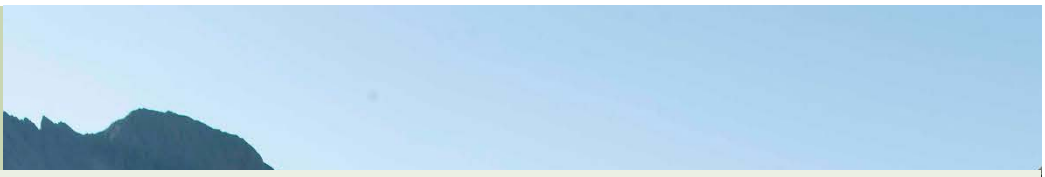
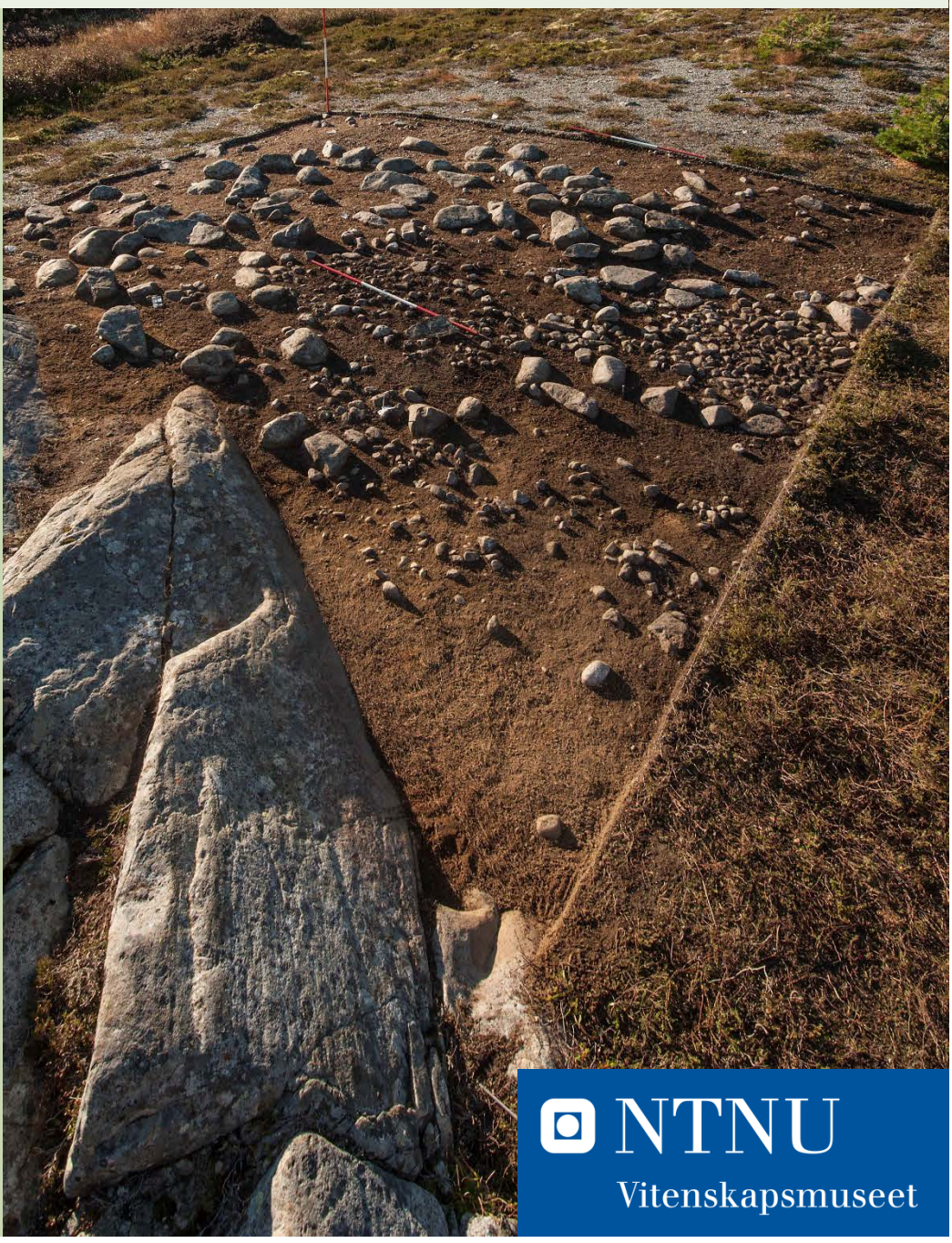


Hein B. Bjerck, Heidi Mjelva Breivik, Silje E. Fretheim and
Atilio Francisco J. Zangrando

Excavation of Mohalsen 2012-II, Vega municipality, Nordland

NTNU Vitenskapsmuseet
arkeologisk rapport 2016-4



NTNU
Vitenskapsmuseet

NTNU Vitenskapsmuseet arkeologisk rapport 2016:4

Hein B. Bjerck, Heidi Mjelva Breivik, Silje E. Fretheim and Atilio Francisco J. Zangrando

Excavation of Mohalsen 2012-II, Vega municipality, Nordland

NTNU
Vitenskapsmuseet

NTNU Vitenskapsmuseet arkeologisk rapport

Dette er en elektronisk serie fra 2014. Serien er ikke periodisk, og antall nummer varierer per år. Rapportserien benyttes ved endelig rapportering fra prosjekter eller utredninger, der det også forutsettes en mer grundig faglig bearbeidelse.

Tidligere utgivelser: http://www.ntnu.no/vitenskapsmuseet/publikasjoner

Referanse
Bjerck, H.B., Breivik, H.M., Fretheim, S.E. and Zangrando, A.F.J. 2012: NTNU Vitenskapsmuseet arkeologisk rapport 2016:4. Excavation of Mohalsen 2012-II, Vega municipality, Nordland.

Trondheim, juli 2016

Utgiver
NTNU Vitenskapsmuseet
Seksjon for arkeologi og kulturhistorie
7491 Trondheim
Telefon: 73 59 21 16/73 59 21 45
e-post: post@vm.ntnu.no

Ansvarlig signatur
Bernt Rundberget (seksjonsleder)

Kvalitetssikret av
Ellen Grav Ellingsen (serieredaktør)

Publiseringstype
Digitalt dokument (pdf)

Forsidefoto
Overview of Mohalsen 2012-II after excavation of Layer 1. Towards WSW, Da52222_034.
Foto: Åge Hojem, NTNU Vitenskapsmuseet

www.ntnu.no/vitenskapsmuseet

ISBN 978-82-8322-075-9
ISSN 2387-3965

Sammendrag

Bjerck, H.B., Breivik, H.M., Fretheim, S.E. and Zangrando, A.F.J. 2012: NTNU Vitenskapsmuseet arkeologisk rapport 2016:4. Excavation of Mohalsen 2012-II, Vega municipality, Nordland.

Mohalsen2012-II ble utgravd i oktober 2012 som en del av Marine Ventures-prosjektet. Formålet med undersøkelsen var å finne ut om restene av boligstrukturen på lokaliteten representerer et telt eller en mer permanent hytte/huskontruksjon, samt å undersøke bosetningskronologien og å analysere sammensetningen og spredningen av steinartefakter.

Hovedstrukturen framstod som en uorganisert ring bestående av 98 rullestein. To ildsteder ble funnet innenfor steinringen. Artefaktspredningen og utbredelsen av et brunt sandjordslag sammenfalt med restene av boligstrukturen.

I følge strandlinjediagrammer og de analyserte ^{14}C-prøvene kan lokaliteten dateres til siste fase av tidligmesolittikum (TM3). Det ble funnet få tidsdiagnostiske artefakter, men de innsamlede funnene ser ut til å støtte den tidligmesolittisk tidsplassering.

Observasjonene gjort i felt tilsier at boligstrukturen har vært et hus (dvs. en bolig som er konstruert med tanke på lengre opphold, og/eller gjentatte besøk) heller enn en teltring, som er mer vanlige på boplasser fra tidligmesolittikum.

Nøkkelord: Tidligmesolittikum – huskonstruksjon – ildsted – kvarts – kvartsitt – flint – mikrolitt – stikkel

Hein B. Bjerck, Heidi Mjelva Breivik, Silje E. Fretheim and Atilio Francisco J. Zangrando, NTNU Vitenskapsmuseet, Seksjon for arkeologi og kulturhistorie, NO-7491 Trondheim

Summary

Bjerck, H.B., Breivik, H.M., Fretheim, S.E. and Zangrando, A.F.J. 2012: NTNU Vitenskapsmuseet arkeologisk rapport 2016:4. Excavation of Mohalsen 2012-II, Vega municipality, Nordland.

The excavation of Mohalsen2012-II was conducted in October 2012 as part of the Marine Ventures project. The main objective of the excavation was to sort out the character of the structure of Molhalsen2012-II (expedient tent or permanent house), establishing chronologies of occupations and analyzing the composition and distribution of its lithic assemblages.

The main feature was a somewhat disorganized ring of 98 cobbles. Two fireplaces were detected on the inside, and the distribution of artifacts, as well as an area of brown sandy soil, seemed to coincide with the extension of the dwelling structure.

Shoreline dating and ^{14}C dates demonstrate that this is an Early Mesolithic site, probably within EM3 (8500-8000 cal BC). The artifact assemblage contains few chronological markers, but seems in agreement with the date.

The observations point in the direction of house (i.e. a dwelling constructed for lengthy occupations, and to be of use during reoccupations at the site) rather than an expedient tent, which is more common at sites from the Early Mesolithic period.

Key words: Early Mesolithic – dwelling structure – fireplace – quartz – quartzite – flint – microlith – burin

Hein B. Bjerck, Heidi Mjelva Breivik, Silje E. Fretheim and Atilio Francisco J. Zangrando, NTNU University Museum, The Department of Archaeology and Cultural History, NO-7491 Trondheim

Arkivreferanser

Mohalsen 2012-II

AskeladdenID	46505
Tilvekstnr	T-26053
Fotonr	Da52222, Da52225-52240
Kartskapnr	9583–9585

Fylke	Nordland
Kommune	Vega
Gårdsnavn	Moen nordre/Moen søndre
Gårdsnummer	11/1–2
Lokalitet	Mohalsen2012-II
Kulturminnetype	Boplass fra tidligmesolittikum
Datering	8500-8000 f.Kr.

Table of contents

List of figures and tables

1. Introduction

The excavation of Mohalsen 2012-II is a research project related to Marine Ventures (Bjerck and Breivik 2012; Bjerck and Zangrando 2013). Expenses were covered by participants' time and research funding: Fretheim/Breivik from their PhD expense grants, Zangrando from his Marine Ventures research grant, Bjerck (including Swensen) from his research account from NTNU Vitenskapsmuseet. Expenses for rental car and analysis of scientific samples were covered by the Marine Ventures project.

Bjerck has conducted the work with the report, Fretheim and Breivik have processed and classified artifacts, Zangrando has organized the samples for radiocarbon (charcoal) and chromatographical analyses (sediments).

The work is a joint operation, and it was decided that the group "owns" the scientific results as a collective, and that the group will decide how data is published beyond this report.

In agreement with cultural management regulations, Riksantikvaren was noted of the excavation, cf letter from NTNU Vitenskapsmuseet 25.5.2012, and response from RA, letter of 23.07.2012. Vega municipality and the Culture Management in Nordland fylkeskommune were notified by copy of this correspondence, and also the memo "Vega excavations week 40–42" by Skar/Bjerck – practical information for project participants that was prepared in mid-September.

1.1. Landscape and site topography

Mohalsen is a low bedrock ridge at the southeastern base of Gullsvågfjellet at Vega (cf. photos 30-37), situated just below the marine limit (96m a.s.l.). The area is mix of wave abraded bedrock ridges and beach sediments. During the Early Mesolithic, there was a large sheltered bay on the southwest side of the Mohalsen formation. Obviously the site was ideal for the early settlers, and settlements are found c. 85 m a.s.l. and also at the successive lower shorelines. The combination of large areas with exposed beach sediments and strong winds have produced sand dunes that today cover a large part of the area and the Early Mesolithic settlements. The Mohalsen2012-II is situated at an exposed beach formation that is 75m a.s.l., close to an outcrop of bedrock that protected from strong winds.

1.2. Research history, Mohalsen

The site is part of Askeladden id. 46505, Mohalsen (Moen nordre/Moen søndre gnr. 11/1–2), Vega k., Nordland, a large area with many sites that through the years have been named in different ways. This particular site is named Mohalsen2012-II to avoid confusion.

It is reported that artifacts from Mohalsen were collected by Edvard Havnø as early as 1924. However, the importance of the site is not fully acknowledged until Fredrik Gaustad's surveys in 1972, which led to the excavation of the Mohalsen I site in 1974 (Pettersen 1982). The artifact assemblage included unifacial blade cores, blades, single edged points, burins, and a flake adze – all typical for the Fosna techno-complex (T19464, cf. Bjerck 1983, Fig 34). The excavation also uncovered a fireplace that was ^{14}C dated to 9350±270 and 8440±190 Alterskjær 1985). This is the site that was further explored by Birgitte Skar and Astrid B. Lorentzen this year, Mohalsen2012-I.

The extraction of gravels in the glacial deposits at Vega in the 1970s was a threat for the Stone Age sites, in the Moen-area and elsewhere at Vega. To counteract this, Kristian Pettersen conducted a survey in the Mohalsen area in 1978 (Lok. 1–16, T19949–63, Pettersen 1979), and some years later, also excavated several sites (Pettersen 1982). In his report, Pettersen

argued for the need for further investigation of the unique Stone Age sites at Vega. This was followed up by the DKNVS-Museet (now NTNU Vitenskapsmuseet), in the form of surveys conducted by Kari Støren Binns (Binns et al. 1982). Mohalsen was one of the survey areas that were further examined by screened test pits and systematical surface collections in the wind eroded beach deposits. New settlement areas were discovered within the Mohalsen area, included the now excavated site Mohalsen2012-II. The site was recorded by a concentration of surface finds and positive test pits (T 20499:25–40 and 47–53, cf. Attachment 6). The 55 artifacts from the site are mostly flakes of quarts, quartzite and some of flint, nine blades (mostly flint) and an end scraper. The dwelling structure that now is excavated was not included in the documentation. At the time, there was little knowledge of Mesolithic dwelling structures from Vega.

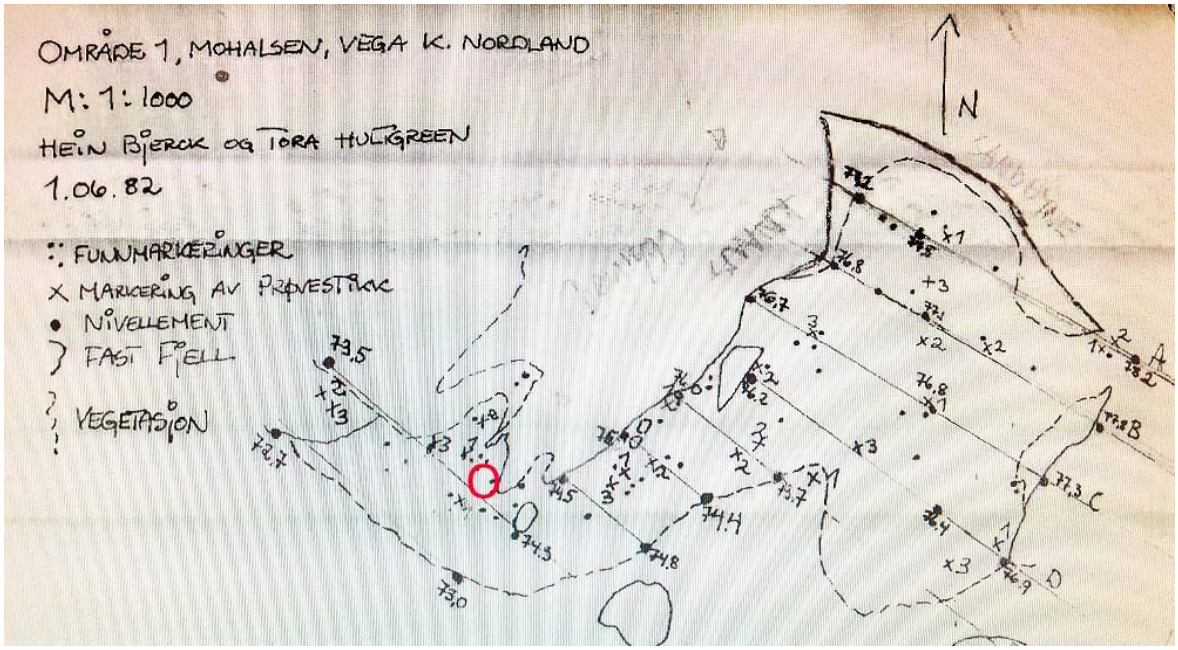


Figure 1: Plan drawing of Area 1, documented in the 1982 survey by Binns, Bjerck, Hultgreen and Sandmo. The location of Mohalsen2012-II in zone H is marked in red. Dots mark artifacts at the surface, X is test pits. In zone H, X1 and X2 are positive, X3 is negative. In zone I, test pit X2 is positive, and X1 (just below the structure) and X3 are negative.

During an excursion to Mohalsen in 2005, Bjerck and Leif Inge Åstveit observed and interpreted the structure as a Mesolithic tent foundation (cf. photo in Bjerck 2009,124), in contrast to the nearby, and presumably somewhat younger circular wall structure that is believed to represent a permanent house (Bjerck 2010, 97).

2. Undersøkelsens rammer

2.1. Time and participants

The excavation took place in the period 4.–17. October 2012, and was conducted as a joint operation with Birgitte Skar's excavation at the nearby Mohalsen2012-I (i.e. Mohalsen I, the site that was excavated in 1974, cf. information above).

Participants: Heidi M. Breivik (4.–10.10), Atilio Francisco Zangrando (4.–17.10), Silje E. Fretheim (8.–13.10), Elisabeth Swensen (4.–12.10), Magnhild Husøy (12.–13.10), Hein B. Bjerck (4.–17.10), Gjermund Steinskog (GPS), Åge Hojem (photographer, 15.–16.10), Terje Brattli (guest excavator, 11.10).

2.2. Objectives

The main objective of the excavation in 2012 was to sort out the character of the structure of Molhalsen2012-II (expedient tent or permanent house), establishing chronologies of occupations and analyzing the composition and distribution of its lithic assemblages. Our interest for this question is many sided, but all come together in the Marine Ventures project. Remains of expedient dwellings, huts, or more likely tents, is a common feature at sites from the Early Mesolithic period. As far as we know, no permanent houses have been documented before the Middle Mesolithic period. In fact, the pit houses from Vega (Åsgarden I and Middagskarheia I, c. 7500 cal BC, Bjerck 1989, 2010) are among the very oldest in Norway/Scandinavia, so far (cf. discussion in Åstveit 2009). This distinction may be related to a change in logistics and settlement structure; from a highly mobile society that move around in boats, all and everything on board, to a structure of established sites with different functions, base camps as well as hunting stations that is documented at Vega around 7500 cal BC (Bjerck et al. 2008, 565pp). The character of the dwelling is a key issue in this discussion, which is relevant in several of the Marine Ventures research objectives as well as the PhD projects of Fretheim and Breivik.

Thus, the plan was to clean the structure of vegetation, and remove the top layer of the beach sediment to get a better impression of the positioning of the rocks, to single out bedrock and rocks that were not part of the human-made structure. We also hoped to find a fireplace that could produce material for ^{14}C dating, and soil samples that could reveal details of the character of the fireplace. The excavation was planned to include one mechanical layer (5cm) on the inside as well as the outside of the structure to document patterns in artifact distribution and composition.

We debated how to be able to decide if the structure was a house or a tent, and concluded that details in the arrangement of rocks were important. The nature of the tent is that it is designed and managed for a specific stay, short or long, seasons, weather conditions – in contrast to a permanent house that is to endure a multitude of strains all through the whole sequence of seasons.

2.3. Methods

A coordinate system was established, and the SW corner of the 35m^2 large excavation area was defined as 50x/50y, x-axis increasing towards N, y-axis towards E. Squares were subdivided in 50x50cm quadrants labeled NW, NE, SW, SE.

The site is situated at a beach ridge formation, a sorted deposit of sand/grape-sized pebbles. For the most part, the wind-eroded surface of the formation was without soil and vegetation cover, and the initial cleaning included removal of live plants, and patches of sandy turf.

Layer 1 was a mechanical layer of the top 5cm of the beach deposit, leaving all larger stones and collections of cobbles. As there was a clear distinction between the rocks in the structure and the

natural sediment, this process was rather unproblematic. All excavated sediments were water screened (4mm) in a nearby pond. Quadrants are basic references for artifact distribution, although a number of artifacts are related to exact coordinates.

A plan drawing (Attachment 2 (digital); archive no. 9583–9584 archive (original) was made in parallel with the excavation, after the removal of Layer 1. The excavation was also documented in individual “square forms”.

To obtain samples for dating and chemical analysis, segments of the two recovered fireplaces were excavated down to sterile beach sediments, profiles documented by photo and drawings, Fireplace 1, 56x/52y (the whole square), and Fireplace 2 (53x/53y, NW and NE) (Attachment 3 (digital); archive no. 9585 (original)). These areas were excavated in mechanical layers around 3cm thick. In both places, artifacts were documented down to c. 10cm depth below surface.

Our initial plan was to leave the recovered structure of cobbles as an attraction for future visitors. However, the two fireplaces were only partly excavated, and there are also more artifacts in the now exposed gravel at the site. Thus, there was a need for a protecting cover over parts of the site. The “inside” part of the structure was covered by protecting water permeable cloth, and beach gravel (the excavated masses at the screening pond), rocks and pieces of turf.

3. The excavation

Day by day progress

October 4: Rainy day. The equipment was already transported to Vega by Skar and Breivik, and also the coordinate system at the site was put (Steinskog and Breivik). Establishing equipment and tent by the site, Breivik, Zangrando, Swensen and Bjerck. Pre-excavation photos. Started with clearing the vegetation from the wind eroded beach deposit.

October 5: Cloudy, but little rain. Finished with the clearing of vegetation. Photos. Starting excavation in SW corner of the marked field after lunch, 5cm mechanical layer, all masses screened in nearby pond.

October 6: Rainy day, Saturday off.

October 7: Cold and sunny. Late start, continued excavation the whole day. No artifacts in area outside the rock alignment.

October 8: Fretheim has joined to the crew. Heavy rain most of the day. Water trouble in N party of the excavation field, work concentrated in the dryer southern side.

October 9: Heavy rain from the morning, lots of surface water, the floor of our tent is a deep pond. We quit at 13:00.

October 10: Breivik leaves in the morning. Sunny day, starting to be colder. Continued excavation of Layer 1. Swensen uncovers Fireplace 1. Fireplace 2 is starting to appear. We have now reached the "inside" of the rock alignment, where more artifacts are found. Plan drawing is prepared in parallel with excavation.

October 11: Excursion to Åsgarden in the morning. Continued excavation of Layer 1. Brattli is guest excavator. Swensen's last day, moves to the other site. Visit to Ljøsåsen on our way home ends in quick sand.

October 12: Bright, but very cold. Husøy joins Zangrando and Bjerck at the site. Frost in ground, screening pond covered with ice. Layer 1 almost finished. Fretheim leaves Vega after work.

October 13: Also bright, and colder. Surface is frozen, and work is slow. Overview photos. Excavation of Layer 1 complete in the afternoon at 1700, in order to dry up and adjust to the planned photo session at Monday 15. Steinskog is mapping the site with surroundings, and also the adjacent sites to the SW.

October 14: Excursions to Middagskarheia and Eidem. Hojem arrives in the evening.

October 15: Another bright and cold day, even more frost on ground. Crew is Zangrando and Bjerck. Reference soil samples at some distance from the site are collected. Hojem makes photos of the prepared post-Layer 1 surface, and also the nearby sites to the SW. The site is a beauty. As soon as photos are finished, Zangrando and Bjerck start to work with Fireplace 1, excavating and sampling in 56x/52y. All rocks in the two quadrants are collected for analysis.

October 16: Also bright and cold. Zangrando and Bjerck continue to excavate/sample Fireplace 1, and are finished by the end of the day. Very good samples. Artifacts found in gravel deposits below fireplace. Profile documented with photos and drawing. Analysis of the sorted rocks in Fireplace 1. Visit from Helgeland museum and journalist from Brønnøysunds Avis, Hojem takes more photos.

October 17: The last day. Bjerck Zangrando excavate/sample Fireplace 2, 53x/53y, quadrant NW and NE. Also very good samples here. Photo and drawing of profile. As in 56x/52y there are artifacts below Layer 1, c. 10 cm down in beach gravel. Swensen and Husøy joined us in the closing

of the excavation, and the covering of the central part of the excavation field, the two fireplaces and what appear to be a floor area with more artifacts on the inside of the circular rock structure. Finished at 14:42.

(Cf. also attached photos to follow the stages of the excavation, Attachment 8):

3.1. The site, features and stratigraphical observations

Excavated area: 35 m^2

Number of features: 3

Number of artifacts: 341

The main structure: 98 cobbles

As was visible at the surface before the excavation, the main structure is a circular alignment of c. 98 cobbles, counting only rocks larger than 20cm. The majority (60) is well rounded, many (23) are rounded/angular, and a few (15) are flat slabs. The plan drawing shows that most have elongated shapes, and are mostly between 25–50cm long, and 20–40cm wide/thick. This means that volumes are approx. 0,012 and 0,003m^3, i.e. that most rocks (specific weight 2,5) are within the range of c. 7–30 kg.

The structure is situated on top of a wide E–W oriented beach ridge, 75m a.s.l. (measured by Steinskog). The beach formation is fairly flat in the top (N part), and is sloping towards S from around 52x. The rocks are in a matrix of well sorted beach sediment, sandy layer with pea- to grape-sized pebbles, and a few larger pebbles. This means that the distinction between the natural sediment and the human made structure is clear. Most of the cobbles in the structure were also visible from the otherwise stone free surface before excavation, but the size and form of the cobbles were more in the clear after the removal of the 5cm thick Layer 1. After excavation of Layer 1, we were able to move *all* rocks by kicking them – meaning that they are all positioned in the top part of the sorted beach gravel, and not protruding from a underlying rocky moraine. In conclusion, the unnatural positioning of larger beach cobbles in a well sorted fine grained pebble layer, and the uniform character of their size (weight) all indicate that the rock structure is made by humans. This is also supported by the recovered artifacts, which are all on the inside of the structure, and also the position of the two fireplaces and the location of the brown sandy soil that coincide with the structure.

In the square 54x/51y there were a couple of angular rocks lying partly on top of each other that did not seem to be in agreement of the proposed age of the structure. These rocks were removed (after documentation in the plan drawing, see photo), and eventually also erased in the finished plan drawing. We suspected that these rocks could be related to more recent activity (fireplace?), but the excavation of Layer 1 at the spot did not produce any more clues to how to interpret this.

The excavation of Layer 1 produced a more clear-cut picture of the individual rocks, but the structure as a whole became more confusing. Towards the S and W, there is a zone with scattered rocks that is difficult to relate to a construction. The rocks seem too many and too scattered to be a tent ring, and also too scattered to be a wall in a permanent house. The latter may be related to the sloping surface – that the alignment of rocks through the years have slided downslope.

Fireplace 1

On the surface/plan: This structure was not detected at the surface before excavating. After the removal of Layer 1 (sandy soil with scattered plants/roots), the structure appeared as a c. 1x1m concentration of "potato-sized" pebbles, one layer, and clearly defined (cf. photo 15). Many are cracked by fire, but many are not. The pebbles are found in a dark matrix, and patches of sooty soil with scattered charcoal pieces. Around this there are also some larger rocks and slabs that seems related to the fireplace. The position of Fireplace 1, however, is way out of center of the main structure.

Excavation/section: 56x/52y was excavated to examine the fireplace, to retrieve samples and to prepare a section along 56–57x/53y. The excavation revealed that the distribution of sooty soil and charcoal are more restricted than the pebble structure, this feature is mostly in quadrant NE. This is evident on photos (39, 41, 43) of plan and section. There was also a patch of silty reddish sediment (55,6–56,75x), that may be related to fire (photo 43 and Profile drawing).

The section does not reflect the rather dense layer of pebbles in the structure. However, the "Brown sandy soil" was very visible here (see below).

The section (oriented perpendicular to the beach ridge) also shows details in the formation of the beach sediment. A sorted gravel layer at the base of the section is covered by beach sand and a layer of sandy gravel that is disappearing towards N (the back of the beach ridge). The latter is probably related to an incident of high energy wave action in the end of the formation process, possible a winter storm. The gravel layer is finally covered with more fine-grained beach sand, which marks the last phase of the natural processes – the settlement is established at this surface.

Analysis of the sorted pebbles in Fireplace 1: In each of the two excavated quadrants of the fireplace, all pebbles were collected and analyzed. Cf. photos 46–48.

	Quadr SE		**Quadr NE**		
Pebble size (cm)	**Burned**	**Not burned**	**Burned**	**Not burned**	**SUM**
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	1	1
4	0	1	0	0	1
5	2	5	1	1	9
6	2	6	3	1	12
7	2	5	3	1	11
8	2	4	5	5	16
9	2	3	2	1	8
10	3	3	1	1	8
11	2	1	0	4	7
12	1	2	1	0	4
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	1	1	2
SUM	**16**	**30**	**17**	**16**	**79**

Table 1: Pebbles in SE and NE quadrants of 56x/52y, Fireplace 1.

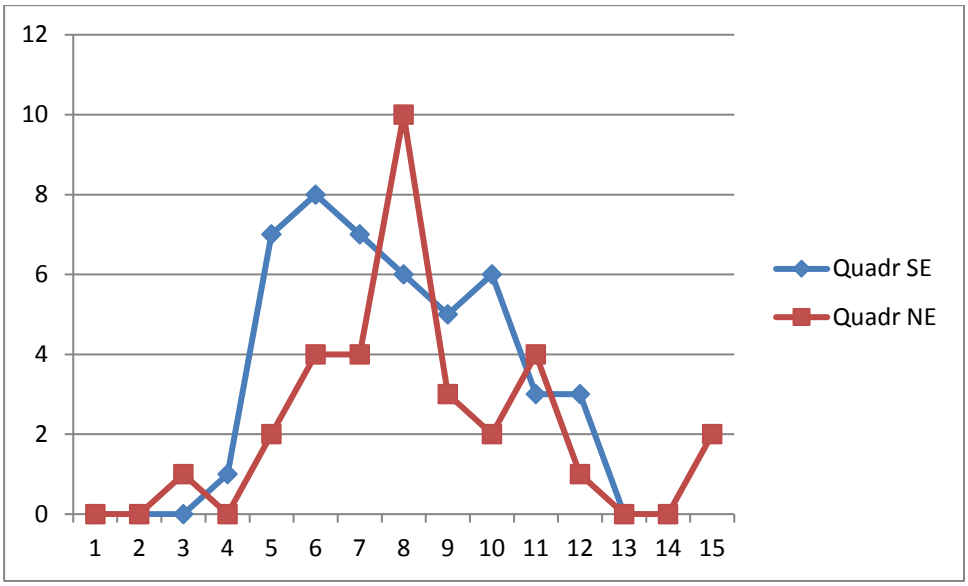


Figure 2: The relative pebble size (0–15cm) in the two excavated Quadrants of Fireplace 1

The 79 pebbles are clearly sorted; in both quadrants most pebbles (91%) are within a range of c. 5–11cm. A visual inspection (Zangrando / Bjerck) indicate the heating is moderate. Most of the pebbles still have their original beach pebble shape, and heating (red coloring / cracks) are only visible at 33 (42%) of the pebbles. There is a slight difference in the burned / not burned ratio between the two quadrants, c. 25/75% in SE, and c. 50/50 in NE. This ratio may reflect the fact that NE is more central in the fireplace.

Fireplace 2

This structure was not visible at the surface. In the process of excavating Layer 1, it was detected by higher density of pebbles, patches of black soil, and also artifacts. However, this structure was not nearly as defined as Fireplace 1, and seems to be older than Fireplace 1, as also was supported by the ^{14}C datings.

To produce samples and section, 53x/53y/NW and /NE was excavated, in c. 3cm thick mechanical layers. Also here, there was only one layer of pebbles, in a matrix of brown, sandy soil, and, mostly in NE quadrant, black sooty soil and scattered charcoal pieces. As in Fireplace 1, the area with charred substances was more confined than the arrangement of pebbles (cf. photos 45, 49, 50).

The fireplaces look like structures that have been documented from Early Mesolithic contexts, e.g. Locality 48 in the Ormen Lange Nyhamna project (Bjerck et al. 2008, Nummedal 1924). Characteristics are the collections of “potato sized” pebbles, moderately heated, and the occurrence of sooty sand/gravel. Similar collections of pebbles are also documented in the Brunlanes project (Jaksland in prep.), but without soot and charcoal.

The brown sandy soil

The removal of Layer 1 and the cleaning of the fireplaces revealed a very distinct color difference in the soil, easy to see on the photos (e.g. photo 25/PA130429). This is the horizontal distribution of the dark brown sandy soil that also is evident in the two sections. This stratigraphical layer was

especially clear around the two fireplaces, and is on the inside of the main cobble structure, and more or less concordant with the artifact distribution. The exact outline of the layer in plan was difficult to document as the borderline was patchy and gradual – and hence not included in the original drawing. However – the approximate extension of the layer, as it appears at the photo 25/PA130429 is shown at the digital plan drawing.

The composition of the layer seems to be natural, like a much decomposed vegetation layer, humus mixed with sand. However, the positioning of the layer, inside the cobble structure, around the fireplaces, and in parallel with artifact distribution, points in the direction of a cultural layer. There is a possibility that both are true. The observed brown soil may be a cultural layer by proxy: An original cultural layer, deriving from organic components from the occupation in the dwelling structure, would certainly attract vegetation in the otherwise naked beach ridge after the site was abandoned. The initial vegetation would attract new generation of plants that eventually would make up the observed soil – even though the original organic components from the settlement are long gone.

4. Material

4.1. Scientific samples and ^{14}C dates

All in all, 11 samples of charcoal, and 13 sediment samples were collected, cf. table, Attachment 7. The sediment samples will be used to examine the chemical composition of the soil in the fireplaces, and will hopefully innominate if blubber has been part of their fuelling. The process to analyze this is started (Carl Heron, Univ. of Bradford, UK), but is not ready in time for this report.

Charcoal samples were collected in situ from both the two fireplaces. Samples are already dated (Beta), results are as follow (Attachment 10):

Fireplace 1, 9050+-40, 2 sigma cal BC is 8300–8230, i.e., EMC3, just as expected.
Location of sample is 56.65x/52.27y, Layer 3, c. 10cm below surface.
Reference: Beta-335452, Moh2012IIFP1

Fireplace 2, 9540+-40, 2 sigma cal BC is 9140–8970 and 8940–8750, i.e. EMC2,
Location of sample is 53.7x/53.6y, Layer 3, c. 10cm below surface.
Reference: Beta-335453, Moh2012IIFP2

While the date of Fireplace 1 is very close to expectations, the date from Fireplace 2 is some hundred years older than expected. That the latter is the older of the two is in agreement with observations in the field, but 450-500 years difference between the two as suggested by the dates seems too much. They seem to be related to two occupations, more or less in the same structure, and it is likely that there is a relation between the two. Also the rapid shoreline displacement at the time, suggest a limited age difference. The date of Fireplace 2 is within a difficult part of the calibration curve, maybe this could explain things.

4.2. Artifacts

Raw materials

The raw material could be divided into four categories:

quartz		196
quartzite		92
flint		49
rock crystal		4
	SUM	**341**

The quartz is mainly of a white, coarse grained quality, but also some finer grained material was found. It appeared both as artifacts and natural debris, and the property of the material sometimes made it difficult to distinguish between culture and nature. The quartz hence may be a bit overrepresented. However, a relatively good representation of cores and tools shows that this material was exploited on the same level as better quality raw materials.

The quartzite artifacts are, with a couple of exceptions, clearly made from material taken from the same source. It is dark grey and finely grained. Its somewhat brittle quality seem to have caused artifacts to break during production: a high percentage of the flakes and tools have hinges, step breaks or straight fractures.

The flint appears in relatively small quantities and has different qualities. Some of the artifacts have a white patina. The selection of flint, and also the lack of cores, indicates that this material was of secondary importance and has probably been collected locally as beach pebbles.

Artifact types

Flakes: The lithic material is dominated by flakes (301 / 88%), with the medioflake (the maximum measurement is between 1 and 4 cm) as the far most common size. Quartz (175) and quartzite (77) are the most frequently occurring raw materials among the flakes, before flint (45) and rock crystal (4). There are also many fragments (debris without identified strike point/bulb or ventral ripples).

Eight flakes have use-wear or retouch. The retouched flakes are made from quartzite (2) and quartz (1). They all have retouch along a small concave part of the edge. A function as cutting or scraping tools can be suggested. The five flakes with use-wear have diverse morphological traits, but three of them have a strong, pointed corner that indicates the function as engravers or burins.

Cores: The second largest artifact category is the cores and core fragments (23 / 7%). Most of them are classified as undetermined; many with several platforms. The pre-forms and the undetermined cores are almost exclusively made from coarse, white quartz (one from flint and one from quartzite). They are characterized by a pragmatic approach, making the best out of the raw material at hand.

The most interesting cores are the (three) discoid ones. These types of cores are known from EM contexts, mainly from northern Norway. They are almost exclusively made in other materials than flint. The three discoid cores from the Mohalsen site are all made from the same fine grained, dark grey quartzite. They are of somewhat different shapes, but all have traces of removals of several large flakes on both sides, and all around the edge. All the cores have abrasion or use-wear along parts of the edge. The negative flake scars have, in several instances, a characteristic fan shape, and hingings are common. Some of the flakes in the same raw material also has this shape, and are likely to have been detached from these cores.

A single unifacial core was recovered. However, it does not have the typical EM traits, as the two main platforms are not opposing but are rather situated perpendicular to each other. A third, less pronounced platform has marks of preparation, and at least one flake has been detached from here.

A bipolar core of quartz was also found. Nevertheless, the debris suggests that this reduction technique was not employed to a great extent.

None of the cores are proper blade cores, as they don't have negative traces of previous (successful) detachments of blades. This is also reflected in the very few blades recovered (5). One of them was refitted with a burin-like tool, showing that the intention probably wasn't to make a blade after all.

Tools: Besides eight flakes with use-wear or retouch, the tool category includes a lancet microlith, scrapers and burins. The *microlith* is the only datable instrument. It's made on a blade of the same dark grey quartzite as the discoid cores. The retouch is quite coarse, and is slightly convex towards the point. It has a step fracture in the opposite end. The properties of the raw material make it difficult to determine which end is the proximal, but the shape and thickness of the retouched edge gives associations to a bulb removal. There are also marks of previous preparation on the dorsal side, indicating at least a platform in this end. Moreover, the fracture is likely to have occurred during the production of the blade, as many of the quartzite flakes seem to have suffered the same destiny.

The clearest example amongst the four *scrapers* is one made from milky quartz. The tool has convex retouch in the distal end, and is also worked along the edges from the platform remnant in the proximal end: retouch on one side and a burin spall on the other. The other scrapers have more disputable retouch, and are classified as uncertain tools.

Three *burins* were recovered from the site. One specimen made from quartz has indecisive marks along a fracture edge. The two other ones are made from the dark grey quartzite and are more elaborately worked with several detachments in order to form a tough working edge. Both tools have use-wear or light retouch along another edge, and may also have been used as a scraper. The tools (13) constitute 4 % of the collected artifacts. The blades are not included in this estimate.

The classification of artifacts

Blade		
macroblade		1
medioblade		4
Flake		
macroflake		7
macroflake with use-wear		3
medioflake		230
medioflake with use-wear		1
microflake		34
fragment		25
fragment with use-wear		1
Diagnostic flake		
s*craper-edge rejuvination*		1
Core		
unifacial core with several platforms		1
bipolar core		1
discoid core		3
core with one platform		1
undetermined core with several platforms		1
undetermined core pre-form		2
Core fragment		
fragment of platform core		2
fragment of undetermined core		12
Microlith		
lancet microlith		1
Scraper		
endscraper on flake		1
undetermined scraper		3
Retouched flake		
medioflake with concave retouch		2
retouched fragment		1
Burin		
Burin, w/burin blow on fracture (Norw.,*kantstikkel på brudd)*		2
undetermined burin		1
	SUM	**341**

The collected material provides few chronological clues. The microlith and the discoid cores are the only artifacts pointing towards an Early Mesolithic date. The practically total absence of blade technology is uncommon in this time period, but the cores show that other reduction techniques were performed. The properties of the chosen raw material may have invited to a different technological approach, as both the quartz and quartzite easily breaks when stricken.
A look at the artifacts that were recovered in the 1982 survey revealed four regular blades and a core front from a blade core – probably conical – in flint (T20499:28-31, 33). These suggest a dating to Middle Mesolithic/Late Mesolithic. However, a change to production of more regular blades could have happened already in the EM/MM transition (Bjerck 1983). The rest of the collection resembles the material from the present excavation: mainly flakes and fragments from white quartz and dark grey quartzite.

Artifact distribution

Vertical distribution: The only units to be excavated beneath Layer 1 were 56x/52y/NW, NE, SW, SE and 53x/53y/NW, NE. Post-depositional processes (frost action etc.) are usually the main factors affecting the vertical finds distribution on Norwegian EM sites. We expected the top 5cm of the beach deposit not only to provide a representative picture of the horizontal finds distribution, but to include the majority of the finds from the site. The vertical finds distribution within the 56x/52y and 53x53y units seems to contradict this (table below). However, these units comprised parts of Fireplaces 1 and 2, both with a clear stratigraphy (see description above, Profile drawing, Photos 43, 50). In fact, Layer 1 above the fireplaces is substantially different from Layer 1 elsewhere on the site, as it consisted mostly of the thin deposit of humus mixed sand above and between the closely set pebbles on top of the original site surface. The level corresponding to Layer 1 (top 5cm) elsewhere on the site is thus closer to Layers 3 + 4 (top 3+3cm beneath the fireplace pebble layers). It should also be mentioned that many of the finds from Layer 4 – particularly the large number of quartz finds from beneath Fireplace 2 – are unspecified fragments that could well be the result of fire cracking.

Mechanical layers	Number of finds, 56x52y (NW, NE, SW, SØ) Fireplace 1	Number of finds, 53x53y (NW, NE) Fireplace 2
Layer 1	3	6
Layer 2	1	2
Layer 3	4	12
Layer 4	28	66
Layer 5	0	0

Table 2: Horizontal distribution of artifacts in the excavated areas by Fireplace 1 and 2. These are the only parts of the site that was excavated to sterile sediments.

Horizontal distribution: Of the 227 finds from Layer 1, 39% were found in situ, and the exact positions were noted in the field. In attachment 4a, artefact distributions (in total, and different raw materials) are displayed. Both in situ finds and finds from screen in Layer 1 are marked – the latter randomly placed within the 50x50cm excavation units. The total distribution show that nearly all finds came from the northeast part of the excavation area, mostly between and east of the two fireplaces, and within the brown sandy soil area. The southwest half of the circular dwelling structure ("the main structure") is almost devoid of finds. No "wall effect" restricts the finds in the northeast part, which could be seen as indication that the entrance faced this way. This would mean that Fireplace 2 was situated in / near the entrance area, but still inside the dwelling.

The ^{14}C-dates indicate that Fireplace 1 postdates Fireplace 2 by several generations. Still, there are no obvious stratigraphical indications of different phases on the site, and nothing in the total finds distribution to indicate separate activity areas. If we look at the distribution of different raw materials, however, a pattern becomes quite clear: There is a marked concentration of the dark

grey quartzite finds, including the three discoid cores and two burins, just east of Fireplace 1, against the north limit of the excavated area (cf. Attachment 4d, distribution of quartzite). The quartz finds, on the other hand, show a concentration within and surrounding Fireplace 2 (cf. Attachment 4c, distribution of quartz). The flint finds are not very numerous, and show no clear concentrations (cf. Attachment 4b, distribution of flints). The horizontal distribution of quartz vs. quartzite in Layer 1 could be seen to indicate that quartz was mainly used in the earliest of the demonstrated occupational phases, represented by Fireplace 2 and (possibly) the dwelling structure, while the dark grey quartzite was used by the people who constructed Fireplace 1, at a later date. The finds from Layers 2–4 on the southwest edge of Fireplace 2, within the unit 53x/53y/NW, compromises the quartzite distribution pattern somewhat, as the unit contained a total of 13 quartzite finds, including the lancet microlith. This *could* mean that the dark grey quartzite was utilized in both phases. However, the main pattern still stands. The number of quarts finds from layer 2–4 in 53x/53y/NW amount to a total of 52, supporting the link between the use of quartz and Fireplace 2.

The distribution of different artefact types does not seem to reveal different activity areas within the part of the site that actually contained finds. The tools and cores were found within the general finds concentration zones. However, it is worth noting that a large part of what we interpret as the floor area in a fairly permanent EM dwelling structure contained no lithics whatsoever.

5. Conclusions

The excavation of Mohalsen2012-II site revealed series of features that seem to go together in a dwelling structure. The main cobble structure seems to mark a boundary between the sterile outside and the inside with the two fireplaces, and the area with artifacts, that also coincide with the brown sandy soil. The latter is probably a cultural deposit by proxy, an original floor area with organic deposits that through the years has been decomposed.

Shoreline dating and ^{14}C dates demonstrate that this is an Early Mesolithic site, probably within EM3 (8500-8000 cal BC). The artifact assemblage contains few chronological markers, but seems in agreement with the date.

The two fireplaces suggest two occupation phases, which also is supported by the differences in ^{14}C age and different patterns in artifact distribution. Fireplace 1 seems to have been left in perfect order, and Fireplace 2 seems to be disturbed, and thus probably is the oldest. This is supported by the ^{14}C dates, but age difference is probably less than the 4-500 years age difference in the dates.

Fireplace 2 and most of the quartz assemblage seem to go together with the main cobble structure. Fireplace 1 and most of the quartzite artifacts is not in good agreement with the main structure. It is also in the very border of the excavation area, and probably part of a structure that is only partly excavated.

The two fireplaces with collections of moderate heated pebbles and patches of sooty soils bear resemblance to the Ormen Lange project. This implies that they may have been fuelled by blubber, and that the sorted pebbles are placed to conserve heat. Both fireplaces show that the actual fire was more confined than the area with pebbles, meaning that pebbles were heated and eventually raked more widespread (also observed at Locality 48 in the Ormen Lange project). Warming pebbles in a fire fed by blubber is an arrangement that permits low energy fuelling over long time, producing modest heat sufficient for a small dwelling. We hope that the chemical analysis of sediment samples may reveal more data on this.

House or tent? It is believed that the somewhat disorganized 98 cobbles all are related to the dwelling structure. This seems way more than needed in a tent, or a very temporary dwelling that was not meant to last for planned future stays at the place. This point in the direction of house, i.e. a dwelling constructed for lengthy occupations, and also to be of use during reoccupations at the site. The possible remains of a floor area with substantial organic accumulation are pointing in the same direction. The fireplaces may suggest stable fire over lengthy periods, but this could also be the case in a tent.

6. References

Alterskjær, K. 1985. Eldre steinalder. In Pettersen K. og Wik, B. (eds.) *Helgeland historie* Bd 1, 20–60. Mosjøen: Helgeland historielag.

Binns, K. S., H. Bjerck, T. Hultgreen and A.-K. Sandmo 1982. Mohalsen Vega, 1982. Unpublished (and unfinished) report. Trondheim: NTNU Vitenskapsmuseet.

Bjerck, H. B. 1983. Kronologisk og geografisk fordeling av mesolitiske element i Vest- og Midt-Norge. Unpubl. thesis. Univ. of Bergen.

Bjerck, H. B. 1990. Mesolithic site types and settlement patterns at Vega, Northern Norway. *Acta Archaeologica* Vol. 60–1989, 1–32.

Bjerck, H. B. 2010. Norwegian Mesolithic Trends: A Review. In Bailey, G. & Spikins, P. (eds.) *Mesolithic Europe*, 60–106. Cambridge: Cambridgre University Press.

Bjerck, H. B. (red.), L. I. Åstveit, T. Meling, J. Gundersen, G. Jørgensen & S. Normann 2008. *NTNU Vitenskapsmuseets arkeologiske undersøkelser Ormen Lange Nyhamna*. Trondheim: Tapir Akademisk Forlag.

Bjerck H. B. and H. M. Breivik 2012. Off shore pioneers: Scandinavian and Patagonian lifestyles compared in the Marine Ventures project. *Antiquity* 2012, 086(333). [http://antiquity.ac.uk/projgall/bjerck333/]

Bjerck, H. B. and A. F. Zangrando 2013. Marine Ventures: Comparative Perspectives on the Dynamics of Early Human Approaches to the Seascapes of Tierra del Fuego and Norway. *Journal of Island and Coastal Archaeology*, 8(1): 79-90

Jaksland, L. (in prep). E18 Brunlanesprosjektet, 1-3. Oslo: Kulturhistorisk museum.

Nummedal, A. 1924. Om Flintpladsene. *Norsk geologisk Tidsskrift* VII (1923), 89–141.

Pettersen, K. 1979. Kartlegging av fornminner i Ljøsåsen- og Mohalsen-området, Vega kommune, Nordland, 1978. Unpublished report. Trondheim: Vitenskapsmuseet.

Pettersen, K. 1982. Steinalder på Vega. En introduksjon og et analyseforsøk. *Rapport, Arkeologisk serie* 1982:9. Trondheim: Det Kongelig Norske Vitenskabs Selskab - Museet.

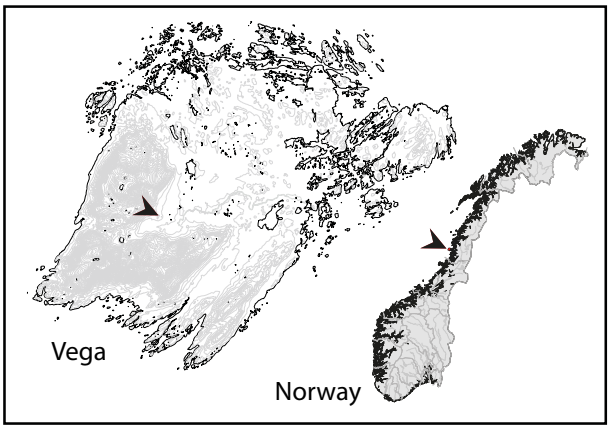
Åstveit, L. I. 2009. Different ways of building, different ways of living: Mesolithic house structures in western Norway. In McCartan, S., Schulting, R., Warren, G. and Woodman P.C. (eds.) *Mesolithic Horizons*. Papers presented at the Seventh International Conference on the Mesolithic in Europe, Belfast 2005, 414-421. Oxbow Books: Oxbow and Oaksville.

List of attachments

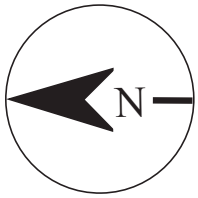
1. Map, overview of site and nearby features
2. Plan drawing
3. Profile drawings Fireplace 1 and 2
4. Plan Drawings with artifact distribution:
    a. All Artifacts
    b. Flint
    c. Quartz
    d. Quartzite
5. Catalogue artifacts from excavation:
    a. Summary of artifacts and raw materials
    b. Artifact catalog
6. Catalogues artifacts from the excavation (T26053), and parts of 1982 survey (T20499)
7. Catalogue of Scientific samples: Charcoal, sediments
8. Photos from excavation, including Åge Hojem photos
9. Photos of artifacts
10. Dating Report BETA

Attachment 1

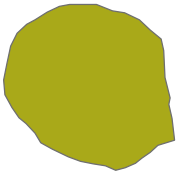
Map of Mohalsen 2012-II and nearby sites / dwellings to the SW, by G. Steinskog and S. E. Fretheim

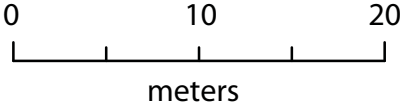


Mohalsen 2012-II, 75m a.s.l.

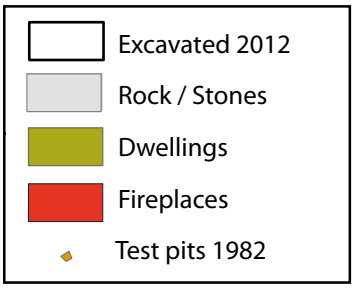


Rock alignment and artifacts, possible tent ring, 74m a.s.l.





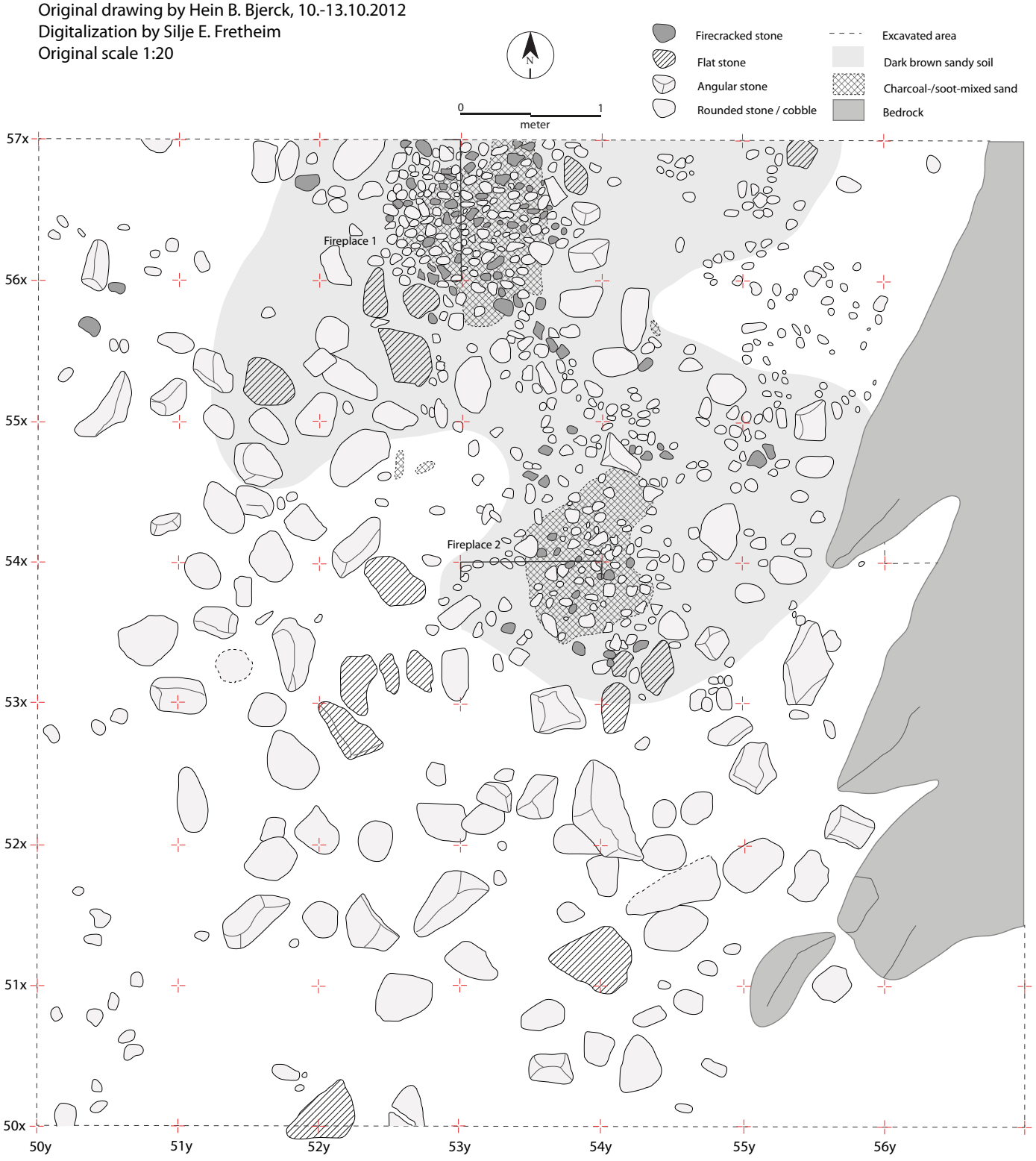
Cobble structure, probably house foundation, 72m a.s.l.



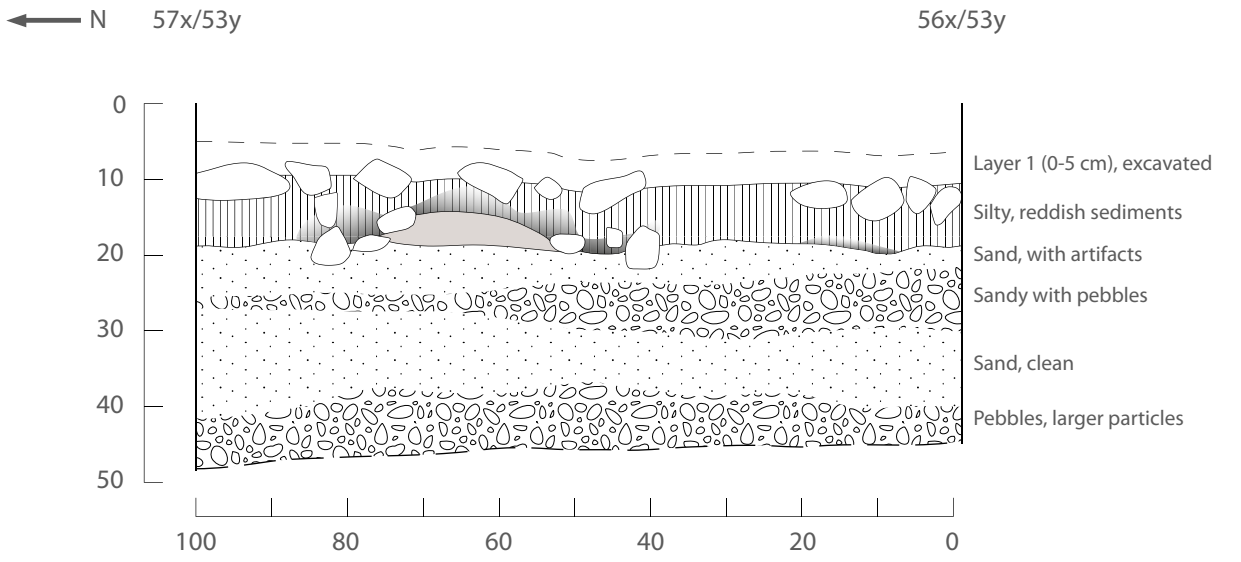
Attachment 2

Mohalsen 2012-II
Skjeggmoen (gnr 11/bnr 1,2), Vega, Nordland
Plan drawing of excavated area after the removal of Layer 1
Includes dwelling structure and Fireplaces 1 and 2

Original drawing by Hein B. Bjerck, 10.-13.10.2012
Digitalization by Silje E. Fretheim
Original scale 1:20



Attachment 3

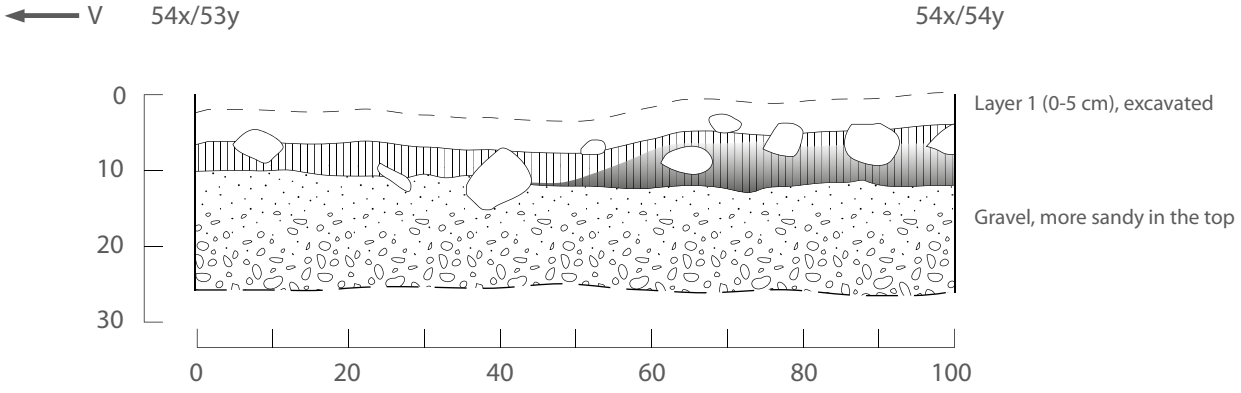


Section through Fireplace 1, profile along 53y

Mohalsen 2012-II, Vega, Nordland

Original scale: 1:10

Drawing by: A. Francisco J. Zangrando and Hein B. Bjerck 16.10.12
Digitalization: Heidi M. Breivik



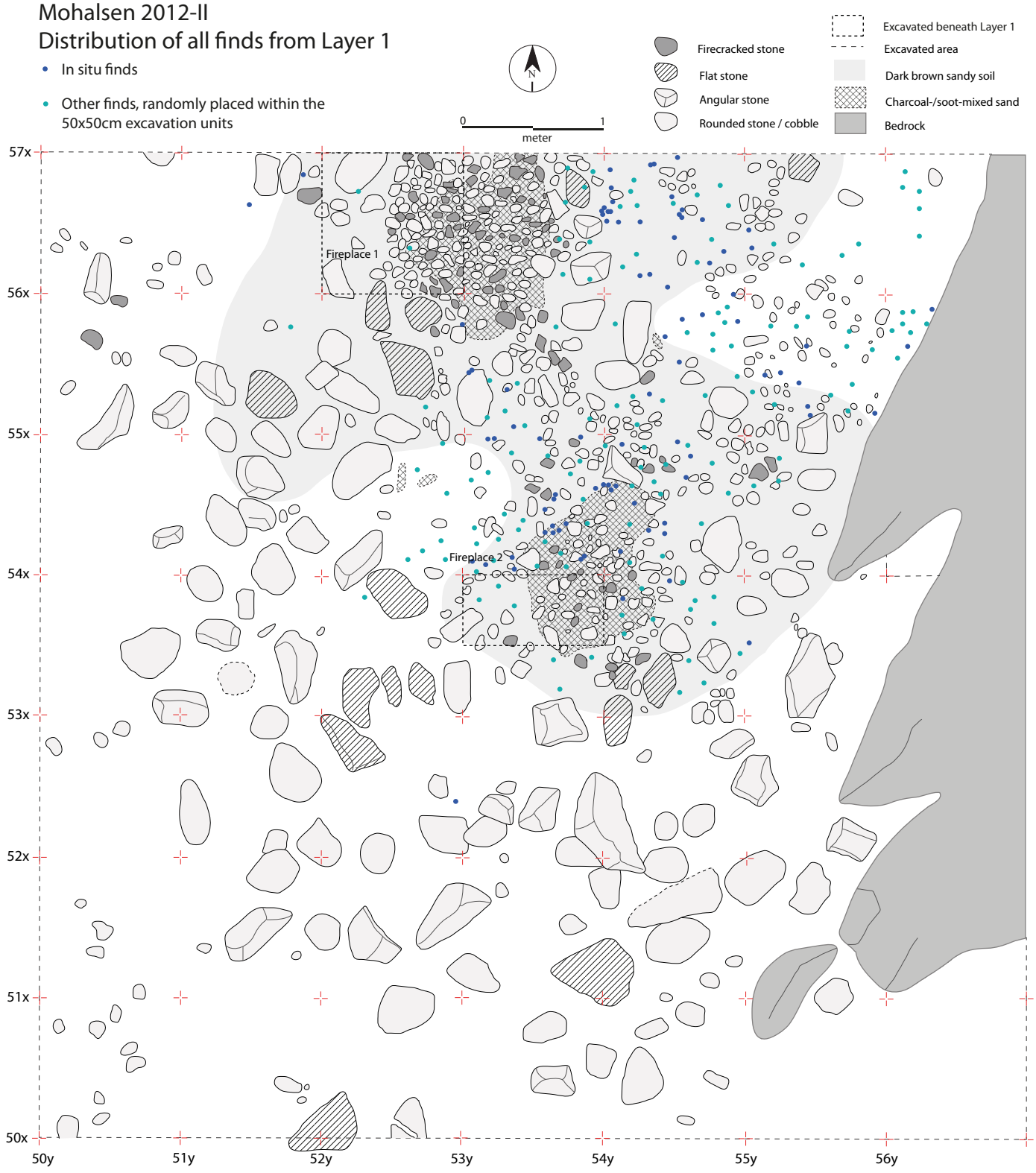
Section through Fireplace 2, profile along 54x

Mohalsen 2012-II, Vega, Nordland

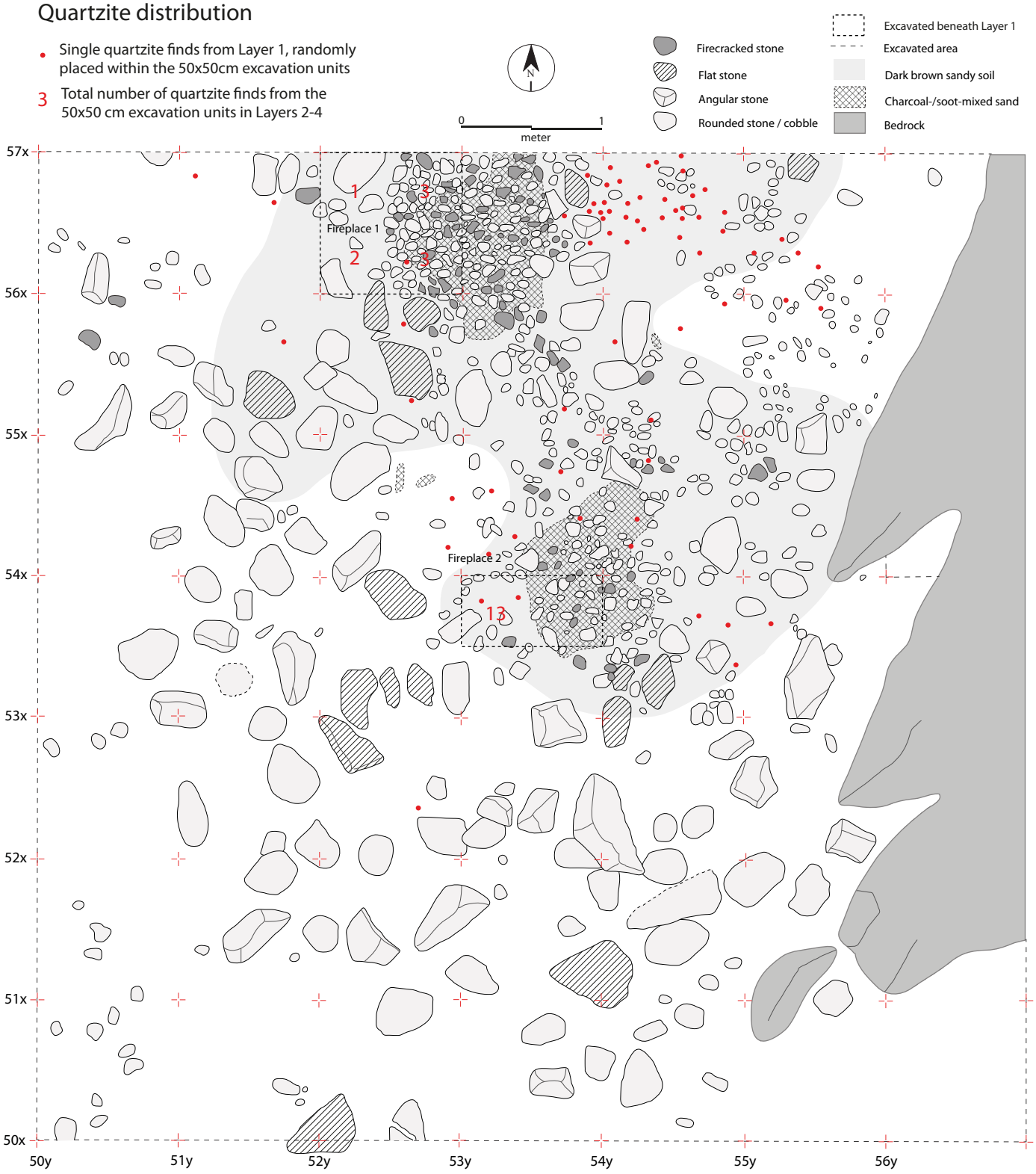
Original scale: 1:10

Drawing by: A. Francisco J. Zangrando and Hein B. Bjerck 17.10.12
Digitalization: Heidi M. Breivik

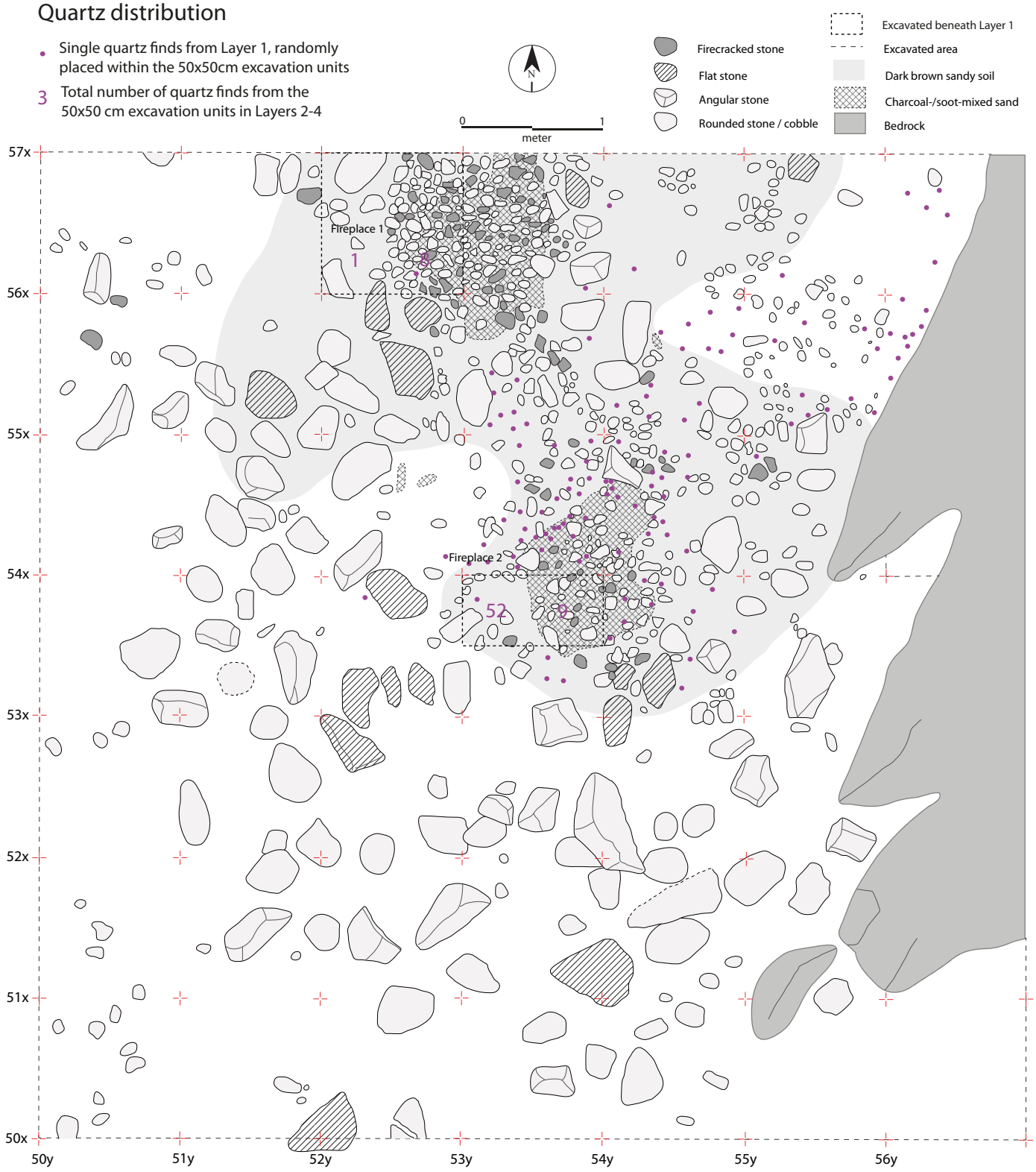
Attachment 4a



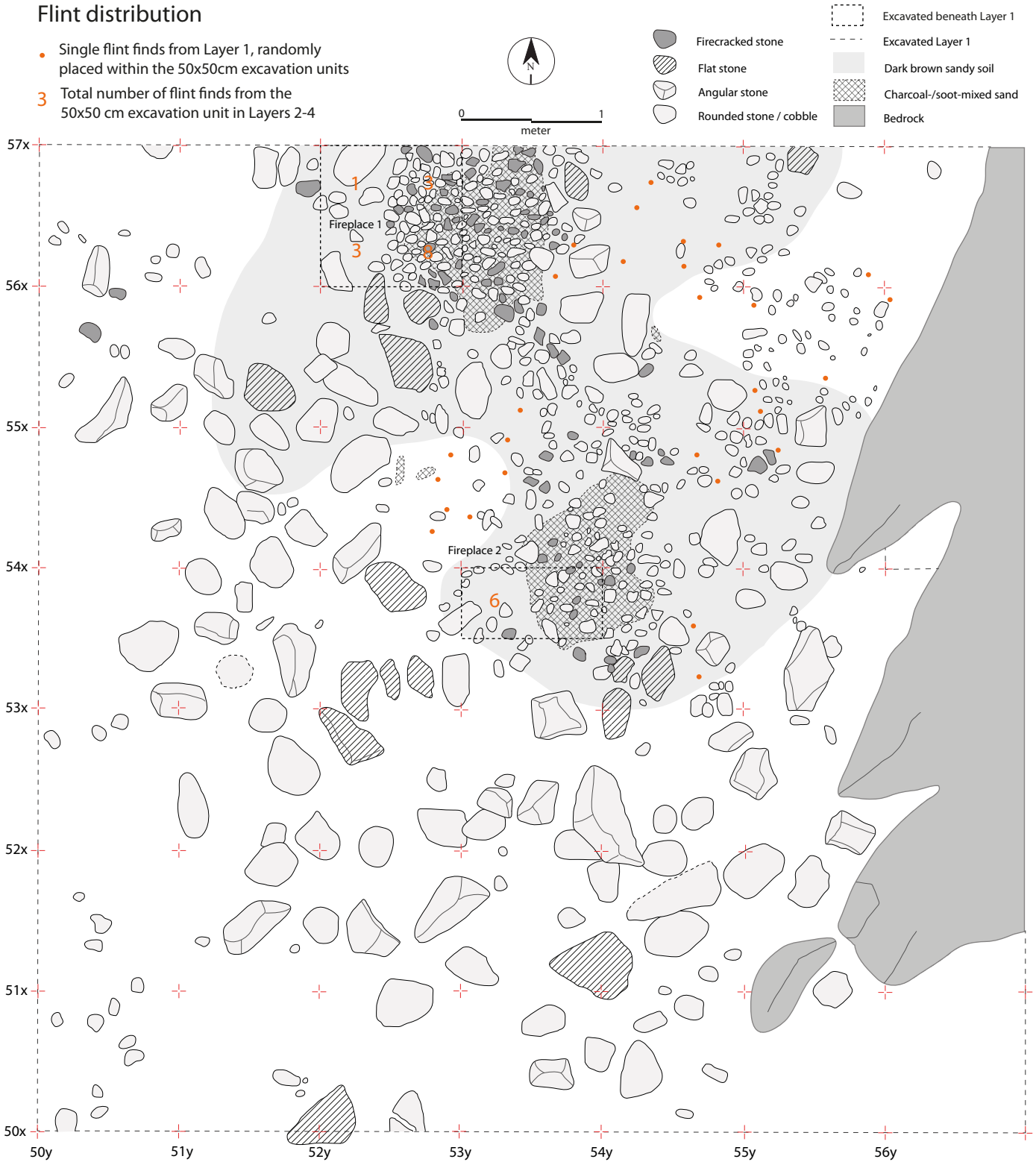
Attachment 4b



Attachment 4c



Attachment 4d



Attachment 5a

T26053, Mohalsen 2012-II

Overview, artifacts

Blade	
macroblade	1
medioblade	4
Flake	
macroflake	7
macroflake with use-wear	3
medioflake	230
medioflake with use-wear	1
microflake	34
fragment	25
fragment with use-wear	1
Diagnostic flake	
scraper-edge rejuvination	1
Core	
unifacial core with several platforms	1
bipolar core	1
discoid core	3
core with one platform	1
undetermined core with several platforms	1
undetermined core pre-form	2
Core fragment	
fragment of platformcore	2
fragment of undetermined core	12
Microlith	
lancet microlith	1
Scraper	
endscraper on flake	1
undetermined scraper	3
Retouched flake	
medioflake with concave retouch	2
retouched fragment	1
Burin	
burin, w/ burin blow on fracture	2
undetermined burin	1
SUM	341

Overview, raw material

quartz	196
quartzite	92
flint	49
rock crystal	4
SUM	341

T26053/1-191
Boplassfunn fra Eldre steinalder fra MOHALSEN 2012-II, av SKJEGGEMOEN (11), VEGA K., NORDLAND.

1) Avslag (medioavslag) av kvartsitt.
(In siu koordinater: 52,55x 52,95y)
Ganske finkornet, lys grå kvartsitt.

2) Avslag (medioavslag) av kvarts.

3) Kjerne (ubestemt kjerne) av kvarts, *var*. ubestemt kjerne med flere plattformer.
Minst to plattformer, ikke motstående.
Mål: Stm: 4,2 cm.

4) Avslag (medioavslag) av kvartsitt.
Grovkornet, lys grå / gråbrun.

5) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå.

6) Avslag (makroavslag) av kvarts.

7) Avslag (medioavslag) av kvarts. *Antall:* 2.

8) Avslag (medioavslag) av kvarts. *Antall:* 5.
Det største avslaget har koordinatene 53,85x 54,16y.
Et lite kvartsavslag har koordinatene 53,96x 54,48 y.

9) Retusjert avslag (retusjert medioavslag) av kvarts, *var*. medioavslag med konkav retusj.
Avslaget er flekkelignende. Konkav retusj langs en sidekant, ned mot distalenden.
Kordelengde: 4 mm. Muligens også rett retusj i distalenden.
Mål: L: 1,5 cm.

10) Flekke (makroflekke) av flint. *Gjenstandsdel:* medial.
Bruksspor langs ene sidekanten + et hjørne. Hvitpatinert.
(53,94x53,85y)
Mål: Stm: 1,9 cm.

11) Avslag (medioavslag) av kvartsitt. *Antall:* 2.
Finkornet, mørk grå. Det ene minner om proksimalfragment av flekke, men neppe regulær flekketeknikk.

12) Avslag (medioavslag) av kvarts. *Antall:* 3.

13) Avslag (medioavslag) av flint.

14) Avslag (medioavslag) av kvarts. *Antall:* 2.

15) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt

16) Kjernefragment (plattformkjernefragment) av kvartsitt.
Evt. prepareringsavslag à la flekkefront, uten at det dreier seg om en flekkekjerne. Knusespor langs en tilnærma rett kant - mulige bruksspor, men kanskje heller etter trimming av plattformkant.
(53,52x55,03y).
Mål: Stm: 5,0 cm.

17) Kjernefragment (ubestemt kjernefragment) av flint.
Ubestemt kjernefragment, frostsprengt i tre fragmenter. Natulig overflate dekker ca 1/3 av "kjernen". Noen spalteflater, som går i ulike retninger, er synlig på den bevarte delen av gjenstanden. Ingen preparerte plattformer.

18) Avslag (medioavslag) av flint.

19) Avslag (medioavslag) av kvartsitt.
Noe grovkornet, mellomgrå

20) Skraper (ubestemt skraper) av flint.
Avslag med mulig konkav skraperretusj i distalenden. Avslaget er vannrullet og har slitasje rundt det hele, noe som gjør det vanskelig å bedømme om det faktisk er retusj.
Mål: Stm: 3,0 cm.

21) Avslag (fragment) av flint.
Bit eller fragment av medioavslag

22) Kjernefragment (ubestemt kjernefragment) av kvarts.
Sannsynlig fragment av en kjerne. Preparering/hugning langs en kant. Dette er enten en plattformkant eller en lederygg. Resten av gjenstanden ser ut til å være ubearbeidet.
Hvis det er en plattformkant er dette (ut fra den nåværende formen å dømme) trolig en bred ensidig kjerne med én plattform. Plattformen er spissvinklet. De siste avspaltningene har ikke resultert i flekker. Plattformen ser ut til å være naturlig overflate uten bearbeiding.
Hvis det er en lederygg er dette en overløpen ryggflekke som har tatt med seg vel mye av motstående ende. Det er ikke mulig å avgjøre om det foreliggende fragmentet har positiv spalteflate.
Mål: Stm: 5,8 cm.

23) Avslag (fragment) av kvartsitt.
Fragment av medioavslag i finkornet, mørk grå kvartsitt

24) Avslag (fragment) av flint. *Antall:* 2.
Biter, medio. Begge litt usikre som artefakter. Den ene er patinert, den andre har én klar spalteflate, resten naturlig overflate. (Den siste: 54,98x53,17y).

25) Avslag (medioavslag) av kvarts. *Antall:* 2.
(Det ene: 54,98x53,17y).

26) Avslag (fragment) av kvartsitt.
Bit, medio. Finkornet, mørk grå kvartsitt.

27) Kjerne (forarbeide til kjerne) av kvarts.
Stor kvartsblokk der de fleste flater er naturlige, mens den største flaten ser ut til å være dannet ved flere avspaltninger, fra en naturlig plattform. (In situ???)
Mål: Stm: 10,3 cm.

28) Avslag (fragment) av flint.
Minner om en bitteliten bipolar kjerne (1,2 cm i stm).
Funnet i lag 0-2 cm.

29) Avslag (medioavslag) av kvarts. *Antall:* 8.
Flere av funnene er registrert med nøyaktige koordinater: 54,06x 53,36y; 54,10x 53,07y; 54,16x 53,37y;

30) Flekke (medioflekke) av kvarts. *Gjenstandsdel:* proksimal.
Mål: Stm: 1,8 cm.

31) Kjerne (ubestemt kjerne) av kvartsitt, *var.* ubestemt kjerne med en plattform.
Opptil fem avspaltninger slått nesten rundt det hele. De fleste av avsplatningene opptrer rundt en tilsynelatende ubearbeidet plattformlignende flate, men bare ett avslag er sikkert slått fra denne flaten - de andre på et tidligere tidspunkt. I tillegg kommer en mulig påbegynt preparering av en mindre plattform, men ingen egentlige avslag er slått fra denne.
Relativt finkornet, mørk grå kvartsitt.
Kjernen har koordinatene 54,08x 53,16y.

32) Avslag (medioavslag) av kvarts. *Antall:* 6.
2-3 av dem er litt usikre som artefakter (biter).
(2 in situ funn: 54,51x53,64y og 54,58x53,68y).

33) Kjernefragment (ubestemt kjernefragment) av kvarts. *Antall:* 2.
(54,99x53,84y og 54,63x53,94y).

Mål: Største mål største fragment 3,2 cm. Største mål minste fragment 2,9 cm.

34) Avslag (medioavslag) av kvartsitt.
Kan ved første øyekast ligne en enegga spiss, men er slått fra midten av ene langsida ("vingeforma" avslag), og det som ligner en tange er ikke retusjert. Grå kvartsitt, lysere og mattere enn den dominerende kvartsittypen på lokaliteten.

35) Avslag (medioavslag) av kvarts. *Antall:* 8.
Halvparten sikre avslag, resten biter.
(In situ funn: 54,46x53,55y, 54,27y53,65y, 54,29x53,66y).

36) Avslag (mikroavslag) av kvarts. *Antall:* 2.

37) Skraper (ubestemt skraper) av kvarts.
På stor bit / kjernefragment. Litt usikker retusj, men klare bruksspor langs en steil, tilnærma rett kant + del av tilstøtende kant.
(54,13x53,76y).
Mål: Stm: 3,8 cm.

38) Kjerne (bipolar kjerne) av kvarts.
Uhomogent råstoff, grenser stedvis mot bergkrystall.
Mål: Stm: 3,0 cm.

39) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå. Dels naturlig overflate på forsida.
(54,32x53,64y).

40) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt.

41) Skraper (ubestemt skraper) av kvarts.
Avslag med mulig skraperretusj langs en sidekant, samt bruksspor langs den rette bruddkanten i distalenden.
Gjenstanden har koordinatene 54,55x 54,09y
Mål: Stm: 3,3 cm.

42) Avslag (medioavslag) av kvarts. *Antall:* 4.
Tre av avslagene har nøyaktige koordinater: 54,54x 54,22y; 54,94x 54,25y; 54,97x 54,25y.

43) Avslag (mikroavslag) av kvarts.

44) Avslag (fragment) av kvarts. *Antall:* 6.
Seks biter eller fragmenter av kjerner/avslag. Slagbule kan ikke detekteres.
Tre av bitene har nøyaktige koordinater: 54,54x 54,16y; 54,51x 54,20y; 54,56x 54,19y.

45) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk går kvartsitt.
Avslaget har koordinatene 54,58x 54,17y.

46) Avslag (fragment) av flint. *Antall:* 2.
Begge er hvitpatinerte.

47) Avslag (medioavslag) av kvarts. *Antall:* 2.

48) Avslag (medioavslag) av bergkrystall. *Antall:* 2.

49) Avslag (fragment) av kvarts.
Bit, medio.

50) Avslag (medioavslag) av kvarts. *Antall:* 6.
To av avslagene har nøyaktige koordinater: 54,34x 54,33y; 54,18x 54,12y.

51) Avslag (medioavslag) av kvartsitt, *var*. medioavslag med bruksspor.
Medioavslag med bruksspor på hjørnet som dannes mellom sidekanten og distalenden. Mulig framretusjert spiss her.
Avslaget er i finkornet, mørk grå kvartsitt.
Funnet har koordinatene 54,34x 54,45y.

52) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt.
Avslaget har koordinatene 54,28x 54,47y.

53) Avslag (medioavslag) av kvarts.

54) Avslag (mikroavslag) av bergkrystall.

55) Avslag (makroavslag) av flint, *var*. makroavslag med bruksspor.
Skiveforma, med jevne bruksspor (evt. fin retusj) langs en tilnærma rett / svakt konkav kant.
Mål: Stm: 5,4 cm.

56) Avslag (medioavslag) av kvarts.

57) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt

58) Retusjert avslag (retusjert fragment) av kvartsitt.
Finkornet, lys grå. Fin retusj langs kort konkav kant, ut mot en tilnærma spiss kortende. De to langsidene er bruddkanter.

Mål: Stm: 2,7 cm.

59) Avslag (makroavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt

60) Avslag (medioavslag) av kvarts.

61) Avslag (fragment) av flint.
Kan pusles sammen med undernr. 67.

62) Avslag (medioavslag) av kvarts. *Antall:* 7.
(In situ koordinater: 55,42x53,05y, 55,45x53,05y, 55,06x53,35y, 55,33x53,29y).

63) Kjernefragment (ubestemt kjernefragment) av kvarts.
Mål: Stm: 4,1 cm.

64) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt.
Funnet har koordinatene 55,43x 53,69y

65) Avslag (medioavslag) av kvarts.
Avslaget har koordinatene 55,20x 54,45y

66) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt.
Funnet har koordinatene 55,90x 54,42.

67) Avslag (fragment) av flint, *var*. fragment med bruksspor.
Ryggflekkelignende form, men vanskelig å få fatt på hvilken flate som danner baksiden. Den ene kortenden har kraftige knusespor. Ingen knusespor i den andre enden - ellers kunne gjenstanden også ha lignet en stor bipolar kjerne. Én flate er naturlig. Mulige bruksspor langs den ene sidekanten, og knusesporene i enden kan kanskje også tolkes som bruksspor.
Undernummer 61 kan pusles inn ved enden med knusespor.

68) Avslag (medioavslag) av kvarts. *Antall:* 6.

69) Avslag (mikroavslag) av kvarts. *Antall:* 2.

70) Avslag (makroavslag) av kvartsitt.
Finkornet, mørk grå. Hengslet avslag. Slått fra diskosformet kjerne? Negativt avtrykk av "vingeforma" avslag på forsida.

71) Avslag (fragment) av kvartsitt.
Finkormet, mørk grå.

72) Avslag (medioavslag) av kvarts. *Antall:* 4.

73) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt.
Avslaget ble funnet i overflaten, og har koordinatene 55,37x 54,33y.

74) Avslag (mikroavslag) av kvarts.

75) Avslag (fragment) av kvarts.
Bit

76) Avslag (mikroavslag) av flint.

77) Avslag (medioavslag) av kvarts.
Avslaget har koordinatene 55,65x 55,45y og ble funnet i en dybde av ca 4 cm.

78) Avslag (mikroavslag) av kvarts.

79) Avslag (medioavslag) av kvartsitt.

80) Avslag (mikroavslag) av kvarts. *Antall:* 2.

81) Avslag (makroavslag) av kvartsitt.
Finkorna, mørk grå. "Vingeforma", med knusespor på forsida, ved proksimalenden.

82) Avslag (medioavslag) av flint.
Avslaget har koordinatene 55,45x 55,26y og er funnet i en dybde av 1-2 cm.

83) Avslag (mikroavslag) av flint.
Avslaget har koordinatene 55,14x 55,47y og ble funnet nesten øverst i laget.

84) Avslag (medioavslag) av kvarts. *Antall:* 2.
Avslagene har koordinatene 55,20x 55,44y og 55,42x 55,17y. Sistnevnte ble funnet høyt oppe i laget.

85) Avslag (mikroavslag) av kvarts. *Antall:* 2.
Det ene avslaget har koordinatene 55,38x 55,39y.

86) Avslag (medioavslag) av kvartsitt.

87) Avslag (fragment) av flint.
Liten flintknoll med én spalteflate. Usikker som artefakt.

88) Avslag (medioavslag) av kvarts. *Antall:* 2.
Ett avslag, én bit.
(In situ: 55,17x55,92y)

89) Avslag (mikroavslag) av kvarts.

90) Avslag (medioavslag) av kvarts.

91) Avslag (mikroavslag) av flint.
Avslaget har koordinatene 55,90x 56,33y og er funnet i en dybde av 2-3 cm.

92) Avslag (medioavslag) av kvarts. *Antall:* 3.
Det største avslaget har koordinatene 55,63x 56,19y og er funnet i en dybde av ca 1 cm.

93) Avslag (mikroavslag) av kvarts. *Antall:* 5.

94) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå.
(In situ: 56,48x51,65y).

95) Avslag (fragment) av bergkrystall.

96) Avslag (medioavslag) av kvarts.
Mulige bruksspor langs en sidekant

97) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå kvartsitt

98) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå.
(In situ: 56,83x51,84y)

99) Kjerne (diskosformet kjerne) av kvartsitt.
Vifteformet kjerne med avspaltninger rundt om og på begge sider. På den ene siden spor etter 3-4 store avspaltninger som går fra kanten og inn mot sentrum. Noen kantpartier ser ut til å være preparert ved tilhugning eller abrasjon - muligens kan noe av dette være bruksspor. Den andre siden er flatere - også her er spor etter tre store avspaltninger, men disse er alle slått på et tidligere tidspunkt. Et parti med noen mindre avspaltninger er trolig en slags plattformpreparering.
Finkornet, mørk grå kvartsitt
Funnet har koordinatene 56,61x 53,99y ("39 cm fra NØ hjørne, på Ø grense").
Mål: Stm: 6,2 cm.

100) Kjerne (diskosformet kjerne) av kvartsitt.

Relativt sirkulær kjerne med avspaltninger rundt det hele og på begge sider. På den ene siden tre større avspaltninger fra kanten og inn mot sentrum. To partier med mindre avspaltninger og abrasjon som må sees som plattformpreparering. På den andre siden 4-5 større avspaltninger. Noen gnuremerker langs siden kan være preparering eller bruksspor.
Finkornet, mørk går kvartsitt.
Funnet har koordinatene 56,59x 53,98y (!41 cm fra NØ hjørne, 2 cm fra Ø grense").
Mål: Stm: 6,1 cm.

101) Avslag (medioavslag) av kvartsitt. *Antall:* 2.
Avslagene er to fragmenter som passer sammen. Sammensatt kan avslaget beskrives som vingeformet, og har spiss avspaltningsvinkel.
Det minste avslaget har koordinatene 56,59x 53,98y ("41 cm fra NØ hjørne, 2 cm fra Ø grense") og det største 56,57x 53,99y (43 cm fra NØ hjørne, 1 cm fra Ø grense").

102) Avslag (medioavslag) av flint. *Antall:* 2.
Det minste avslaget er funnet SV i kvadranten.

103) Avslag (mikroavslag) av kvarts.

104) Avslag (medioavslag) av kvartsitt.
Avslaget er vingeformet.
Finkornet, mørk grå kvartsitt.

105) Avslag (medioavslag) av flint. *Antall:* 2.
Det største avslaget er i et grovt, seigt og heterogent flintlignende materiale - råstoffbestemmelsen er usikker. Denne har koordinatene 56,51x 54,27y ("49 cm fra N grense, 23 cm fra Ø grense"). Det andre avslaget har koordinatene 56,93x 54,35y ("7 cm fra N grense, 35 cm fra V grense").

106) Avslag (fragment) av kvarts.
Bit.
Funnet har koordinatene 56,67x 54,07 ("33 cm fra NV hjørne, 7 cm fra V grense")

107) Kjerne (ensidig kjerne) av kvartsitt, *var.* ensidig kjerne med flere plattformer.
Ingen klassisk ensidig TM-kjerne. Trapesformet kjerne med avspaltninger på én side slått fra to eller tre spissvinklede plattformer. De to sikre plattformene er ikke motstående. Den ene er preparert ved abrasjon - her har siste avslag hengslet og trolig umuliggjort videre bruk av plattformen. Den andre plattformen er trolig forsøkt fornyet ved et par avslag som er hengslet. En tredje sidekant har noe som minner om preparering. Minst ett avslag er slått herfra.
Funnet har koordinatene 56,59x 54,50y ("41 cm fra N grense, 50 cm fra V grense"). Et avslag har samme koordinater.
Finkornet, mørk grå kvartsitt.
Mål: Stm: 5,0 cm.

108) Flekke (medioflekke) av kvartsitt. *Gjenstandsdel:* proksimal.
Proksimalfragment av irregulær flekke. Hengslet - trolig under produksjon.
Funnet kan refittes med unr. 121
Finkornet, mørk grå kvartsitt.
Funnet har koordinatene 56,52x 54,10y ("48 cm fra NV hjørne, 10 cm fra V grense").

109) Avslag (medioavslag) av kvartsitt. *Antall:* 11.
Alle avslagene er i det samme finkornede, mørkegrå materialet. Ett av avslagene er vingeformet.
Funnene har følgende koordinater: 56,53x 54,02y ("47 cm fra N grense, 2 cm fra V grense"); 56,88x 54,05y ("12 cm fra N grense, 5 cm fra V grense"); 56,59x 54,50y ("41 cm fra N grense, 50 cm fra V grense"); 56,75x 54,05y ("25 cm fra N grense, 5 cm fra V grense"); 56,92x 56,34y ("8 cm fra N grense, 34 cm fra V grense").

110) Avslag (fragment) av kvartsitt.
Bit av finkornet, mørk grå kvartsitt

111) Avslag (medioavslag) av kvartsitt. *Antall:* 7.
Finkornet, mørk grå.
(In situ funn: 56,53x54,7y, 56,55x54,55y, 56,52x54,99y, 56,57x54,55y, 56,69x54,48y, 56,6x54,57y).

112) Avslag (fragment) av kvartsitt.
Bit, medio.
(In situ funn: 56,53x54,75y).

113) Flekke (medioflekke) av flint. *Gjenstandsdel:* medial.
Mål: L: 1,6 cm.

114) Avslag (fragment) av kvarts.
Bit, medio.
(In situ: 56,14x54,32y).

115) Avslag (medioavslag) av kvartsitt. *Antall:* 2.
(In situ: 56,13x54,26y).
Mål: L: 3,2 cm.

116) Flekke (medioflekke) av kvartsitt.
(In situ: 56,06x54,45y).

117) Avslag (medioavslag) av flint. *Antall:* 3.
Avslagene har koordinatene 56,00x 54,93y ("7 cm fra Ø grense, 0 cm fra S grense"); 56,30x 54,85y ("15 cm fra Ø grense, 30 cm fra S grense"); 56,22x 54,75y. Sistnevnte ble funnet nær

toppen av laget.

118) Kjerne (diskosformet kjerne) av kvartsitt.
Trolig en diskosformet kjerne: avslag er slått rundt det hele på begge sider. På den ene siden møtes fem negative avspaltninger i en spiss slik at formen blir nærmest konisk. Sammenhengende preparering langs halve omkretsen. Den andre siden er dannet av 2-3 store avspaltninger og er relativt flat.
Gjenstanden har koordinatene 56,40x 54,50y ("50 cm fra Ø grense, 40 cm fra S grense"). Avslaget T26053:119 har samme koordinater.

119) Avslag (medioavslag) av kvartsitt. *Antall:* 2.
Finkornet, mørk grå kvartsitt.
Det minste avslaget har koordinatene 56,40x 54,50y ("50 cm fra Ø grense, 40 cm fra S grense"). Den diskosformede kjernen T26053:118 har samme koordinater. Det største avslaget har koordinatene 56,36x 54,55y ("55 cm fra SV hjørne, 36 cm fra S grense").

120) Stikkel (kantstikkel) av kvartsitt, *var.* kantstikkel på brudd.
Finkornet, mørk grå. Stikkel + skraper? På makroavslag. Fra den kraftige bruddkanten i distalenden (inntil 1,8 cm tykk) er det slått av avslag / biter på på begge sider, så kraftige, skarpe hjørner har blitt dannet. På den ene siden ser dette ut til å ha skjedd i to omganger. Her er det også tydelige bruksspor på og ved hjørnet. Samtidig tyder bruksspor / retusj langs avslagets ene konvekse sidekant på at det har fungert som skraper.
(In situ: 56,52x54,7y).
Mål: Stm: 5,8 cm.

121) Stikkel (ubestemt stikkel) av kvartsitt.
Kileformet - minner nærmest om en skiveøks. Gjenstanden har en bearbeidet egg som er fremkommet ved minst to langsgående avspaltninger slått fra samme side. Den ene avspaltningen er en hengslet flekke som ble funnet i samme kvadrant (unr. 108). En tredje avspaltning er slått vinkelrett øverst på eggen slik at det dannes et solid hjørne. Muligens bruksspor her. Også preparering/retusj/bruksspor videre nedover eggen og på motstående side. Muligens skraperfunksjon.
Funnet har koordinatene 56,58x 54,11y (42 cm fra NV hjørne, 11 cm fra V grense").
Finkornet, mørk grå kvartsitt.
Mål: Stm: 5,6 cm.

122) Avslag (medioavslag) av kvarts.
2 avslag i kvartsitt hvorav det ene er i det samme finkornede, mørkegrå råstoffet som de fleste andre kvartsittartefakter fra lokaliteten, mens det andre er lysere på farge, men ellers av samme kvalitet.
Førstnevnte har koordinatene 56,33x 55,04y og ble funnet 2 cm under topp.

123) Avslag (makroavslag) av kvartsitt.
Et hengslet avslag med to negative avspaltninger og flere små hengslinger fra samme

plattformkant.
Finkornet, mørk grå kvartsitt.
Avslaget har koordinatene 56,26x 55,02y og er funnet 2 cm under topp.

124) Avslag (medioavslag) av kvartsitt. *Antall:* 2.

125) Avslag (medioavslag) av flint.
Patinert, litt usikkert som artefakt.

126) Avslag (medioavslag) av kvarts. *Antall:* 3.

127) Avslag (mikroavslag) av kvarts.

128) Avslag (mikroavslag) av kvarts.

129) Avslag (mikroavslag) av kvartsitt.
Finkornet, mørk grå.

130) Avslag (medioavslag) av kvarts.

131) Mikrolitt (lansettmikrolitt) av kvartsitt.
Laget på hengslet flekke (fracture languette?). Steil, grov retusj langs et svakt konvekst parti, trolig i proksimalenden. Noen mikrostikkelfasett kan ikke detekteres.

132) Avslag (medioavslag) av kvarts.

133) Avslag (medioavslag) av flint.
Hvitpatinert, hengslet.

134) Avslag (medioavslag) av kvarts. *Antall:* 6.

135) Stikkel (kantstikkel) av kvarts, *var*. kantstikkel på brudd.
Litt usikker klassifisering, men kan uansett ha fungert som stikkel.
Mål: Stm: 3,5 cm.

136) Avslag (makroavslag) av kvartsitt.
Finkornet, mørk grå.

137) Avslag (medioavslag) av kvartsitt. *Antall:* 3.
Finkornet, mørk grå.

138) Avslag (medioavslag) av flint.
Avslaget har koordinatene 56,72x 52,32y.

139) Retusjert avslag (retusjert medioavslag) av kvartsitt, *var.* medioavslag med konkav retusj.
Fragmentert eller hengslet avslag med konkav retusj eller bruksspor langs deler av en sidekant.
Finkornet, mørk grå kvartsitt.

140) Avslag (medioavslag) av kvarts.

141) Avslag (medioavslag) av kvartsitt.
Hengslet og med parallelle sidekanter. Mulig intensjonen har vært å produsere en flekke.
Spissvinklet og preparert plattformrest.

142) Avslag (medioavslag) av flint.
(In situ: 53,91x53,61y).

143) Kjerne (forarbeide til kjerne) av kvarts.
Litt usikker klassifisering. Det som her tolkes som mulig spor etter trimming langs en steil kant kan også tenkes å være en form for bruksspor. Sporene / trimminga går inntil 1,2 cm innover en flate med naturlig, matt overflate. Eventuelle avspaltninger må ha vært ekstremt tynne, eller så har overgangen mellom slått og naturlig overflate rett og slett blitt polert (i forbindelse med bruk?).
(In situ: 53,55x53,52y).
Mål: Stm: 4,7 cm.

144) Avslag (medioavslag) av kvartsitt.
finkornet, mørk grå.
(53,62x53,72y).

145) Avslag (medioavslag) av flint. *Antall:* 4.

146) Avslag (medioavslag) av kvarts. *Antall:* 32.

147) Avslag (mikroavslag) av kvarts. *Antall:* 7.

148) Skraper (endeskraper) av kvarts, *var.* endeskraper på avslag.
På grunn av råstoffets grove kvalitet er det vanskelig å se om det er sammenhengende retusj langs det konvekse partiet i distalenden. Bearbeiding også langs begge sidekanter fra plattformresten i proksimalenden og ca 1 cm nedover. På den ene siden mulig stikkelslag, på den andre siden svært fin retusj eller bruksspor. Gjenstanden foreligger i to fragmenter. Stm er tatt i sammensatt tilstand.
Mål: Stm: 5,5 cm.

149) Kjernefragment (ubestemt kjernefragment) av kvarts. *Antall:* 3.
Materialets grove kvalitet gjør det vanskelig å avgjøre om det er kjernefragmenter eller

forarbeide til kjerner.

150) Avslag (makroavslag) av kvartsitt, *var*. makroavslag med bruksspor.
Vifteformet avslag med mulige bruksspor i hjørnet mellom sidekant og distalende-

151) Avslag (medioavslag) av kvartsitt. *Antall:* 6.

152) Avslag (medioavslag) av kvarts. *Antall:* 5.

153) Kjernefragment (ubestemt kjernefragment) av kvarts. *Antall:* 4.
Litt vanskelig å avgjøre om det dreier seg om kjernefragmenter, kjerner eller (i ett tilfelle) forarbeid til kjerne.
Mål: Største mål mellom 3,0 og 4,2 cm.

154) Avslag (makroavslag) av kvartsitt, *var*. makroavslag med bruksspor.
Finkornet, mørk grå. Bruksspor på et kraftig hjørne med vinkel ca 60 grader. Brukt som borspiss, eller evt. stikkel?
(56,56x52,33).
Mål: Stm: 7,4 cm.

155) Avslag (medioavslag) av flint. *Antall:* 2.
Patinerte.

156) Avslag (mikroavslag) av flint.

157) Avslag (makroavslag) av kvartsitt.
Finkornet, mørk grå.

158) Avslag (medioavslag) av kvartsitt.
Finkornet, mørk grå.

159) Avslag (medioavslag) av flint. *Antall:* 2.

160) Avslag (mikroavslag) av flint.

161) Avslag (medioavslag) av kvarts.

162) Diagnostisk avslag (avslag fra skraperproduksjon) av kvartsitt, *var*. skrapereggoppskjerping.
Flekkelignende form, men den ene rette sidekanten er svært steil (90 grader) og har kraftige bruksspor (evt. ujevn retusj). Det samme har proksimalenden. All eventuell retusj fra forsiden.
Mål: L: 4,6 cm.

163) Kjernefragment (plattformkjernefragment) av kvartsitt.

Finkornet, mørk grå.
Mål: Stm: 5,2 cm.

164) Avslag (medioavslag) av flint. *Antall:* 8.

165) Avslag (medioavslag) av kvarts. *Antall:* 5.

166) Avslag (fragment) av kvarts.
Usikker artefakt, mulig natur.

167) Avslag (medioavslag) av kvartsitt. *Antall:* 2.
Finkornet, mørk grå kvartsitt.
Det største avslaget har koordinatene 56,30x 52,75y.

168) Prøve (trekullprøve) .
Ildsted 1. Prøve 3.
In situ-koordinater: 56,6-56,8x/52,9y
Ca. 0,1 gr.

169) Prøve (trekullprøve) .
Ildsted 1. Prøve 4.
In situ-koordinater: 56,6-56,8x/52,9y
Ca. 0,1 gr.

170) Prøve (trekullprøve) .
Ildsted 1. Prøve 5.
In situ-koordinater: 56,6-56,8x/52,9y
Ca. 0,1 gr.

171) Prøve (trekullprøve) .
Ildsted 1. Prøve 6.
Plukket fra såld.
Ca. 0,2 gr.

172) Prøve (trekullprøve) .
Ildsted 1.
In situ-koordinater: 56,3x/52,45y
Ca. 0,2 gr.

173) Prøve (trekullprøve) .
Ildsted 1.
In situ-koordinater: 56,57x/52,23y
Ca. 2 gr.

174) Prøve (trekullprøve) .
Ildsted 1.
In situ-koordinater: 56,6x/52,2y
Ca. 0,2 gr.

175) Prøve (trekullprøve) .
Ildsted 1.
In situ-koordinater: 56,37x/52,27y
Ca. 0,2 gr.

176) Prøve (trekullprøve) .
Ildsted 1.
In situ-koordinater: 56,48x/52,66y.
Kull i sandsedimenter. Ca. 7 gr.

177) Prøve (trekullprøve) .
Ildsted 1.
In situ-koordinater: 56,65x/52,27y.
Prøven ble innsendt til Beta-lab med referanse Moh2012IIFP1. Datering: 9090±40 BP / 8300-8230 2 sigma cal BC (Beta-335452).

178) Prøve (trekullprøve) .
Ildsted 2.
In situ-koordinater: 53,7x/53,6y.
Prøven ble innsendt til Beta-lab med referanse Moh2012IIFP2. Datering: 9500±40 BP / 9140-8970 og 8940-8750 2 sigma cal BC (Beta-335453).

179) Prøve (jordprøve) .
Ildsted 1. Prøve 1.
In situ-koordinater: 56,6-56,8x/52,9y.
Ca. 160 gr.
Ca 20 g. sendt til University of Bradford for kromatografiske analyser (Moh2012IIFP1 sample 2).

180) Prøve (jordprøve) .
Ildsted 1. Prøve 2.
In situ-koordinater: 56,6-56,8x/52,9y
Ca. 250 gr.

181) Prøve (jordprøve) .
Ildsted 1.
In situ-koordinater: 56,6-56,8x/52,8-53,0y.
Ca. 440 gr.
Ca. 20 gr. sendt til University of Bradford for kromatografiske analyser (Moh2012IIFP1

sample 1).

182) Prøve (jordprøve) .
Ildsted 1.
In situ-koordinater: 56,5-56,7x/52,5-52,8y
Ca. 280 gr.

183) Prøve (jordprøve) .
Ildsted 2.
In situ-koordinater: 53,8-53,9x/53,6-53,8y.
Ca. 440 gr.
Ca.13 gr. sendt til University of Bradford for kromatografiske analyser (Moh2012IIFP2, sample1).

184) Prøve (jordprøve) .
Ildsted 2.
In situ-koordinater: 53,65x/53,75y.
Ca. 150 gr.

185) Prøve (jordprøve) .
Ildsted 2.
In situ-koordinater: 53,65x/53,65y.
Ca. 150 gr.

186) Prøve (jordprøve) .
Ildsted 2.
In situ-koordinater: 53,7-53,9x/53,6-53,8y.
Ca. 450 gr.
17,5 g. sendt til University of Bradford for kromatografiske analyser (Moh2012IIFP2 sample 2).

187) Prøve (jordprøve) .
Ildsted 2.
In situ-koordinater: 53,7-53,9x/53,6-53,8y.
Ca. 670 gr.

188) Prøve (jordprøve) .
Referanseprøve utenfor lokaliteten.
In situ-koordinater:50,0-50,2x/72,0-72,2y
Ca. 830 gr.
Ca. 33 gr. sendt til University of Bradford for kromatografiske analyser (Moh2012-II offsite sample 1)

189) Prøve (jordprøve) .

Referanseprøve utenfor lokaliteten.
In situ-koordinater: 53,0-53,2x/34,8-35,0y.
Ca. 1150 gr.
Ca. 27 gr. sendt til University of Bradford for kromatografiske analyser (Moh2012-II offsite sample 2).

190) Prøve (jordprøve) .
Referanseprøve utenfor lokaliteten.
In situ-koordinater: 65,0-65,2x/50,0-50,2y.
Ca. 1230 gr.

191) Prøve (jordprøve) .
Ildsted 1.
In situ-koordinater: 56,3-56,5x/52,8-53,0y.
Ca. 750 gr.

Funnomstendighet: Arkeologisk utgravning Utgravningen ble gjennomført i perioden 4.-17. oktober 2012, som en forskningsgraving i sammenheng med prosjektet Marine Ventures Comparative perspectives on the dynamics of early human approaches to the seascapes of Tierra del Fuego and Norway). Deltakere: Hein B. Bjerck (prosjektleder/feltleder), Heidi M. Breivik, Atilio Francisco Zangrando, Silje E. Fretheim, Elisabeth Swensen og Magnhild Husøy. Gjermund Steinskog gjorde GPS-innmålinger og Åge Hojem fotograferte mot slutten av gravinga. Mohalsen-området har blitt registrert i flere omganger, og funn samlet inn fra lokalitetsområdet fordeler seg på museumsnr. T20499 (registrering i 1982 ved Kari S. Binns) og T19949-19963 (registrering ved Kristian Pettersen i 1978, fra totalt 16 lokaliteter i Mohalsen-området). Under en ekskursjon i 2004 observerte Bjerck en teltring-lingnende struktur på lokaliteten som nå kalles Mohalsen 2012-II. En målsetning ved 2012-gravinga var å avgjøre denne strukturens karakter (telt? hytte? langtids- eller korttidsopphold?) og alder. Et område på 7x7 m2 ble avtorvet for hånd (deler av området var allerede vegetasjonsfri grus eller berg), og 35 m2 ble gravd ut i et inntil 5 cm tykt lag (ved framrensing av strukturer ble det gravd delvis stratigrafisk), kalt Lag 1. Laget ble horisontalt inndelt i ruter og kvadranter. SV-hjørnet av feltet ble gitt koordinatene 50x50y. X-verdiene steg mot nord, Y-verdiene mot øst. SV-koordinatene på rutene ga dem navn, og kvadrantene (0,5x0,5 m) ble navngitt etter himmelretningene (NV, NØ, SV, SØ). I to ruter (ble det gravd flere lag, inntil lag 5.
Kartreferanse/-koordinater: Projeksjon: EU89-UTM; Sone 32, *N:* 7283548, *Ø:* 631459.
LokalitetsID: 46505.
Funnår: 2012.
Katalogisert av: Heidi Mjelva Breivik.

T 20499 *Funn fra eldre steinalder på Mohalsen 82 Område 1, Skjeggemoen, gnr. 11, Vega k., Nordland:*

Funnbeskrivelser og lokalisering:
Sone H, V-siden av bergrygg, overflatefunn
25: 3 avslag av flint, hvorav 2 medioavslag og 1 bit. St.l. 2,3 cm, samlet vekt 2,8 gram. (T 20499:25)
26: 21 avslag av kvarts, hvorav 20 medioavslag og 1 bit. St.l. 3,3 cm, samlet vekt 39,9 gram. (T 20499:26)
27: 6 avslag av kvartsitt, hvorav 1 makroavslag og 5 medioavslag. St.l. 7,4 cm, samlet vekt 99,6 gram. (T 20499:27)

Sone H, v. struktur, overflatefunn
28: Smalflekke av flint, midtparti. St.l. 3,5 cm, st.b. 1 cm, st.t. 0,2 cm, vekt 1,3 gram. (T 20499:28)
29: Smalflekke av flint, proksimalfragment. St.l. 1,5 cm, st.b. 1 cm, st.t. 0,5 cm, vekt 0,5 gram. (T 20499:29)
30: Mikroflekke av flint, proksimal- og midtparti. St.l. 1,8 cm, st.b. 0,7 cm, st.t. 0,2 cm, vekt 0,4 gram. (T 20499:30)
31: Retusjert mikroflekke av flint, større del av midtparti, retusj langs enden av en sidekant, innenfor et parti på ca. 1,1 cm. Beskrives i rapport som mikrolitt. St.l. 2,9 cm, st.b. 0,7 cm, st.t. 0,2 cm, vekt 0,4 gram. (T 20499:31)
32: Retusjert vanlig flekke av kvartsitt, retusj langs hhv. en rett og en konveks sidekant, innenfor partier på hhv. 4,7 cm og 2,7 cm. De retusjerte parti møtes i den spisse distalenden på stykket. St.l. 4,9 cm, st.b. 2,3 cm, st.t. 0,5 cm, vekt 6,5 gram. (T 20499:32)
33: Vanlig flekke av flint, bruksspor langs begge sidekanter, innenfor partier på hhv. 1,3 cm og 1 cm. St.l. 2 cm, st.b. 1,5 cm, st.t. 0,7 cm, vekt 2,4 gram. (T 20499:33)
34: Endeskraper av flint, svært retusj og kraftige bruksspor langs en konveks endekant, innenfor et parti på ca. 2,5 cm. St.l. 3,7 cm, st.b. 2,6 cm, st.t. 1,1 cm, vekt 7,7 gram. (T 20499:34)

Sone I, overflatefunn
35: 7 avslag av flint, hvorav 3 medioavslag og 4 biter. Et av avslagene er en mulig bipolar kjerne. St.l. 2,6 cm, samlet vekt 18,2 gram. (T 20499:35)
36: Avslag av kvarts, medioavslag. St.l. 1,9 cm, samlet vekt 1,4 gram. (T 20499:36)
37: 2 avslag av kvartsitt, medioavslag. St.l. 3,3 cm, samlet vekt 8,5 gram. (T 20499:37)
38: Retusjert vanlig flekke av flint, vannrullet eksemplar, distalpartiet avbrukket, usikker retusj langs begge sidekanter. Retusjen er slått fra motstående sideflater (dorsal- og ventralside). St.l. 2,1 cm, st.b. 1,2 cm, st.t. 0,4 cm, vekt 1,4 gram. (T 20499:38)
39: Smalflekke av flint, uregelmessig eksemplar, avbrukket i proksimalpartiet. St.l. 2,8 cm, samlet vekt 1,2 gram. (T 20499:39)
40: 5 knoller av flint. St.l. 3,2 cm, samlet vekt 35,2 gram. (T 20499:40)

Sone J, overflatefunn
41: Kjerne med en plattform av kvartsitt, stort, uregelmessig eksemplar, 2 negative spalteflater slått fra samme plattform, samt en større avspaltning eller bruddflate på en annen sidekant. St.l. 18 cm, st.b. 8 cm, st.t. 6,5 cm, vekt 820,3 gram. (T 20499:41)

Prøvestikk, Sone B (stikk nr. B1)
42: Knoll av flint. St.l. 1 cm, vekt 0,4 gram. (T 20499:42)

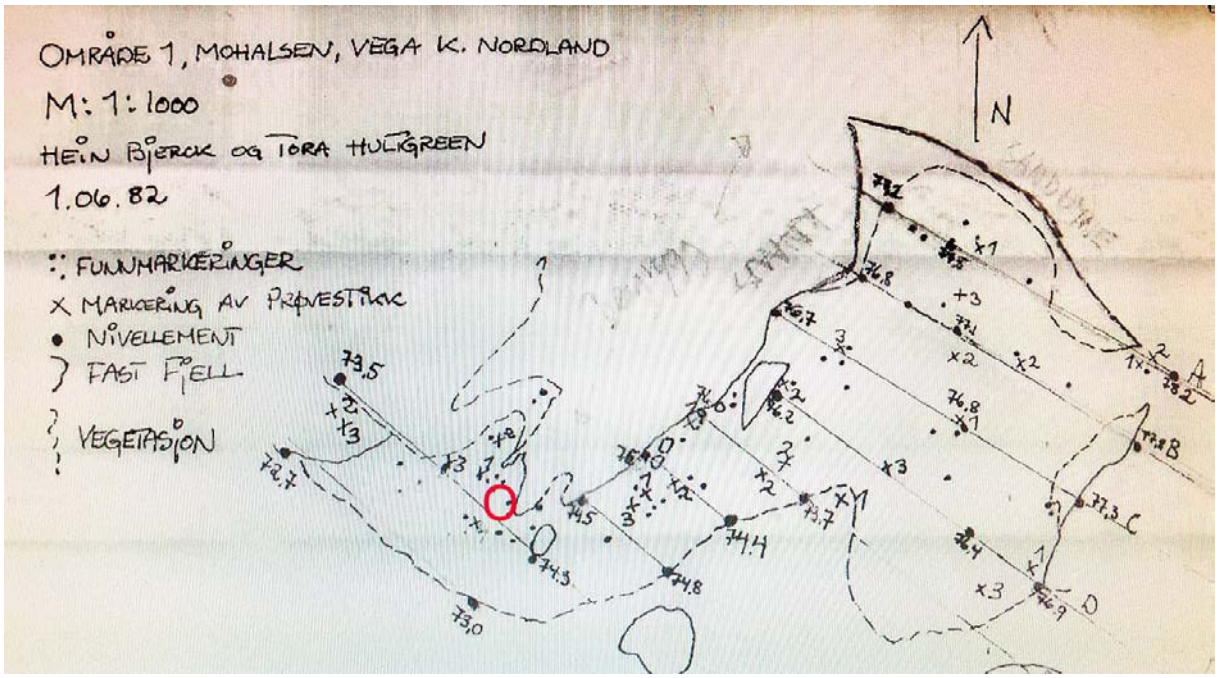
Prøvestikk, Sone E (stikk nr. E1)
43: Avslag av flint, medioavslag. St.l. 1 cm, samlet vekt 0,3 gram. (T 20499:43)

Prøvestikk, Sone G (stikk nr. G3)
44: 2 vannrullede avslag av flint, hvorav 1 medioavslag og 1 mikroavslag. St.l. 1,2 cm, samlet vekt 0,6 gram. (T 20499:44)
45: Avslag av kvartsitt, medioavslag. St.l. 1,2 cm, vekt 0,8 gram. (T 20499:45)
46: Knoll av flint. St.l. 1,8 cm, vekt 1,7 gram. (T 20499:46)

Prøvestikk, Sone H, v. struktur (stikk nr. H1)
47: Avslag av flint, medioavslag. St.l. 1 cm, vekt 0,1 gram. (T 20499:47)
48: Avslag av kvarts, makroavslag. St.l. 4,2 cm, vekt 14,6 gram. (T 20499:48)
49: Avslag av kvartsitt, medioavslag. St.l. 1,8 cm, vekt 0,5 gram. (T 20499:49)

Prøvestikk, Sone H (stikk nr. H2)
50: Vannrullet avslag / bit av flint. St.l. 1,8 cm, vekt 1 gram. (T 20499:50)
51: Avslag av kvartsitt, makroavslag. St.l. 9,5 cm, samlet vekt 131,8 gram. (T 20499:51)

Prøvestikk, Sone I (stikk nr. I2)
52: Mikroflekke av flint. St.l. 1,2 cm, st.b. 0,5 cm, st.t. 0,1 cm, vekt < 0,1 gram. (T 20499:52)
53: Knoll av flint. St.l. 1,1 cm, vekt 0,7 gram. (T 20499:53)



Charcoal samples

Catalog number	Site	x	y	Layer	Date	Recovery	Sample code	Lab code	Radiocarbon age	Cal. Age (2 sigma cal BC)
T26053:168	Mohalsen 2012 II	56.6 - 56.8	52.9	2	15.10.2012	in situ				
T26053:169	Mohalsen 2012 II	56.6 - 56.8	52.9	2	15.10.2012	in situ				
T26053:170	Mohalsen 2012 II	56.6 - 56.8	52.9	2	15.10.2012	in situ				
T26053:171	Mohalsen 2012 II	56	52	2	15.10.2012	sieve				
T26053:172	Mohalsen 2012 II	56.3	52.45	2	15.10.2012	in situ				
T26053:173	Mohalsen 2012 II	56.57	52.23	3	16.10.2012	in situ				
T26053:174	Mohalsen 2012 II	56.6	52.2	3	16.10.2012	in situ				
T26053:175	Mohalsen 2012 II	56.37	52.27	3	16.10.2012	in situ				
T26053:176	Mohalsen 2012 II	56.48	52.66	5	10.10.2012					
T26053:177	Mohalsen 2012 II	56.65	52.27	3	16.10.2012	in situ	Moh2012IIFP1	Beta - 335452	9090+-40	8300-8230
T26053:178	Mohalsen 2012 II	53.7	53.6	3	17.10.2012	in situ	Moh2012IIFP2	Beta - 335453	9500+-40	9140-8970 and 8940-8750

Sediment samples

Catalog number	Site	Location	x	y	Layer	Date	Weight (g)	Chromatography analysis	Sample code
T26053:179	Mohalsen 2012 II	Fireplace 1	56.6 - 56.8	52.9	2	15.10.2012	248	x	Moh2012IIFP1 sample 2
T26053:180	Mohalsen 2012 II	Fireplace 1	56.6 - 56.8	52.9	2	15.10.2012	170		
T26053:181	Mohalsen 2012 II	Fireplace 1	56.6 - 56.8	52.8-53.0	4	16.10.2012	462	x	Moh2012IIFP1 sample 1
T26053:182	Mohalsen 2012 II	Fireplace 1	56.5 - 56.7	52.5-52.8	4	16.10.2012	272		
T26053:183	Mohalsen 2012 II	Fireplace 2	53.7 - 53.9	53.6 - 53.8	3	17.10.2012	458	x	Moh2012IIFP2 sample 1
T26053:184	Mohalsen 2012 II	Fireplace 2	53.65	53.75	4	17.10.2012	144		
T26053:185	Mohalsen 2012 II	Fireplace 2	53.65	53.65	4	17.10.2012	150		
T26053:186	Mohalsen 2012 II	Fireplace 2	53.8 - 53.9	53.6 - 53.8	4	17.10.2012	450	x	Moh2012IIFP2 sample 2
T26053:187	Mohalsen 2012 II	Fireplace 2	53.7 - 53.9	53.6 - 53.8	3	17.10.2012	660		
T26053:188	Offsite		50.0 - 50.2	72.0 - 72.2	7-15 cm depth	15.10.2012	854	x	Moh2012II offsite sample 1
T26053:189	Offsite		53.0 - 53.2	34.8 - 35.0	7-12 cm depth	15.10.2012	> 1000	x	Moh2012II offsite sample 2
T26053:190	Offsite		65.0 - 65.2	50.0 -50.2	25-35 cm depth	15.10.2012	> 1000		
T26053:191	Mohalsen 2012 II	Fireplace 1	56.3 - 56.5	52.8 - 53	10-15 cm depth	15.10.2012	744		

Attachment 8

	Photos from Mohalsen2012-II, Vega, 4.-17. October 2012	
1		4.10.2012 Mohalsen2012-II, before excavation. Photo towards S. Photo Hein B. Bjerck. PA040064
2		4.10.2012 Mohalsen2012-II, before excavation. Photo towards SW. Photo Hein B. Bjerck. PA040065
3		4.10.2012 Mohalsen2012-II, before excavation. Photo towards W. Photo Hein B. Bjerck. PA040070

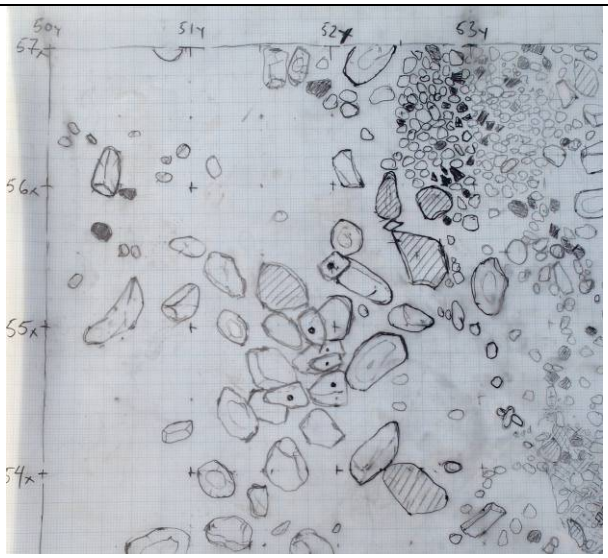
4		4.10.2012 Mohalsen2012-II, before excavation. Photo towards E. Photo Hein B. Bjerck. PA040072
5		5.10.2012, 11:59 Mohalsen2012-II, after removal of vegetation layer, before excavation of Layer 1. Photo towards SW. Photo Hein B. Bjerck. PA050169
6		5.10.2012, 13:33 Mohalsen2012-II, after removal of vegetation layer, before excavation of Layer 1. Photo towards W. Photo Hein B. Bjerck. PA050194

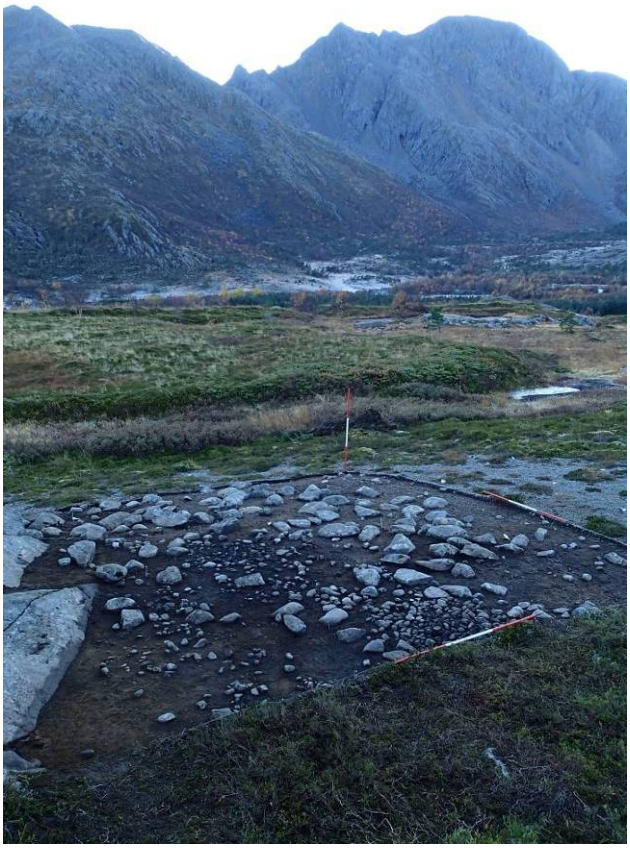
7		5.10.2012, 13:37 Mohalsen2012-II, after removal of vegetation layer, before excavation of Layer 1. Photo towards E. Photo Hein B. Bjerck. PA050206
8		7.10.2012 Mohalsen2012-II, just started excavation of mechanical Layer 1 along the 50y-axis. Breivik, Zangrando and Swensen. Photo towards W. Photo Hein B. Bjerck. PA070223
9		7.10.2012 Mohalsen2012-II, just started excavation of mechanical Layer 1 along the 50y-axis. Breivik, Zangrando and Swensen. Photo towards SW. Photo Hein B. Bjerck. PA070224

10		8.10.2012 Mohalsen2012-II, overview in heavy rain. Photo towards NW. Photo Hein B. Bjerck. PA080249
11		9.10.2012, 12:58 Too much rain to excavate, afternoon off. Photo towards SW. Photo Hein B. Bjerck. PA090271
12		10.10.2012 Mohalsen2012-II, overview, Trolltind in background. Photo towards SSW. Photo Hein B. Bjerck. PA100281
13		10.10.2012, 12:42 Fireplace 1 is appearing in the N part of the excavation. Swensen (left) and Fretheim. Photo towards E. Photo Hein B. Bjerck. PA100284

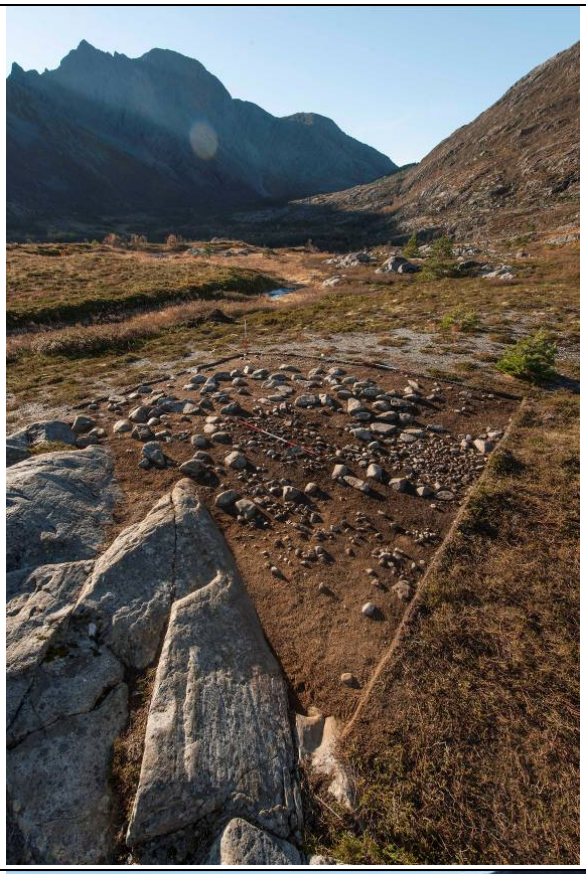
14		10.10.2012, 16:34 Most of the cobble structure is excavated. Fireplace 1 is uncovered; Fireplace 2 (left) is starting to appear. Photo towards W. Photo Hein B. Bjerck. PA100291
15		11.10.2012, 12:42 Fireplace 1 in front, Fireplace 2 in background. Swensen, Fretheim, Zangrando and Brattli. Photo towards S. Photo Hein B. Bjerck. PA110327
16		11.10.2012, 15:54 Most of the area “inside” the cobble structure is excavated. Fireplace 1 in front, Fireplace 2 in background. Swensen and Fretheim. Photo towards S. Photo Hein B. Bjerck. PA110331
17		11.10.2012, 15:56 Most of dwelling structure is uncovered, the cobble structure, Fireplace 1 (right) and Fireplace 2 (left). Also note the brown sandy soil around the two fireplaces. Photo towards W. Photo Hein B. Bjerck. PA110335

18		11.10.2012, 15:58 As PA110335, plus Swensen and Fretheim. Photo towards E. Photo Hein B. Bjerck. PA110337
19		12.11.10.2012, 15:54 As PA110335, at the end of the day. Photo towards S. Photo Hein B. Bjerck. PA120357
20		13.10.2012, 10:44 The first sun in the morning the next day, excavation is slow, because field was frozen during night. Photo towards S. Photo Hein B. Bjerck. PA130370
21		13.10.2012, 11:11 Overview of Mohalsen, and Gullsvågfjellet, the shadow from Trolltindan is like the 75 m sea level that once was here. Photo towards S. Photo Hein B. Bjerck. PA130378
22		13.10.2012, 12:00 Overview of Mohalsen2012-II, panorama, towards E. Photo Hein B. Bjerck. PA130407

23		13.10.2012 Photo of plan drawing, with the removed rocks marked (dot). These rocks were angular, and located on top of each other, and did not look like they were part of the Mesolithic structure. The reason to remove them was also to be able to excavate the area, to see if related to a modern fireplace. However, no further clues were found, as there was only clean gravel under/between the rocks. Note: These rocks are not included in the final plan drawing. See also Photo 19/ PA120357 vs. Photo 25/ PA130429 with rocks removed. Photo Hein B. Bjerck. PA130408
24		13.10.2012, 14:16 Panorama, looking E. Photo Hein B. Bjerck. PA130420
25		13.10.2012, 16:46 The whole of Layer 1 excavated, site cleaned and prepared for Åge's final photos, before excavating fireplaces. The brown sandy layer, possible cultural layer by proxy, is very clear on this photo. Towards S. Photo Hein B. Bjerck. PA130429
26		13.10.2012, 16:50 As 25, looking E. Photo Hein B. Bjerck. PA130431

27		13.10.2012, 16:57 As 25, looking SW. Photo Hein B. Bjerck. PA130439
28		13.10.2012, 16:57 As 25, looking SW. Photo Hein B. Bjerck. PA130441
29		15.10.2012 Mohalsen2012-II, after excavating the 5 cm thick mechanical Layer 1. Photo Åge Hojem. Moh2012-II_Hojem_1

30		15.10.2012 Panorama, Mohalsen2012-I in the foreground, locality II and Trolltindan in the background, to the left of the green tent. Looking E-W. Photo Åge Hojem. Moh2012-II_Hojem_2
31		15.10.2012 Overview of Mohalsen2012-II after excavation of Layer 1. Towards WSW. Photo Åge Hojem. Moh2012-II_Hojem_3
32		15.10.2012 Like Photo 31. Photo Åge Hojem. Moh2012-II_Hojem_4

33		15.10.2012 Like Photo 31. Photo Åge Hojem. Moh2012-II_Hojem_5
34		15.10.2012 Like Photo 31. Photo Åge Hojem. Moh2012-II_Hojem_6
35		15.10.2012 Like Photo 31, but towards SE. Photo Åge Hojem. Moh2012-II_Hojem_7

36		15.10.2012 Like Photo 31, close up of Fireplace 1. Towards S. Photo Åge Hojem. Moh2012-II_Hojem_8
37		15.10.2012 Panorama Mohalsen and Gullsvågfjellet. Looking W. Photo Åge Hojem. Moh2012-II_Hojem_9
38		15.10.2012 Close up of section along 53y, Fp1, showing black substance in the brown sandy soil, and also specks of light brown silty sediment, that may be related to burning/ash. Photo Åge Hojem. Moh2012-II_Hojem_10
39		15.10.2012, 14:21 Zangrando and Bjerck excavating Fireplace 1. Note that the blackened area is limited, much smaller that the area of sorted pebbles. See also Photo 41/ PA160523. Towards S. Photo Åge Hojem. Moh2012-II_Hojem_11

40		15.10.2012 At the end of the day, working with sampling Fireplace 1. Towards W. Photo Åge Hojem. Moh2012-II_Hojem_12
41		16.10.2012 11:16 In the morning, frozen soils in Fireplace 1 during the night. 56x/52y. Looking E. Photo Hein B. Bjerck. PA160523
42		16.10.2012 Still working on Fireplace 1, work is slow because of frozen ground. Also hard to observe details in the soils in the sharp, low sunlight. Towards SW. Photo Åge Hojem. Moh2012-II_Hojem_13
43		16.10.2012, 17:04 Section along 56-57x/53y, Fireplace 1. Black substance, fire cracked rocks, and the brown sandy soil. Also note the wedge of beach gravel, thinning towards N (left), apparently a storm deposit in the final stage of the beach ridge formation. Charcoal from Fp1 is 14C dated to 9050+-40 uncal BP, i.e. 2 sigma cal BC 8300-8230 (Beta-33542) Photo Hein B. Bjerck.

		PA160550
44		17.10.2012, 10:26 In the morning, frozen ground, working on Fireplace 2. The excavation area (53x/53y/NW and /NE) was protected from the night frost by a styrofoam mat (cf Photo 42). Photo Hein B. Bjerck. PA170589
45		17.10.2012, 11:17 Fireplace 2 (53x/53y/NW and /NE) after removing rocks/Layer 2, and preparing the surface. Note that also here is the blackened area more confined than the collection of sorted pebbles. Also note the zone of silty light red-brown sediment adjacent to the blackened area, cf. Photo 43 from Fp1. Looking N. Photo Hein B. Bjerck. PA170595
46		17.10.2012 All pebbles from 56x/52y/SE, Fireplace 1, sorted in unburnt (left) and burned (right). Note that most pebbles have retained their shape as beach pebbles, and are only moderately cracked, that probably means that the heating has been moderate. The rocks were put back in the excavated part of Fireplace 1 after analyzed. Photo Hein B. Bjerck. PA170599

47		17.10.2012 Zangrando scrutinizing pebbles from the NE quadrant in Fireplace 1 (56x/52y) Photo Hein B. Bjerck. PA170604
48		17.10.2012 All pebbles from 56x/52y/NE, Fireplace 1, sorted in unburnt (left) and burned (right). Also here, most pebbles have retained beach pebble shape, and are not much cracked. The rocks put back in the excavated part of Fireplace 1 after analyzed. Photo Hein B. Bjerck. PA170606
49		17.10.2012, 12:07 Fireplace 2 (53x/53y/NW and /NE), after removing of Layer 3, ca. 10 cm from surface. There are Photo Hein B. Bjerck. PA170610
50		17.10.2012, 13:29 Section of Fireplace 2, (54x/53-54y). Dating from Fp2 is 9540+-40 uncal BP, i.e. 2 sigma cal BC 9140-8970 and 8940-8750 (Beta-335453) Photo Hein B. Bjerck. PA170619

51		17.10.2012, 13:48 During documentation of section in Fireplace 2, Fireplace 1 is already backfilled. Photo Hein B. Bjerck. PA170620
52		17.10.2012, 14:41 The inside part of the cobble structure, i.e. the area w brown sandy soil w artifacts, and also the remains of the two fireplaces are covered with water permeable fiber cloth, and covered by gravel and sod. Photo Hein B. Bjerck. PA170626

Attachment 9

	Artifact photos, Mohalsen2012-II, T26053.	
53		T26053:131 Lancet microlith, quartzite. Traces of platform preparation below the retouched edge. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52236_001
54		T26053:131 Lancet microlith, quartzite. The blade was probably fractured during production. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52236_002
55		T26053:131 Lancet microlith, quartzite. Close-up of the retouched edge. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52236_003

Attachment 9

56		T26053:99 Discoid core, quartzite. Flakes are detached from all around on both sides. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52229_001
57		T26053:99 Discoid core, quartzite. Flakes are detached from all around on both sides. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52229_003
58		T26053:99 Discoid core, quartzite. Close-up showing abrasion or use-wear along the platform edge. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52229_004

Attachment 9

59		T26053:100 Discoid core, quartzite. Flakes are detached from all around on both sides. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52230_001
60		T26053:100 Discoid core, quartzite. Flakes are detached from all around on both sides. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52230_002
61		T26053:100 Discoid core, quartzite. Close-up showing abrasion along the platform edge. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52230_003
62		T26053:100 Discoid core, quartzite. Close-up showing possible use-wear along the platform edge. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52230_004

Attachment 9

63		T26053:118 Discoid core, quartzite. The traces of detached flakes meet in a point, giving one of the sides a conical shape. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52233_001
64		T26053:118 Discoid core, quartzite. The opposite side is formed by three flake detachments, Photo Åge Hojem, NTNU Vitenskapsmuseet Da52233_002
65		T26053:118 Discoid core, quartzite. Close-up showing preparation along the platform edge. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52233_003

Attachment 9

66		T26053:107 Unifacial core with three platforms, quartzite. The core is not a classical EM core. Front/dorsal. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52232_001
67		T26053:107 Unifacial core with three platforms, quartzite. Back/ventral. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52232_002
68		T26053:107 Unifacial core with three platforms, quartzite. Close-up from the side showing the acute platform angle. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52232_003
69		T26053:107 Unifacial core with three platforms, quartzite. Top/main platform. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52232_004

Attachment 9

70		T26053:16 Fragment of platform core, quartzite. Front/dorsal. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52226_001
71		T26053:16 Fragment of platform core, quartzite. Back/ventral. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52226_002

Attachment 9

72		T26053:16 Fragment of platform core, quartzite. The acute platform angle is visible from the side. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52226_004
73		T26053:16 Fragment of platform core, quartzite. The opposite side. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52226_003
74		T26053:16 Fragment of platform core, quartzite. Possible use-wear or preparation visible on the top/platform. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52226_005

Attachment 9

75		T26053:120 Burin with burin blow on fracture, quartzite. The burin edge, formed by 2-3 spalls, is visible on the right side. Front/dorsal. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52234_001
76		T26053:120 Burin with burin blow on fracture, quartzite. Close-up of the burin edge. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52234_003
77		T26053:120 Burin with burin blow on fracture, quartzite. A possible burin function in the opposite corner of the tool. Back/ventral. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52234_002

Attachment 9

78		T26053:121 Burin, quartzite. The tool has an edge formed by several detachments. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52235_001
79		T26053:121 Burin, quartzite. Close-up of a hinged blade detachment. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52235_003
80		T26053:121 Burin, quartzite. The tool has a rough working edge with a pointed corner on top. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52235_002
81		T26053:121 Burin, quartzite. The tool is also woked in the opposite corner. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52235_005

Attachment 9

82		T26053:34, 51, 79, 98, 104 Wing-shaped flakes, quartzite. Probably detached from discoid cores. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52239
83		T26053:10, 30, 108, 113, 116 Blade fragments of quartzite, quartz and flint. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52240

Attachment 9

		T26053:3 Undetermined core with at least two platforms, quartz. The most prominent platform is presented on the photo. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52225_001
		T26053:3 Undetermined core with at least two platforms, quartz. The most prominent platform is presented on the photo. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52225_002

Attachment 9

		T26053:143 Core preform, quartz. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52237_001
		T26053:143 Core preform, quartz. The platform edge (top) has fine preparation. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52237_002

Attachment 9

		T26053:148 End scraper on flake, quartz. Concave retouch in the distal end. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52238_001
		T26053:148 End scraper on flake, quartz. The tool also has very fine retouch / use-wear on the right side edge. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52238_002
		T26053:148 End scraper on flake, quartz. The tool has a burin-like edge on the left side. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52238_003

Attachment 9

		T26053:20 Possible scraper, flint. Patinated and water rolled. Front/dorsal. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52227_001
		T26053:20 Possible scraper, flint. Back/ventral. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52227_002
		T26053:20 Possible scraper, flint. Close-up of the concave retouch in the distal end. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52227_003

Attachment 9

		T26053:55 Macro flake with use-wear, flint. Front/dorsal. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52228_001
		T26053:55 Macro flake with use-wear, flint. Back/ventral. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52228_002
		T26053:55 Macro flake with use-wear, flint. Close-up of the edge with use-wear. Photo Åge Hojem, NTNU Vitenskapsmuseet Da52228_003

Attachment 10

Beta Analytic Inc.
4985 SW 74 Court
Miami, Florida 33155 USA
Tel: 305 667 5167
Fax: 305 663 0964
Beta@radiocarbon.com
www.radiocarbon.com

Consistent Accuracy . . .
. . . Delivered On-time

November 21, 2012

Mr. Hein Bjerck
NTNU Vitenskapsmusset
Trondheim, 7491
Norway

RE: Radiocarbon Dating Results For Samples Moh2012IIFP1, Moh2012IIFP2

Dear Mr. Bjerck:

Enclosed are the radiocarbon dating results for two samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

The cost of analysis was previously invoiced. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Mr. Hein Bjerck

Report Date: 11/21/2012

NTNU Vitenskapsmusset

Material Received: 11/16/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 335452	9090 +/- 40 BP	-27.3 o/oo	9050 +/- 40 BP
SAMPLE : Moh2012IIFP1			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 8300 to 8230 (Cal BP 10250 to 10180)			
Beta - 335453	9500 +/- 40 BP	-22.8 o/oo	9540 +/- 40 BP
SAMPLE : Moh2012IIFP2			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 9140 to 8970 (Cal BP 11090 to 10920) AND Cal BC 8940 to 8750 (Cal BP 10890 to 10700)			

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "*". The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.3:lab. mult=1)

Laboratory number: **Beta-335452**

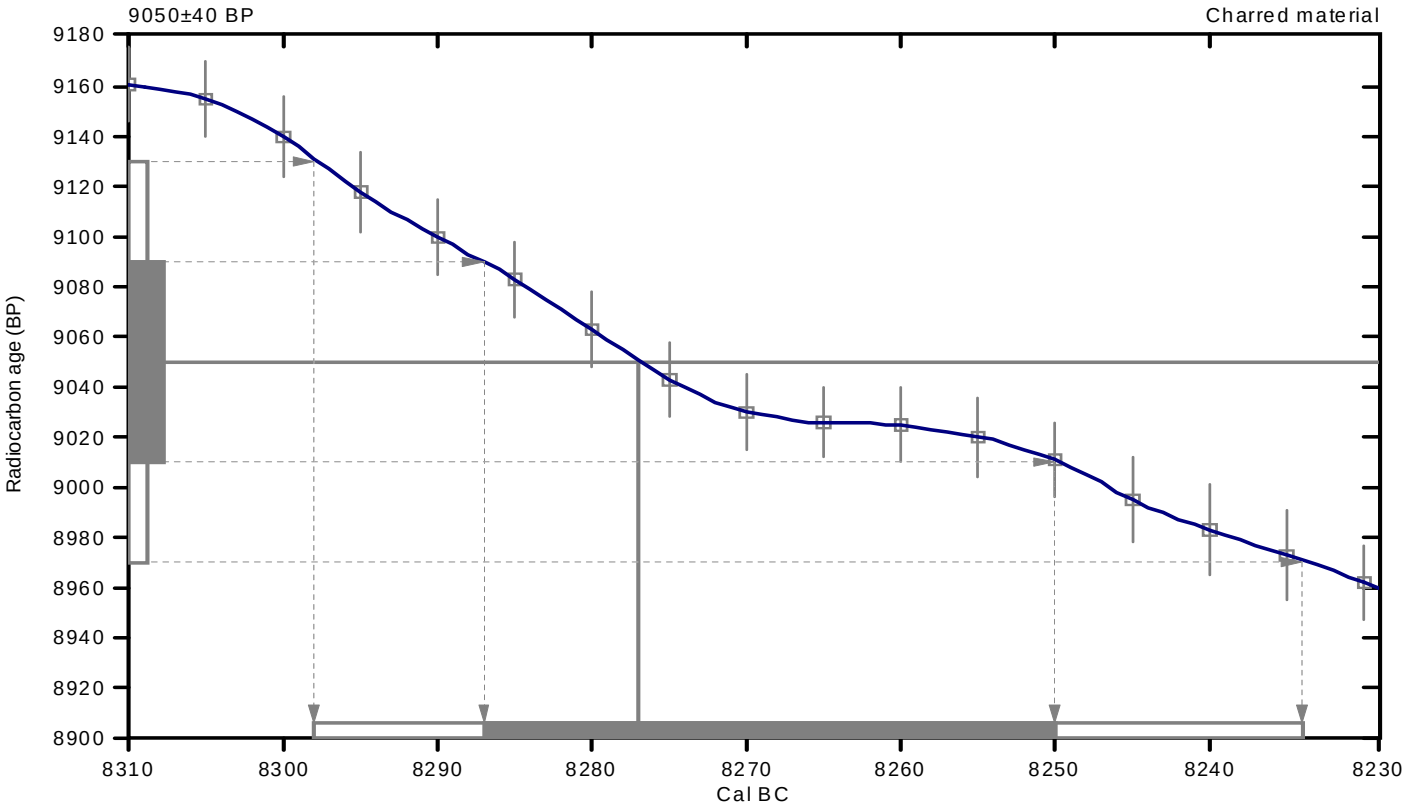
Conventional radiocarbon age: **9050±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 8300 to 8230 (Cal BP 10250 to 10180)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 8280 (Cal BP 10230)

1 Sigma calibrated result: (68% probability) Cal BC 8290 to 8250 (Cal BP 10240 to 10200)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.8:lab. mult=1)

Laboratory number: **Beta-335453**

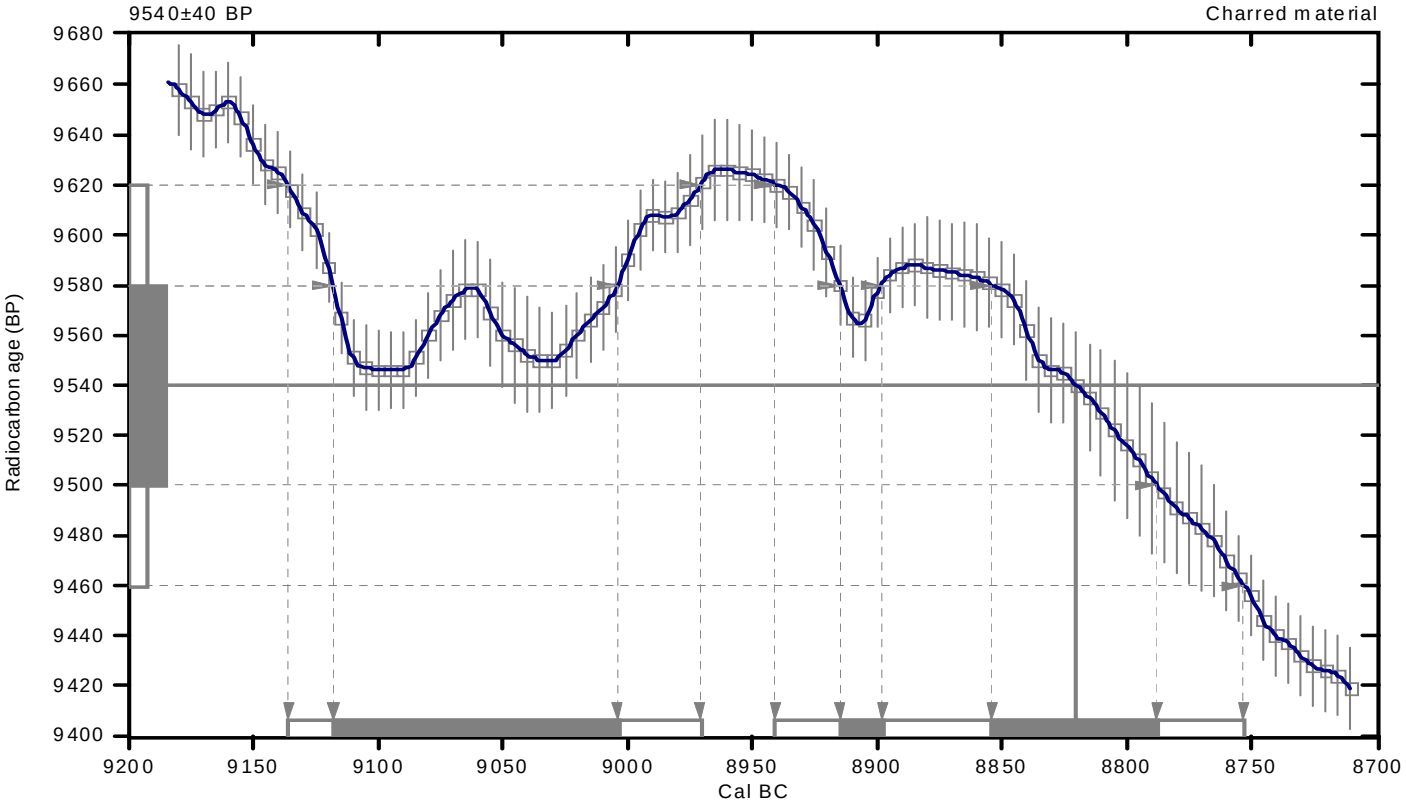
Conventional radiocarbon age: **9540±40 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 9140 to 8970 (Cal BP 11090 to 10920) and Cal BC 8940 to 8750 (Cal BP 10890 to 10700)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 8820 (Cal BP 10770)

1 Sigma calibrated results: (68% probability) Cal BC 9120 to 9000 (Cal BP 11070 to 10950) and Cal BC 8920 to 8900 (Cal BP 10860 to 10850) and Cal BC 8850 to 8790 (Cal BP 10800 to 10740)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

NTNU Vitenskapsmuseet er en enhet ved Norges teknisk-naturvitenskapelige universitet, NTNU.

NTNU Vitenskapsmuseet skal utvikle og formidle kunnskap om natur, kultur og vitenskap. Museet skal sikre og forvalte de vitenskapelige samlingene og aktivisere dem gjennom forskning, formidling og undervisning.

Seksjon for arkeologi og kulturhistorie har forvaltningsansvar for automatisk fredete kulturminner og skipsfunn i Nordmøre, Sør-Trøndelag, Nord-Trøndelag, nordlige Romsdal og Nordland til og med Rana. Seksjonen foretar arkeologiske undersøkelser på kulturminner over og under vann, i henhold til kulturminneloven.

ISBN 978-82-8322-075-9

ISSN 2387-3965

www.ntnu.no/vitenskapsmuseet

NTNU
Vitenskapsmuseet