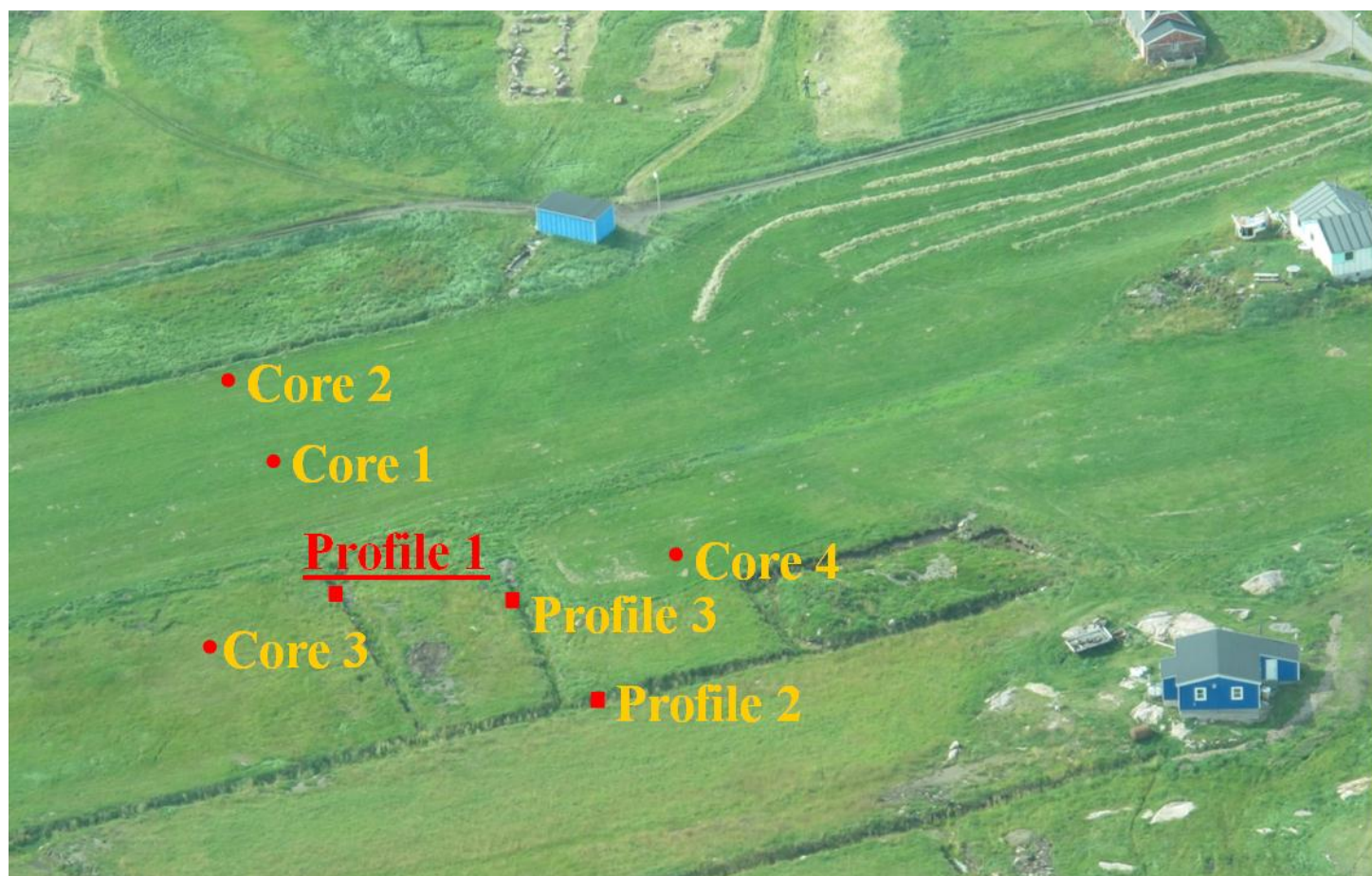


The midden at Garðar. Results from the macrofossil analyses.

Peter Steen Henriksen



The midden at Garðar. Results from the macrofossil analyses.

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In 2010 a series of samples for macrofossil analyses were collected from the midden in Igaliku 100 meters east of the ruins. Three intact columns were taken from the sides of the modern drainage ditches and four cores were taken with a 60 mm auger. The positions of the samples can be seen on the front page. The picture is taken by the author in the summer 2010.

Results from the macro fossil analyses

At present only the samples from profile 1 has been analysed. The results of the analyses can be seen in table 1. The column, divided into nine samples, was taken in a drainage ditch, where the midden layer was thickest. Figure 1 shows the profile and the position of the samples.

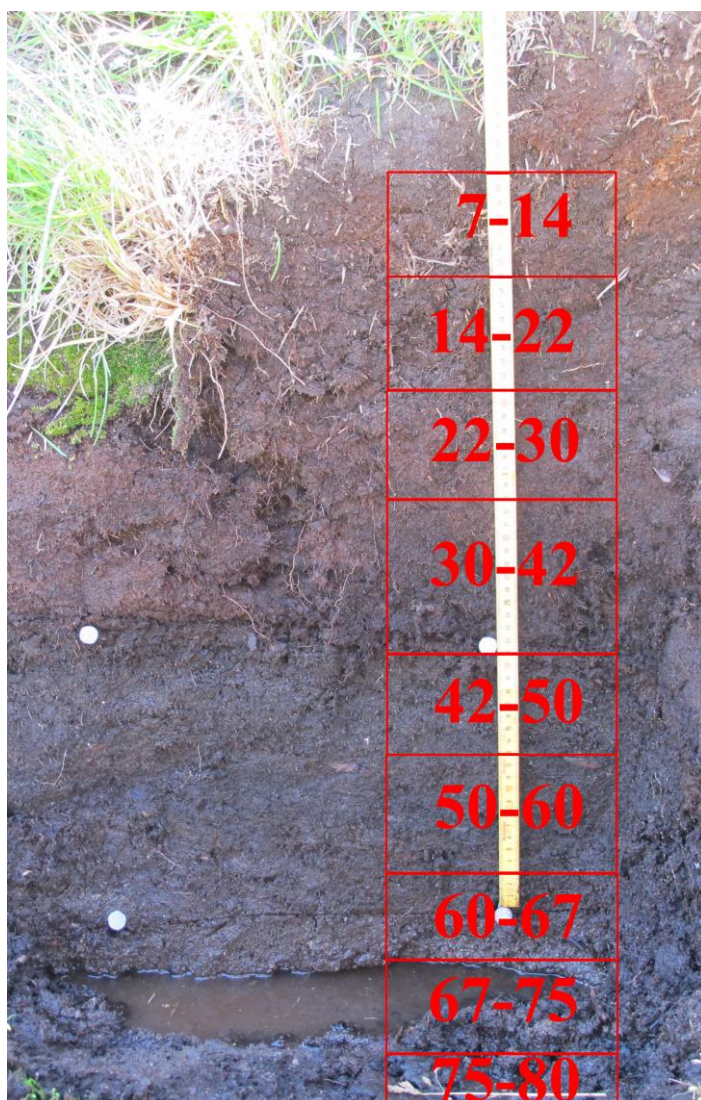


Figure 1: Profile 1 and the position of the samples. The two lowermost samples can not be seen on the profile due to the high water level.

The peat-layer was about 67 cm thick and laying upon a subsoil of coarse dark grey sand. The peat was divided into a reddish brown upper part of well preserved fibrous plant material and a dark brown under part of degraded clay-rich peat.

The same profile has been investigated and dated by Buckland et al. (2009). According to their age-depth model the dark brown layer can be dated to approx. 1100 -1400 AD, which is the period where the bishop's residence was in function.

The upper half contained only very few seeds and other macrofossils beside the root and stem parts that forms the layer. The layer seems not to be influenced by human activity, besides a few finds of charcoal, wood chips and bone fragments between 14 and 42 cm. As this layer was formed after the Norse period these finds might be refuse from the Inuits.

The layer between 42 and 67 cm contained numerous seeds, twigs and household refuse like charcoal, wood chips and bone fragments.

The sand layer in the bottom contained fewer seeds and no signs of human activity.

Table 1: Results of the macrofossil analyses of samples from profile 1 at E47. Where noting else is written, the figures represent seeds.

E47 Igaliku, profile 1	Depth in cm	7-14	14-22	22-30	30-42	42-50	50-60	60-67	67-75	75-80
		Volume of sample in ml	25	25	25	100	100	100	100	100
Ruderal plants/weeds										
Capsella bursa-pastoris	Shepherd's-purse			2		21	41	11		
Fallopia convolvulus	Black-bindweed		1							
Poa annua	Annual Meadow-grass			1						
Polygonum aviculare s.l.	Knotgrass		3	4		100	44	51		
Rumex acetosella	Sheep's Sorrel	1	2			3	4		17	
Stellaria media	Common Chickweed		3	1	1	251	250	93	16	
Thlaspi arvense	Field Penny-cress							1		
Tripleurospermum maritimum	Sea Mayweed					3	1	1		
Plants from grass- and heathland										
Deschampsia flexuosa	Common Hairgrass		2							
Juniperus communis	Common Juniper				1	3		4		
Loiseleuria procumbens	Trailing Azalea							1		
Papaver radicatum	Arctic Poppy						1			
Phleum pratense	Timothy		cf 7							
Ranunculus acris	Meadow Buttercup					4	6			
Rhinanthus minor	Yellow-rattle		1				3			
Selaginella selaginoides	Lesser Clubmoss, megaspores		3			17	5		100	100
Thalictrum alpinum	Alpine Meadow-rue					1				
Vaccinium spec.	Bilberries						1			
Viscaria alpina	Alpine Catchfly									1
Plants from wetlands										
Alchemilla spec.	Lady's-mantles					1				
Alopecurus geniculatus	Marsh Foxtail					10	10			
Carex spec.	Sedges		32	11	2	61	26	21	7	13
Catabrosa aquatica	Whorl-grass					250	1000	1000	100	
Eleocharis palustris/uniglumis	Common/Slender Spike-rush					1		1		
Empetrum nigrum	Crowberry					36	12	5	3	1
Juncus spec.	Rushes	3		1	2	100	250	250	250	
Montia fontana coll.	Blinks	19	17	32	75	1000	1000	1000	250	21
Pinguicula vulgaris	Common Butterwort					1		1		
Potentilla anserina	Silverweed		1	2	5	27	26	13	4	
Sagina saginoides	Alpine Pearlwort								3	
Viola spec.	Violets					1	5		1	
Water plants										
Callitriche hamulata	Intermediate Water-starwort					8	55	50	19	
Potamogeton filiformis	Slender-leaved Pondweed								1	
Trees										
Betula glandulosa	Glandular Birch						1			
Betula glandulosa	Glandular Birch, leaf fragments									1
Betula spec.	Birches, seeds			2	6		2			
Betula spec.	Birches, bud scales					2		2		2
Betula spec.	Birches, twigs						25			
Betula spec.	Birches, catcin scales					1				
Salix spec.	Willows, bud scales		2	3	5	9	5	3	1	
Salix spec.	Willows, twigs						25			
Variabel ecology										
Brassicaceae	Cabbage family							3		
Bryophyta	Mosses, stems			1		25		10	10	10
Cenococcum geophilum	Fungal sclerotia				1				1	
Draba spec.	Whitlowgrasses					1				
Luzula spec.	Wood-rushes						2			
Poa spec.	Meadow-grasses	2			2					1
Poaceae	Grass family		4	9	2	25	25		10	4
Ranunculus spec.	Buttercups	1		1						
Sagina spec.	Pearlworts					20	27			
Unidentified seeds				1				5	4	
Various plant parts										
Leaf fragments						10		10	4	
Flower fragments						5				
Twig fragments				2	5			25		10
Stem fragments										25
Charcoal			10	10	1	25	25	10		4
Wood chips		4	3			25	25			
Zoology										
Acarina					25	25	10		4	10
Insect remains		3	10	4	10	50	25	10	10	10
Trichoptera	Caddisfly, larvae cases									2
Bone fragments			3	3		25	25	100		

The vegetation and the landscape.

At the start of the habitation period, represented by the top of the sand layer and bottom of the peat, the area of the midden was wet. The flora is totally dominated by *Catabrosa*, *Juncus* and *Montia*, all plants growing on very wet ground. Seeds from *Potamogeton* and *Callitriche* and a single larvae case from a Caddisfly show that there must have been shallow waters and/or streams in the area.

The layer contemporary with the Norse habitation is dominated by the same wetland flora, but there are also many seeds from ruderal plants, introduced to Greenland by the Norse (Böcher et al. 1968). This indicates that plant material from the settlement has been spread on the area, or that the level of nutrition has increased strongly. The very high numbers of seeds from *Montia* also indicates that the area has been fertilised as also this species is promoted by a high level of nutrition.

The layer of fibrous red peat formed after the Norse period contains very few seeds and a narrower spectrum of plants. There are no longer signs of a high level of nutrition and the plants connected to open waters and very wet ground are almost absent.

The area also seems to have been almost treeless as seeds from Birches only appear in small numbers. Birches produce a very large number of seeds that spreads easily.

It is therefore likely that the many twigs from Birches and Willows found in the sample 50-60 cm have been brought to the area as household or farmyard refuse.

References

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Böcher, T.W., Holmen, K. and Jakobsen, K. 1968: *Grønlands flora*. P. Haase and Son, København