 3: Plan of peat showing animal and human footprints

Location of Antler find

Truncated peat containing remnants of a submerged forest

Peat Deposit

Key:

N

Animal print

Human print

Unknown

Sand obscuring peat

Approximate direction of travel

Surface Timber

metres 0 8

Figure 4: Detailed plan of recorded footprints and other hollows in the upper section of peat

Key:

Animal print

Human print

Unknown

Sand obscuring peat

Approximate direction of travel

Surface Timber

Figure 5: Detailed plan of recorded footprints and other hollows in the lower section of peat

Key:

N

Animal print

Human print

Unknown

Sand obscuring peat

Approximate direction of travel

Surface Timber

metres 0 4

Figure 6: Human footprint trail, direction of movement is towards the camera (scale = 2m).

Figure 7: Human footprint trail, direction of movement is away from the camera (scale = 0.25m).

Figure 8: Animal hoofprint (probably wild boar) trail with cloven hoofs and size suggesting red deer, direction of movement is away from the camera (scale = 0.25m).

Figure 9: Surface timber in the newly exposed area of the peat bed.

3 Peat exposed along the shoreline not containing any preserved footprints

3.1 A further section of peat was recorded eroding along the shoreline to the northwest of the deposit which contains preserved animal and human footprints. This peat bed did not contain any recognisable footprint impressions; however several large timbers were noted in the surface of this deposit. The timbers did not appear to be worked and were left *in-situ*.

4 Truncated area of peat containing remnants of a submerged forest and red deer antler

4.1 An area of 504m² of exposed peat/ancient land surface containing remnants of woodland/forest was recorded to the north of the peat bed containing the human and animal footprints (Figure 10). This consisted of a heavily truncated peat bed containing substantial tree trunks and tree boles. The tree trunks were predominantly aligned east / west suggesting a marine inundation and the toppling of trees in this direction. The shoreward section of this peat bed contained large areas of detrital peat and dislodged timbers with a significant covering of boulders.

4.2 A piece of red deer antler was recovered from within this ancient woodland land surface on Friday 8th February 2013 and donated to the project team (Figure 11). The exact location of the antler find was surveyed in using a total station.

Figure 10: Submerged forest to the north of the original peat bed exposure, looking west (scale = 1m).

Figure 11: Red deer antler discovered within the submerged forest peat (scale = 0.15m).

Conclusion

This peat layer has high potential to yield further archaeological material, wood and animal remains for this significant period of human history (Late Mesolithic) about which little is known from this region. As it contains waterlogged timber, some of which appears to have been worked (Fig. 13), there is potential for considerable information gain in relation to woodland modification and timber working techniques as well as gaining further insight into the kind of tools and equipment people at this time produced. Furthermore, it has the opportunity to shed light on much bigger questions relating to the final drowning of the North Sea, the Mesolithic coastal settlement of northern England at this time as well as details of how people lived, procured resources and adapted to and managed their environment. Perhaps most significantly, this deposit may be contemporary with, and relate to, the Mesolithic occupation site known to exist 50m to the north of the peat below the Bronze Age cemetery that is eroding out of the cliff section and which is to be investigated and recorded as part of a Heritage Lottery-funded project. These are questions of national and international significance and this site, which is under severe and continuous erosion, has the ability to contribute significant information to these questions. The layer is usually protected by up to 1m of sand in places, however this is removed during storm events and the peat layer is exposed and further eroded. Sampling the deposit for worked timber and other finds remains a priority as is something that could potentially be incorporated into the Heritage Lottery-funded project.

Figure 12. Cleaning sand off the peat bed to expose footprints and hoof prints for recording.

Figure 13. Timber sample that appears to have been worked (scale – 0.25m).

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APPENDIX 1 All recorded imprints in peat deposit with maximum dimensions.

Footprint No	Human/Non-human/Unknown	Length (mm)	Width (mm)	Depth (mm)
1	Human	230	130	40
2	Human	300	120	70
3	Unknown	320	280	80
4	Animal	130	140	30
5	Unknown	290	150	50
6	Animal	160	120	50
7	Unknown	190	130	50
8	Human	170	80	20
9	Unknown	160	150	50
10	Human	280	140	30
11	Animal	120	130	30
12	Human	90	40	20
13	Animal	190	120	60
14	Animal	150	90	40
15	Human	220	120	40
16	Human	250	140	20
17	Human	290	90	60
18	Animal	240	130	90
19	Human	200	100	20
20	Human	220	100	40
21	Human	250	110	40
22	Unknown	190	120	50
23	Animal	130	70	30
24	Human	230	100	40
25	Animal	130	60	80
26	Unknown	200	120	100
27	Human	190	100	50
28	Human	210	110	50
29	Unknown	230	90	45
30	Human	170	70	30
31	Human	300	140	60
32	Unknown	180	150	30
33	Animal	140	100	50
34	Unknown	140	120	50
35	Animal	110	120	60
36	Unknown	180	160	50
37	Unknown	180	150	50
38	Animal	70	80	10
39	Animal	140	120	30
40	Animal	150	50	40
41	Animal	230	120	40
42	Human	200	110	40
43	Human	180	100	50
44	Human	240	90	90
45	Unknown	130	110	40
46	Animal	190	100	90
47	Animal	240	90	50
48	Animal	110	90	50

Footprint No	Human/Non-human/Unknown	Length (mm)	Width (mm)	Depth (mm)
49	Animal	190	120	70
50	Unknown	210	130	90
51	Animal	180	120	30
52	Human	220	100	90
53	Animal	80	100	50
54	Human	160	100	90
55	Animal	120	90	50
56	Unknown	130	70	60
57	Human	80	70	40
58	Animal	130	140	60
59	Human	100	80	40
60	Human	210	110	70
61	Human	180	140	80
62	Animal	120	100	70
63	Human	190	100	60
64	Human	200	120	80
65	Human	230	100	90
66	Human	220	130	80
67	Unknown	180	100	90
68	Unknown	200	170	80
69	Unknown	160	110	60
70	Animal	100	80	50
71	Animal	100	100	70
72	Human	160	100	70
73	Animal	230	150	70
74	Animal	180	130	80
75	Human	190	100	80
76	Unknown	200	110	60
77	Animal	200	160	70
78	Animal	130	100	60
79	Human	170	100	50
80	Unknown	210	170	50
81	Unknown	160	150	50
82	Human	160	100	80
83	Human	210	100	100
84	Animal	180	100	50
85	Human	200	90	30
86	Animal	140	150	50
87	Human	200	90	50
88	Human	230	110	70
89	Animal	140	100	40
90	Animal	60	70	40
91	Human	210	100	50
92	Human	230	80	70
93	Animal	140	100	60
94	Unknown	170	100	80
95	Human	200	160	90
96	Unknown	260	260	100
97	Human	150	80	70
98	Human	240	120	80

Footprint No	Human/Non-human/Unknown	Length (mm)	Width (mm)	Depth (mm)
99	Unknown	230	190	90
100	Animal	120	70	40
101	Animal	150	120	50
102	Animal	160	160	60
103	Unknown	200	120	80
104	Human	270	90	90
105	Human	270	150	90
106	Human	250	160	50
107	Animal	120	130	60
108	Unknown	130	110	40
109	Human	190	130	80
110	Animal	80	100	50
111	Unknown	160	100	40
112	Unknown	170	130	60
113	Human	220	100	90
114	Animal	190	190	90
115	Animal	190	120	60
116	Animal	200	70	80
117	Human	170	120	60
118	Animal	150	100	70
119	Unknown	190	210	100
120	Unknown	350	90	130
121	Animal	100	80	60
122	Human	180	120	60
123	Human	130	140	80
124	Unknown	200	150	80
125	Human	220	130	80
126	Unknown	240	180	90
127	Animal	170	150	50
128	Human	290	130	100
129	Human	310	70	70
130	Animal	140	120	50
131	Unknown	200	100	30
132	Animal	180	130	70
133	Human	200	100	50
134	Animal	250	180	80
135	Unknown	150	130	70
136	Unknown	290	200	60
137	Unknown	160	120	50
138	Unknown	150	130	50
139	Unknown	180	160	60
140	Unknown	190	160	40
141	Unknown	300	180	50
142	Unknown	230	230	50
143	Unknown	200	140	80
144	Human	200	100	50
145	Human	200	110	50
146	Human	210	130	70
147	Human	220	80	40
148	Human	140	100	60

Footprint No	Human/Non-human/Unknown	Length (mm)	Width (mm)	Depth (mm)
149	Unknown	170	170	60
150	Human	210	100	50
151	Human	200	100	40
152	Human	200	100	70
153	Human	200	140	90
154	Human	220	140	80
155	Human	160	120	50
156	Unknown	180	130	70
157	Human	180	90	50
158	Unknown	190	140	60
159	Human	230	120	80
160	Human	150	100	90
161	Unknown	140	100	50
162	Human	300	160	70
163	Human	220	100	50
164	Human	220	130	50
165	Unknown	160	140	40
166	Unknown	120	100	80
167	Human	270	120	50
168	Unknown	136	078	-
169	Unknown	142	083	-
170	Unknown	119	082	-
171	Animal	135	122	-
172	Unknown	184	119	-
173	Animal	081	068	-
174	Animal	063	070	-
175	Animal	173	119	-
176	Animal	141	115	-
177	Animal	115	087	-
178	Animal	139	136	-
179	Unknown	145	082	-
180	Unknown	244	167	-
181	Unknown	161	117	-
182	Human	188	100	-
183	Animal	153	134	-
184	Animal	158	073	-
185	Unknown	155	086	-
186	Animal	093	089	-
187	Unknown	159	123	-
188	Unknown	216	191	-
189	Human	249	165	-
190	Unknown	222	152	-
191	Animal	126	170	-
192	Animal	156	093	-
193	Unknown	114	055	-
194	Animal	070	092	-
195	Unknown	147	068	-
196	Animal	119	132	-
197	Unknown	126	149	-
198	Unknown	088	088	-

Footprint No	Human/Non-human/Unknown	Length (mm)	Width (mm)	Depth (mm)
199	Human	216	128	-
200	Animal	049	052	020
201	Animal	064	074	-
202	Unknown	189	157	070
203	Unknown	212	153	080
204	Animal	085	097	080
205	Animal	060	121	-
206	Unknown	122	080	040
207	Unknown	256	264	100
208	Unknown	132	076	040
209	Unknown	220	149	080
210	Unknown	166	067	060
211	Animal	116	120	040
212	Animal	121	178	050
213	Unknown	486	287	090
214	Unknown	175	118	0601
215	Unknown	205	123	070
216	Animal	281	132	070
217	Human	271	127	060
218	Human	307	150	060
219	Human	279	138	070
220	Animal	225	136	080
221	Unknown	098	094	-
222	Unknown	079	062	010
223	Unknown	446	383	090
224	Unknown	165	146	060
225	Animal	236	135	070
226	Unknown	128	083	070
227	Animal	161	140	050
228	Animal	148	120	060
229	Unknown	399	202	100
230	Unknown	214	170	090
231	Unknown	179	134	080
232	Unknown	286	158	090
233	Unknown	157	089	050
234	Animal	082	090	040
235	Animal	086	125	020
236	Unknown	110	075	020
237	Animal	229	138	050
238	Human	242	133	064
239	Human	337	124	053
240	Animal	103	096	026
241	Animal	140	135	060
242	Animal	088	068	060
243	Human	233	051	075
244	Animal	088	075	005
245	Human	376	102	054
246	Animal	165	104	059
247	Animal	128	165	048
248	Animal	174	140	024

Footprint No	Human/Non-human/Unknown	Length (mm)	Width (mm)	Depth (mm)
249	Animal	136	147	061
250	Animal	125	125	045
251	Unknown	442	268	111
252	Unknown	228	149	040
253	Human	117	074	030
254	Animal	284	143	098
255	Unknown	226	138	049
256	Unknown	328	316	126
257	Human	296	091	076
258	Unknown	180	089	036
259	Human	338	107	083
260	Animal	065	097	034
261	Unknown	224	130	006
262	Unknown	144	150	065
263	Animal	134	147	061
264	Animal	130	146	060
265	Animal	136	150	057
266	Animal	152	198	079
267	Animal	143	156	080
268	Unknown	201	109	060
269	Animal	139	082	004